# Globalization and Health Equity

6<sup>th</sup> Annual International Conference on New Voices in Global Health and Development 2019

5 APRIL 2019 | PIYACHART BUILDING II THAMMASAT UNIVERSITY, RANGSIT CAMPUS, PATHUMTHANI, THAILAND

# **Published July 2019**

# Contents

Conference Agenda	1
Committee	10
Welcome Address	12
Associate Professor Dr. Sasitorn Taptagaporn	
Keynote Address	
Associate Professor Dr. Kitti Prasirtsuk	14
Oral Procontation	16
0.1 Fortune consistent with distant dimension and fortune decome shildren and (	17
0-1 Factors associated with dietary diversity among infant and young children aged 6- 23 months in Nepal (Abstract only) Rajeev Banjara, Uma Langkulsen and Nitava Vajananoom	17
0-2 Dietary intake and nutritional status of children under five years in the area	18
affected by volcano eruption, North Sumatra Province – Indonesia (Abstract only)	
Sadar Ginting, Nithra Kitreerawutiwong and Sunsanee Mekrungrongwong	
U-3 Towards achievement of UHC in India: analyzing the strategies from Ghana,	19
Mexico, and Thanand (Abstract only) M.S.W. Kusters, Z.I.E. Nieuwhof, W. van Bergen, M. Cuijpers, A. Galaurchi, O. Ghafuri, E. Mashhadchi,	
M. Segers, K. van Teunenbroek and F. Stevens	
0-4 A review to identify major determinants of unsafe abortion in Africa and compare	20
between South Africa and Kenya of varying incidents (Abstract only) Lwin Phone Myat	
O-5 Prevalence and social determinants of tobacco use among health professional	21
students in Southeast Asia	
Manatee Jitanan, Kwanjai Amnatsatsue, Patcharaporn Kerdmongkol, Farizah Binti Mohd Hairi, Pimpan Silapasuwarn and Nithat Sirichotiratana	
0-6 Nicotine deliverance systems: a new threat of an old challenge ( <i>Abstract only</i> ) Romen Raniit	29
0-7 Health literacy of third year students at Thang Long University of Hanoi, Vietnam	30
in 2017 (Abstract only)	
Hien Thi Thu Ngo and Quoc Anh Truong	
0-8 Have men been left behind? Explaining health inequalities faced by male	31
Daniel Reattie	
0-9 Corporal punishment of children by parents and teachers in South Asia	32
Prarthana Koirala	
0-10 Equity perspective on Myanmar's National Strategic Plan for tuberculosis (2016-	44
2020): systematic literature review	
0-11 Social constructs of mental illness; barriers to care and treatment for women	52
with anxiety disorders and depression	52
Kendra Gore	

### **Oral Presentation**

0-12 Human rights and health equity consequences of the Italian anti-immigration policies from 2002 to 2018	61
0-13 Social factors contributing to stigmatisation of mental health in Sub Saharan Africa (SSA)	68
0-14 A predictive model for dengue cases in Southern Lam Dong Province, Vietnam, 2007-2017	74
An Dao Thien Nguyen, Uraiwan Kositanont, Soawapak Hinjoy and Sopon Lamsirithaworn O-15 Changing ecology of deadly Nipah virus and the pathways of outbreak in Bangladesh (Abstract only) Khandakar Md Jakaria	82
0-16 Challenges for malaria elimination in Nepal Saugat Shrestha	83
0-17 The relationship between spiritual well being (SWB) and quality of life among older adults who live in the retirement home at Mojokerto, Indonesia <i>(Abstract only)</i>	94
0-18 Assessment of the self-perceived health-related quality of life of pulmonary tuberculosis patients in Pakistan	95
Shahab E. Saqib, Mokbul Morshed Ahmad, Sanaullah Panezai and JM Abdullah O-19 The basic screening for hypertension and diabetes in the elderly by high school students in Phranakhon Si Ayutthaya Province Noppawan Theerapuncharoen and Weerapol Theerapuncharoen	101
$\mathbf{r}_{\mathbf{r}}$	
Poster Presentation	107
Poster Presentation P-1 Stigma among medical doctors against people living with HIV in Kathmandu (Abstract only) Dhirai Polea Jappifer Mathias and Paiego Banjara	107 108
<ul> <li>Poster Presentation</li> <li>P-1 Stigma among medical doctors against people living with HIV in Kathmandu (Abstract only)         <ul> <li>Dhiraj Roka, Jennifer Mathias and Rajeev Banjara</li> <li>P-2 Malnutrition and associated factors after discharge from neonatal intensive care, a cohort study in young infants in Mungeli, India</li> </ul> </li> </ul>	107 108 109
<ul> <li>Poster Presentation</li> <li>P-1 Stigma among medical doctors against people living with HIV in Kathmandu (Abstract only) Dhiraj Roka, Jennifer Mathias and Rajeev Banjara</li> <li>P-2 Malnutrition and associated factors after discharge from neonatal intensive care, a cohort study in young infants in Mungeli, India Rachel McDougall, Gayatri Ganesh, Richa John, Namita Titus and Melanshya Pears</li> <li>P-3 Health system in Zimbabwe and delay in seeking health care of breast cancer among women in Zimbabwe</li> </ul>	107 108 109 119
<ul> <li>P-1 Stigma among medical doctors against people living with HIV in Kathmandu (Abstract only)         <ul> <li>Dhiraj Roka, Jennifer Mathias and Rajeev Banjara</li> </ul> </li> <li>P-2 Malnutrition and associated factors after discharge from neonatal intensive care, a cohort study in young infants in Mungeli, India         <ul> <li>Rachel McDougall, Gayatri Ganesh, Richa John, Namita Titus and Melanshya Pears</li> </ul> </li> <li>P-3 Health system in Zimbabwe and delay in seeking health care of breast cancer among women in Zimbabwe         <ul> <li>Elsie Gotora, Nitaya Vajanapoom and Wanapa Naravage</li> </ul> </li> <li>P-4 Successful family planning in Bangladesh: lessons to be learned for Nepal         <ul> <li>Sharada Basnet, Marc Van der Putten and Li Liana</li> </ul> </li> </ul>	107 108 109 119 125
<ul> <li>Poster Presentation</li> <li>P-1 Stigma among medical doctors against people living with HIV in Kathmandu (Abstract only) <ul> <li>Dhiraj Roka, Jennifer Mathias and Rajeev Banjara</li> </ul> </li> <li>P-2 Malnutrition and associated factors after discharge from neonatal intensive care, a cohort study in young infants in Mungeli, India <ul> <li>Rachel McDougall, Gayatri Ganesh, Richa John, Namita Titus and Melanshya Pears</li> </ul> </li> <li>P-3 Health system in Zimbabwe and delay in seeking health care of breast cancer among women in Zimbabwe <ul> <li>Elsie Gotora, Nitaya Vajanapoom and Wanapa Naravage</li> </ul> </li> <li>P-4 Successful family planning in Bangladesh: lessons to be learned for Nepal Sharada Basnet, Marc Van der Putten and Li Liang</li> <li>P-5 Biomedical hazardous waste management in Nepal: an outlook of international principles and its implementation in national practice Nikita Pokharel, Uma Langkulsen and Sarina Pradhan</li> </ul>	107 108 109 119 125 130
<ul> <li>Poster Presentation</li> <li>P-1 Stigma among medical doctors against people living with HIV in Kathmandu (Abstract only) <ul> <li>Dhiraj Roka, Jennifer Mathias and Rajeev Banjara</li> </ul> </li> <li>P-2 Malnutrition and associated factors after discharge from neonatal intensive care, a cohort study in young infants in Mungeli, India <ul> <li>Rachel McDougall, Gayatri Ganesh, Richa John, Namita Titus and Melanshya Pears</li> </ul> </li> <li>P-3 Health system in Zimbabwe and delay in seeking health care of breast cancer among women in Zimbabwe <ul> <li>Elsie Gotora, Nitaya Vajanapoom and Wanapa Naravage</li> </ul> </li> <li>P-4 Successful family planning in Bangladesh: lessons to be learned for Nepal Sharada Basnet, Marc Van der Putten and Li Liang</li> <li>P-5 Biomedical hazardous waste management in Nepal: an outlook of international principles and its implementation in national practice <ul> <li>Nikita Pokharel, Uma Langkulsen and Sarina Pradhan</li> </ul> </li> <li>P-6 Type and quantity of bacterias in classroom air, Srinakharinwirot University Ongkharak Campus (Abstract only)</li> <li>Pareena Nakprasom, Dollaya Sangsuwan, Natawan Noicharoen, Apisara Sommatas and Pattakorn</li> </ul>	107 108 109 119 125 130 137

### Poster Presentation

P-8 Task shifting at Mae Tao Clinic, Thai-Myanmar Border: a case study of frontline community health workers in implementation of child health programs	146
Aye Thandar Aung, Nitaya Vajanapoom and Bill Brady	
P-9 Documentation of factors contributing to road traffic accidents in Nepal Nilam Bhandari and Nitava Vajanapoom	154
P-10 What Nepalese can learn about antimicrobial resistance in poultry (Abstract	166
onlu)	100
City J	
D 11 Health gratem and multi drug registent tubergulagia control in India	167
Sai Woon Chai and Nitaya Vajanapoom	107
P-12 Factors associated with knowledge of female community health volunteers in	175
Nepal on 5 key areas- health, nutrition, family planning, WASH and agriculture in	
Nepal	
Anushree KC and Nitaya Vajanapoom	
P-13 The efficacy of older person leaders on health promotion among ageing of elderly	184
club of Ongkharak District, Nakhonnayok Province (Abstract only)	
Pattakorn Buppan, Pimonporn Chaovipoch, Pakarang Seemee, Rattiporn Kosuwin, Ormjai	
Taejarernwiriyakul, Sirikul Thumajitsaku, Apisara Sommatas, Surasak Yooyongsatit and Rattiya Chindowa	
D 14 Monitoring of organophosphate and carbamate insecticides in soils from canals	105
by anti- acetyleholinestorace activity (Abstract only)	105
Dy dilli- deelytenoinester dse delivity (Abstruct only) Noramon Thongkord, Banthitar Pholmeesan, Piyanorn Phankham, Kun Silprasit and Sirikul	
Thummaiitsakul	
P-15 Review of services for, and barriers to early infant diagnosis of HIV in Nigeria.	186
Malawi, Kenya and Uganda	
Aryu Kyaw and Rodger Doran	
P-16 Post-earthquake humanitarian assistance and its effects on the health system in	194
Nepal	
Rajesh Prasad Chaudhary, Li Liang and Shekh Mohammad Altafur Rahman	
P-17 The influence of sunbathing on improving the quality of sleep for the elderly in	203
Mojopahit nursing home in Mojokerto, East Java	
Arif Wijanarko, Devin Prihar Ninuk and Nasrudin	
P-18 What explains the high maternal mortality in Zimbabwe? A systematic review	209
(Abstract only)	
Gwinyai Tinarwo and Wanapa Naravage	
P-19 Socio-demographic factors associated with causes of maternal mortality in seven	210
selected districts of Nepal (Abstract only)	
Sandhya Gurung, Uma Langkulsen and Wanapa Naravage	
P-20 Intervention strategies that work to eliminate intimate partner violence in South	211
Africa: a women's empowerment approach Masibulele Sishuba-Zulu	
P-21 Molecular characterization of multidrug-resistant Mycobacterium tuberculosis	217
isolates from Thai-Myanmar border	
Fjolla Berani, Adisak Bhumiratana, Andrew Corwin, Benjawan Phetsuksiri, Chie Nakajima,	
Yasuhiko Suzuki and Orasa Suthienkul	
P-22 Family support and medical adherence among older adults with hypertension in	227
Indonesia	
Safitri Febria Rahmadini, Siti Urifah and Wiwiek Widiatie	00
P-23 Exploring micronutrient and vitamin programs in Malawi: a study of	234
implementation and collaboration in governmental and non-governmental	
programs	
Mackenzie Chigumula and Tatchalerm Sudhipongpracha	

### Poster Presentation

P-24 Issues of sustainability of rural community WASH Programs in the transition from Millennium Development Goal to Sustainable Development Goal in Southern	243
Africa	
Elizabeth Wariva, Rodger Doran and Liang Li D 25 Understanding factors contributing to uncefe abortion among the adolescent	252
r-25 onderstanding factors contributing to unsafe abortion anong the adorescent	232
giris in Nepai Chetan KC and Wanana Narayaae	
P-26 Prevalence and incidence of dyslinidemia and related factors among non-	259
overweight adults in a Thai University (Abstract only) Nakamol Sutatong and Sirima Mongkolsomlit	_0,
P-27 Menstrual hygiene management implementation among Santriwati who live in	260
an Islamic Boarding School of Darul Ulum, Jombang Indonesia	
Arifa Retnowuni and Athi' Linda Yani	
P-28 Oncologic outcomes between open, laparoscopic and robotic surgery among	267
patients with early stage ovarian cancer: a network meta-analysis	
Swekshya Karmacharya, Pawin Numthavaj, Chuenkamon Charakorn and Ammarin Thakkinstian	
P-29 Superficial surgical site infections between trans-umbilical and perfumbilical	274
incision in pelvic and abdominal laparoscopic surgery: a systematic review and	
network meta-analysis of randomized control trials	
Eia Singn Rathaur, Boonying Siribum ungwong, Pawin Numthavaj, Chumpon Wilasi asmee, Sasivimol Rattanasiri and Ammarin Thakkinstian	
P-30 Network meta-analysis of survival outcomes between open, laparoscopic and	281
robotic surgery in the early stages of cervical cancer	
Litha Purwanti, Ammarin Thakkinstian, Pawin Numthavaj and Chuenkamon Charakorn	
P-31 Domestic violence against women: ways of understanding	286
Nur-E-Jannat Amee and Marc Van der Putten	
P-32 The optimal role of civil society in addressing the health workforce crisis based	292
on examples from global experience (Abstract only) Michael Noble	

Working Group

### 6<sup>th</sup> Annual International Conference New Voices in Global Health and Development 2019: Globalization and Health Equity

Conference Agenda
5 April 2019
Global Citizen Hall, Thammasat University Rangsit Campus, Pathum Thani, Thailand

Time	Touis	Duccontou	Logation
		Presenter	
8:30	Registration		In front of the conference room
9:00	Introduction to the Agenda	Assoc. Prof. Stephen J. Atwood, M.D., F.A.A.P. Conference Chairperson Faculty of Public Health, Thammasat University	Room A-2014/1, 2 <sup>nd</sup> Floor
9:05	Welcome Address: <b>The</b> <b>Value of Inter-cultural</b> <b>Education of Global</b> <b>Health Students</b>	Assoc. Prof. Dr. Sasitorn Taptagaporn Dean Faculty of Public Health, Thammasat University	Room A-2014/1, 2 <sup>nd</sup> Floor
9:10	Key Note Address: <b>The</b> <b>Power of New Voices</b>	Assoc. Prof. Dr. Kitti Prasirtsuk Vice Rector for International Affairs Thammasat University	Room A-2014/1, 2 <sup>nd</sup> Floor
9:20	Session 1: Global Health a	and Nutrition	
	<ol> <li>Factors associated with dietary diversity among infant and young children aged 6-23 months in Nepal (0-1)</li> </ol>	Mr. Rajeev Banjara Monitoring, Evaluation and Learning (MEL) Advisor SNV Netherlands Development Organization, Nepal	Room A-2014/1, 2 <sup>nd</sup> Floor
	2. Dietary intake and nutritional status of children under five years in the area affected by volcano eruption, North Sumatra Province - Indonesia (0-2)	Mr. Sadar Ginting Ph.D. Student Faculty of Public Health, Naresuan University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
	3. Towards achievement of UHC in India: analyzing the strategies from	Ms. Michelle Kusters MPH-GH Exchange Student	Room A-2014/1, 2 <sup>nd</sup> Floor

Time	Topic Presenter		Location	
	Ghana, Mexico, and Maastricht University, Th Thailand (O-3) Netherlands			
9:50	Panel Discussion	Chair: Assoc. Prof. Stephen J. Atwood, M.D., F.A.A.P.	Room A-2014/1, 2 <sup>nd</sup> Floor	
10:00	GROUP PHOTO & COFFEE	BREAK	Room A-2014/1, 2nd Floor & In front of the conference room	
10:40	Session 2: Social Determi	<u>nants</u>		
	4. A review to identify major determinants of unsafe abortion in Africa and compare between South Africa and Kenya of varying incidents (0-4)	Mr. Phone Myat Lwin MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor	
	5. Prevalence and social determinants of tobacco use among health professional students in Southeast Asia (0-5)	Mr. Manatee Jitanan Dr.P.H. Student (Global Health) Faculty of Public Health and Faculty of Graduate Studies, Mahidol University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor	
	<ul><li>6. Nicotine deliverance systems: a new threat of an old challenge (0-6)</li></ul>	Mr. Romen Ranjit MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor	
	<ol> <li>Health literacy of third year students at Thang Long University of Hanoi, Vietnam in 2017 (0-7)</li> </ol>	Ms. Hien Thi Thu Ngo Ph.D. Student in OEH International Program Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor	
11:10	Panel Discussion	Chair: Dr. Andrew Corwin Faculty of Public Health, Thammasat University	Room A-2014/1, 2 <sup>nd</sup> Floor	
11:25	Session 3: Equity & Healt	<u>h</u>		
	8. Have men been left behind? Explaining health inequalities faced by male adolescents in different settings (0-8)	Mr. Daniel Richard Beattie MPH-GH Exchange Student Maastricht University, The Netherlands	Room A-2014/1, 2 <sup>nd</sup> Floor	
	9. Corporal punishment of children by parents and teachers in South Asia (0-9)	Ms. Prarthana Koirala MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Koom A-2014/1, 2 <sup>nd</sup> Floor	

Time	Tonic	Presenter	Location
Time	10. Equity perspective on Myanmar's National Strategic Plan (2016- 2020) for tuberculosis: systematic literature review (0-10)	Thazin La, M.D. MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
11:55	Panel Discussion	Chair: Professor Dr. Marc Vander Putten Faculty of Public Health, Thammasat University	Room A-2014/1, 2 <sup>nd</sup> Floor
12:10	LUNCH BREAK	Poster Review, TECHNICAL AND AWARDS COMMITTEE MEET	2 <sup>nd</sup> Floor & Room A-2023
1:15	Session 4: Barriers to He	alth	

1110			
	<ul> <li>11. Social constructs of mental illness: barriers to care and treatment for American women with depression and anxiety disorders (0-11)</li> </ul>	Ms. Kendra Gore MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
	12. Human rights and health equity consequences of the Italian anti- immigration policies from 2002 to 2018 (0-12)	Mr. Marco Angelo MPH-GH Exchange Student Maastricht University, The Netherlands	Room A-2014/1, 2 <sup>nd</sup> Floor
	13. Barriers to mental health in Sub Saharan Africa (0-13)	Ms. Kudzai Sharon Muchena MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
1:45	Panel Discussion	Chair: Dr. Arthur E. Brown, Jr., M.D. Faculty of Medical Technology, Mahidol University	Room A-2014/1, 2 <sup>nd</sup> Floor
2:00	Session 5: Infectious Dise	<u>bases</u>	
	14. A predictive model for dengue cases in Southern Lam Dong Province, Vietnam, 2007-2017 (0-14)	Ms. An Dao Thien Nguyen M.Sc. Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor

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Ti <u>me</u>	Topic	Presenter	Location
	15. Changing ecology of deadly Nipah virus and the pathways of outbreak in Bangladesh (0-15)	Khandakar Jakaria, M.D. MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
	16. Challenges for malaria elimination in Nepal (0-16)	Saugat Shrestha, M.D. MPH-GH Student Faculty of Public Health, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
2:30	Panel Discussion	Chair: Ajarn William Brady Faculty of Public Health, Thammasat University	Room A-2014/1, 2 <sup>nd</sup> Floor
2:45	Session 6: Quality of Life a	ind Aging	
	17. The relationship between spiritual well being (SWB) and quality of life among older adults who live in the retirement home at Mojokerto, Indonesia (0-17)	Mr. Ahmad Shodiq Master's Student Social Gerontology, Chulabhorn International College of Medicine, Thammasat University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
	18. Assessment of the self-perceived health- related quality of life of pulmonary tuberculosis patients in Pakistan (0-18)	Mr. Shahab E. Saqib Lecturer Higher Education Department K.P., Pakistan	Room A-2014/1, 2 <sup>nd</sup> Floor
	19. The basic screening for hypertension and diabetes in the elderly by high school students in Phranakhon Si Ayutthaya Province (0-19)	Dr. Noppawan Theerapuncharoen Lecturer Science and Technology Faculty, Rajabhat Phranakhon Si Ayutthaya University, Thailand	Room A-2014/1, 2 <sup>nd</sup> Floor
3:15	Panel Discussion	Chair: Assoc. Prof. Dr. Kwanjai Amnatsatsue Faculty of Public Health, Mahidol University	Room A-2014/1, 2 <sup>nd</sup> Floor
3:30	COFFEE BREAK & POSTEF	R PRESENTATION SESSION	Corridor outside the conference room
4:45	PANEL DISCUSSION: How has the conference addressed the key theme of equity in global health?	<ul> <li><u>Panelists:</u></li> <li>1. Assoc. Prof. Stephen J. Atwood, M.D., F.A.A.P. (Moderator)</li> <li>2. Prof. Dr. Marc Van der Duttage</li> </ul>	Room A-2014/1, 2 <sup>nd</sup> Floor

Time	Topic	Presenter	Location
5.15	Procontation of Aurorda	<ul> <li>Faculty of Public Health, Thammasat University</li> <li>Assoc. Prof. Dr. Nitaya Vajanapoom Faculty of Public Health, Thammasat University</li> <li>Assoc. Prof. Dr. Kwanjai Amnatsatsue Faculty of Public Health, Mahidol University</li> <li>Dr. Andrew Corwin, Faculty of Public Health, Thammasat University</li> <li>Dr. Arthur E. Brown, Jr., M.D. Faculty of Medical Technology, Mahidol University</li> <li>Dr. Rodger Doran Faculty of Public Health, Thammasat University</li> <li>Asst. Prof. Dr. William Leggett Aldis, M.D., F.A.C.P. Faculty of Public Health, Thammasat University</li> </ul>	Poom A 2014/1
5.15	Tresentation of Awards	Taptagaporn Dean Faculty of Public Health, Thammasat University	2 <sup>nd</sup> Floor
5:45	Closing		Room A-2014/1, 2 <sup>nd</sup> Floor

## **Poster Sessions**

### **5 April 2019** Poster Presentations and Review Poster Presenters available on line from 3:30 – 4:45 to answer chat questions. 4 computer stations

### **Poster Presentations**

Code	Poster Presenter	Title	Position / Affiliation
P-1	Mr. Rajeev Banjara	Stigma among medical doctors against people living with HIV in Kathmandu	Monitoring, Evaluation and Learning (MEL) Advisor SNV Netherlands Development Organization, Nepal
P-2	Ms. Rachel McDougall	Malnutrition and associated factors after discharge from neonatal intensive care, a cohort study in young infants in Mungeli, India	Medical Student Queen's University Belfast, School of Medicine, Dentistry & Biomedical Sciences, Northern Ireland
P-3	Ms. Elsie Gotora	Health system in Zimbabwe and delay in seeking health care of breast cancer among women in Zimbabwe	Zimbabwe
P-4	Ms. Sharada Basnet	Successful family planning in Bangladesh: lessons to be learned for Nepal	Training Specialist Chemonics International (GHSC-PSM project), Nepal
P-5	Ms. Nikita Pokharel	Biomedical hazardous waste management in Nepal: an outlook of international principles and its implementation in national practice	Nepal
P-6	Ms. Pareena Nakprasom, Ms. Dollaya Sangsuwan, Ms. Natawan Noicharoen	Type and quantity of bacterias in classroom air, Srinakharinwirot University Ongkharak Campus	Student (Health Promotion) Faculty of Physical Therapy, Srinakharinwirot University, Thailand
P-7	Ye Htut Oo, D.D.S.	HIV risk factors for women married to men who inject drugs: a qualitative case study from Kachin State, Myanmar	Master's Student (Rural Development Management) Faculty of Graduate School, Khon Kaen University, Thailand
P-8	Ms. Aye Thandar Aung	Task shifting at Mae Tao Clinic, Thai- Myanmar Border: the case study of frontline community health workers in implementation of child health programs	University Reproductive Health Corner Project Officer DKT Myanmar University Reproductive Health

Code	Poster Presenter	Title	Position / Affiliation
			Corner Program, Myanmar
P-9	Ms. Nilam Bhandari	Documentation of factors contributing to road traffic accident in Nepal	Nepal
P-10	Mr. Sandeep Ghimire	What Nepalese can learn about antimicrobial resistance in poultry	MNCH and GESI Officer Care Nepal, Nepal
P-11	Sai Woon Chai, M.D.	Health system and multi-drug resistant tuberculosis control in India	Myanmar
P-12	Ms. Anushree KC	Factors associated with knowledge of female community health volunteers in Nepal on 5 key areas- health, nutrition, family planning, WASH and agriculture in Nepal	Nepal
P-13	Ajarn Pattakorn Buppan	The efficacy of older person leaders on health promotion among ageing of elderly club of Ongkharak District, Nakhonnayok Province	Lecturer Faculty of Physical Therapy, Srinakharinwirot University, Thailand
P-14	Ms. Noramon Thongkerd, Ms. Banthitar Pholmeesap, Ms. Piyaporn Phankham	Monitoring of organophosphate and carbamate insecticides in soils from canals by anti- acetylcholinesterase activity	Student Division of Health Promotion, Faculty of Physical Therapy, Srinakharinwirot University, Thailand
P-15	Aryu Kyaw, M.D.	Review on services for, and barriers to early infant diagnosis of HIV in Nigeria, Malawi, Kenya and Uganda	Deputy Project Medical Referent (MSF-Holland) (Sittwe Project) Médecins Sans Frontières (MSF- Holland), Myanmar
P-16	Mr. Rajesh Prasad Chaudhary	Post-earthquake humanitarian assistance and its effects on the health system in Nepal	Nepal
P-17	Mrs. Devin Prihar Ninuk	The influence of sunbathing on improving the quality of sleep for the older persons in Mojopahit Nursing Home in Mojokerto East Java	Lecturer Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, Indonesia
P-18	Mr. Gwinyai Tinarwo	What explains the high maternal mortality in Zimbabwe? A systematic review	TB Focal Nurse Ministry of Health and Child Care, Zimbabwe
P-19	Ms. Sandhya Gurung	Socio-demographic factors associated with causes of maternal mortality in seven selected districts of Nepal	Lecturer Kantipur Academy of Health Science,Tinkune, Kathmandu, Nepal
P-20	Ms. Masibulele Desiree Sishuba-Zulu	Intervention strategies that work to eliminate intimate partner violence in South Africa: a women's empowerment approach	Zimbabwe
P-21	Ms. Fjolla Berani	Molecular characterization of multidrug-resistant Mycobacterium	MPH-GH Student

Code	Poster Presenter	Title	Position / Affiliation
		tuberculosis isolates from Thai- Myanmar border	Faculty of Public Health, Thammasat University, Thailand
P-22	Ms. Siti Urifah	Family support and medical adherence among elderly with hypertension in Indonesia	Lecturer Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, Indonesia
P-23	Mr. Mackenzie Chigumula	Exploring food micronutrient and vitamin programme in Malawi: a review study of governmental and non- governmental programs implementation and collaboration	Environmental Health Officer National Police Headquarters, Capital City, Malawi
P-24	Ms. Elizabeth Wariva	Issues of sustainability of rural community WASH Programs in Southern Africa in the transition from Millennium Development Goal to Sustainable Development Goal	Zimbabwe
P-25	Mr. Chetan KC	Understanding factors contributing unsafe abortion among the adolescent girls in Nepal	Technical officer System Strengthening of Better Health, USAID, Nepal
P-26	Ms. Nakamol Sutatong	Prevalence and incidence of dyslipidemia and related factors among non-overweight adults in a Thai University	Master's Student (Health Promotion) Faculty of Public Health, Thammasat University, Lampang Center, Thailand
P-27	Mrs. Arifa Retnowuni	Menstrual hygiene management implementation among Santriwati who live in an Islamic Boarding School of Darul Ulum, Jombang, Indonesia	Lecturer Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, Indonesia
P-28	Ms. Swekshya Karmacharya	Oncologic outcomes between open, laparoscopic and robotic surgery among patients with early stage ovarian cancer: a network meta- analysis	M.Sc. Student in Medical Epidemiology Section for Clinical Epidemiology and Biostatistics, Faculty of Medicine, Mahidol University, Thailand
P-29	Ms. Ela Singh Rathaur	Superficial surgical site infections between trans-umbilical v/s periumbilical incision in pelvic and abdominal laparoscopic surgery- a systematic review and network meta- analysis of randomized control trials	M.Sc. Student in Medical Epidemiology Section for Clinical Epidemiology and Biostatistics, Faculty of Medicine, Mahidol University, Thailand
P-30	Ms. Litha Purwanti	Network meta-analysis of survival outcomes between open, laparoscopic	M.Sc. Student in Medical Epidemiology

Code	Poster Presenter	Title	Position / Affiliation
		and robotic surgery in the early stages of cervical cancer women	Section for Clinical Epidemiology and Biostatistics, Faculty of
			University, Thailand
P-31	Ms. Nur-E- Jannat Amee	Domestic violence against women: ways of understanding	MPH-GH Student Faculty of Public Health, Thammasat University, Thailand
P-32	Mr. Michael Noble	The optimal role of civil society in addressing the health workforce crisis based on examples from global experience	MPH-GH Exchange Student Maastricht University, The Netherlands

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# Welcome Address: The Value of Intercultural Education of Global Health Students

### Associate Professor Dr. Sasitorn Taptagaporn, Dean, Faculty of Public Health, Thammasat University

Associate Professor Dr. Kitti Prasirtsuk, Vice Rector for International Affairs, Distinguished faculty from Thammasat University, Faculty from Mahidol University, colleagues from other academic institutions, students and friends.

It gives me great pleasure as Dean of the Faculty of Public Health to welcome you to the 6<sup>th</sup> Annual International Conference *New Voices in Global Health and Development, 2019.* 

Over the last years, this conference has grown in both the number of abstracts received and the diversity of the authors of those abstracts. The first two conferences in 2013 and 2014 each had roughly 9 oral presentations and 14-15 poster presentations. The students submitting abstracts in those early years were from Thammasat and Maastricht University. This year we have 19 oral presentations, and 38 poster presentations out of a total of 81 submitted abstracts. And these represented 17 countries.

Those affiliated with the Global Health program in Thammasat University, which includes equal numbers of students from Thammasat and exchange students from Maastricht University, have participated in classes surrounded by fellow students from other continents, countries and cultures, taught by an international faculty.

I give this detailed list in order to briefly examine the value of bringing this highly varied crosscultural group together. We hope to promote to other programs in Thailand and beyond the benefits of an inter-cultural environment for education of students of global health.

Peer learning is powerful. Students learn from each other through observation, conversation and role modeling. Though the situation of a single trimester of interaction between the Maastricht and Thammasat students is very short, both groups have at least a year together in their own group to develop their own internal integration. Neither group is homogenous – both are mixed. In addition, participation in class discussions and extracurricular activities spontaneously organized by members of each group, can accelerate the understanding of different beliefs, cultural practices and even language.

The differences that are the basis of learning by both groups could create an intimidating environment that interferes with some students' willingness to participate. In our experience, networking and strengthening of the bonds within each separate group can provide the initial

support for students, and to raise their confidence to effectively engage with others who are different in background, age, and experience.

The challenge of finding your voice in this inter-cultural educational environment is a valuable skill for a global health professional. Beyond learning how to make a good presentation, or express oneself in writing, the capacity to engage confidently in conversation with other colleagues from any country or culture is a huge advantage for the person whose job will be to bring people together. Advocacy begins with the ability to establish trust, and conversation and interpersonal exchange are key steps toward that end. We believe that the inter-cultural environment facilitates that achievement.

Today's *Conference* offers another inter-cultural experience. We will be hearing from students of highly varied personal, cultural, and educational backgrounds – exchanging information and ideas. I leave it to you to critically examine the strengths of this process, and to let us know areas where improvements could be made. Please don't hesitate to communicate your views and experiences on this form of intercultural learning. It is our hope that with your input, we can expand this forum and continue it for another four years at least.

I look forward to your participation and thank you for your support in attending this *New Voices* conference.

Thank you.

# Vice Rector's Keynote Address: The Power of New Voices

### Associate Professor Dr. Kitti Prasirtsuk, Vice Rector for International Affairs

Associate Professor, Sasitorn Taptagaporn, Dean, Faculty of Public Health, Thammasat University; Distinguished faculty and colleagues, investigators and researchers from other universities, students and friends.

On behalf of Thammasat University, I am pleased to deliver this keynote address for the Sixth International Conference *New Voices in Global Health and Development 2019.* 

This conference has grown and expanded since its inception in 2013. It has become an important forum for learning and personal development for young investigators, students, and faculty involved in Global Health, and a cornerstone for the MPH program in Global Health at Thammasat.

One of the most important functions a University can provide is to offer a forum where new ideas can be presented, some of them more professionally prepared than others, but all of them equally important for our consideration.

A conference like this is the outward demonstration of that function. It is used to spread ideas among other investigators and scholars, old and young. It stimulates more research and offers new ways to solve old problems. It gives us an indicator of what to watch for in the future. This conference is a public space where scholars and students are joined by a common goal to explore new ideas, to learn what is true about life and our world.

The University is where ideas we may disagree with can be expressed and debated but always with respect for opposing views. It must also be a place where the pure pleasure of discovering something new is cultivated and enjoyed.

It is an area where learning can grow through trial and error -- a luxury in an era where social media judges new ideas immediately, liked or disliked. It must be an equitable and just environment, where each voice can be heard and equally considered regardless of the social or economic class, gender or ethnicity of that voice. The extent to which the University can protect this concept is a measure of its success.

The teacher is the facilitator of this educational process who recognizes what is needed to move new ideas into tested hypotheses. Much of this process should come before exposure to public judgment, but eventually a new idea has to be tested in the critical presence of peers, colleagues and faculty.

This New Voices conference is the interface between the classroom and the wider society in which

the university exists. It is an open and exposed environment that invites a different type of scrutiny. It is a critical stop on the journey of professional development, based on the same principles of equity and tolerance of new ideas.

Which brings me to the title of this talk: what is the power of new voices?

Because the researchers in today's conference are new and young, they are not afraid to be challenging. Though they may be too new to change society, they can change the direction society is moving. Their power comes from their fresh perspective on old problems is less burdened by conventional thought, and <u>because more of the future is theirs</u>. This is the voice we hear to remind us that the burden of a rapidly changing global environment will be theirs to bear.

Today, our responsibility is to listen to each presentation carefully, to spend time with each poster presentation outside this hall, and to do our best to understand them, and to ask questions when we don't. These ideas can become the building blocks for resolving the global problems that challenge us today. Each of us is asked to offer an honest critique framed in thoughtful questions, in the way that good friends question each other.

In closing, I repeat the ideas and the ideals of this University – it is an institution where differences are embraced, where equity is protected, and where conversation and dialogue bring us all closer together in our pursuit of Truth.

That is the importance of this University in today's world, and of the international conference before us today. Thank You.

**Oral Presentation** 

### Factors Associated with Dietary Diversity among Infant and Young Children Aged 6-23 Months in Nepal

Rajeev Banjara <sup>1</sup>, Uma Langkulsen <sup>2</sup> and Nitaya Vajanapoom <sup>2</sup> <sup>1</sup> SNV Netherlands Development Organisation, Nepalgunj, Banke, Nepal E-mail: rajeev.rajban@gmail.com, rbanjara@snv.org <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand

#### ABSTRACT

**Background:** Nepal is suffering from high prevalence of malnutrition. Though stunting and underweight were at decreasing trend, the annual decrease rate was too slow and the prevalence was still higher than the world average figures. Infant and Young Child Feeding (IYCF) is one of the effective interventions in combating stunting and wasting among children. Nepal Demographic Health Survey 2011 had shown Minimum Dietary Diversity (MDD) was low as compared to other IYCF indicators. Thus the study aimed to identify the factors associated with the dietary diversity among children aged 6-23 months in Nepal.

**Methodology:** Data collected in the Suaahara process evaluation survey 2014/15 were used for this study. A total of 181 responses from mothers with children 6-23 months were used for analysis. A chi-square test and binary logistic regression was used to determine the possible factors associated with MDD.

**Results:** Out of 181 respondents for child feeding within 24 hours preceding the survey, a total of 118 (65.2 %) children met the requirement of MDD. Study revealed that MDD increased with the increase of mothers' age however after 30 years it declined. Dalits (52.6 %) had poor MDD while Janajatis (69.5 %) had the highest MDD compared to other ethnic groups (67.9 %). Similarly, MDD was higher among Hindu compared to other religions and almost similar among pregnant (64.0%) and non-pregnant women (65.4%). However, there was no significant differences by age, ethnicity, religion, pregnancy status of mothers and wealth quintile in chi square test. Similarly, no significant differences on MDD was found between the boys (50.8 %) and girls (49.2 %). On the other hand, there was significant differences on MDD by age of child. Children with age group of 12-17 months [AOR 3.772; 95 % CI (1.450, 9.811)] and 18-23 months [AOR 4.258; 95 % CI (1.121, 16.379)] had higher odds of receiving the minimum dietary diversity in their daily meal compared to children age group between 6-11months. Strong association of MDD with number of children at home, antennal care (ANC) check-up, nutritional counseling during ANC visit, counseling on healthy timing and spacing of pregnancy, listening to radio and family support were also seen. However, they were not found significant in multiple logistic regression analysis.

**Conclusions:** Age was found to be only significant factor associated with dietary diversity. Further studies using multi-sectoral concept would be very useful in identifying other factors associated with dietary diversity and nutritional status of infant and young children.

Key words: Minimum dietary diversity, infant and young children, Nepal

### Dietary Intake and Nutritional Status of Children under Five Years in the Area Affected by Volcano Eruption, North Sumatra Province - Indonesia

Sadar Ginting <sup>1</sup>, Nithra Kitreerawutiwong <sup>1</sup> and Sunsanee Mekrungrongwong <sup>1</sup>

<sup>1</sup> Faculty of Public Health, Naresuan University, Phitsanulok, 65000 Thailand E-mail: sadarg59@email.nu.ac.th E-mail: nithrakw@gmail.com E-mail: sunsanee.nu@gmail.com

#### ABSTRACT

**Background:** The impact of volcano eruption on malnutrition in children has been known. However, the risked population and the children's nutritional status measurement were only monitored in the shelter areas. Prior to the eruption of Mt. Sinabung in Indonesia, it was observed that the percentage of underweight, stunting, and wasting children under five was decreasing by more than 6% from 2009 to 2017 (Primary data of Health Ministry in Karo District, 2018). Nutrition of children is of paramount importance because the foundation for lifetime health, strength and intellectual vitality is laid during this period. This study was focused on the Mount Sinabung eruption, due to it was the longest eruption mountain (from September 2013 to February 2018) in the history of volcanic eruption in Indonesia, even the world. Therefore, dietary intake and nutritional status of children post-Mount Sinabung eruption are important from a scientific and healthcare standpoint. The purpose of this study is to describe the dietary intake and nutritional status of children under five years in the area affected by Mount Sinabung eruption, Indonesia.

**Methodology:** A cross-sectional descriptive -correlational design was used with 444 samples. Data collection employed face-to-face interviews. The instruments included the 24-hour dietary recall (two 24HR assessments) and anthropomorphic measurement by using calibrated instruments. The data were entered into Epi Data version 3.1 software and calculated using SPSS version 20.0 statistical software and World Health Organization Anthro software with aid of Stat/Transfer.

**Results:** The mean energy and protein intake were 1217 kcal/d (87% RDA/Recommended Dietary Allowance) and 18.93 g/d (76% RDA), respectively. The percentage of energy and protein intakes of children are 86.57% and 76.43% respectively. A number of children who had weight-for-height z-scores below -2 was 17.5%, while 51.6% had height-for-age z-scores that were below the -2 z-score indicating stunted growth. Children's total energy and protein intakes were statistically significant correlated with nutritional status (height/weight).

**Discussion:** The volcanic ash reduces the house hold food security (food availability, food access, and food consumption) and causes water supply problems, environmental sanitation and infectious diseases, which then could affects to the children's nutritional status.

Conclusions: The finding shows that children in the study consumed inadequate of energy and protein, and over 50% were indicating stunted. Future longitudinal studies should examine the associations between dietary patterns and child health and development to provide evidence needed to improve dietary advice given to parents of children in emergency settings.

Key words: Food consumed, anthropometric measurement, children under five

### Towards Achievement of UHC in India: Analyzing the Strategies from Ghana, Mexico, and Thailand

M.S.W. Kusters <sup>1</sup>, Z.I.E. Nieuwhof <sup>1</sup>, W. van Bergen, M. Cuijpers, A. Galaurchi, O. Ghafuri, E. Mashhadchi, M. Segers, K. van Teunenbroek and F. Stevens <sup>1</sup> Maastricht University, Minderbroedersberg 4-6, Maastricht, 6211 LK, The Netherlands E-mail: msw.kusters@student.maastrichtuniversity.nl E-mail: z.nieuwhof@student.maastrichtuniversity.nl

#### ABSTRACT

**Background:** Although India has achieved substantial economic growth in the past decades, equitable and universal access to basic health services is lacking. Therefore, the aim of this study is to identify opportunities for moving towards Universal Health Coverage (UHC) by analyzing the strategies of Thailand, Mexico, and Ghana, three countries with successful but different pathways towards achieving UHC, and their applicability to the context in Karnataka, India.

**Methodology:** A literature search was conducted during a period of 3 months by entering a variety of keywords, including Universal Health Coverage, healthcare system, health policy, Public Health, Government and Economy, for each of the selected countries, on PubMed and Google Scholar. 30 recent articles were selected based on relevance to the research objective and methodological quality. The healthcare systems and UHC strategies of Ghana, Mexico and Thailand, were researched in light of applicability in India. Field visits to a sub-center, PHC, and Taluk hospital in both rural and urban areas in the state Karnataka, which included interviews with the healthcare staff, provided further insights into the healthcare system of Karnataka, India.

**Results:** The main identified healthcare challenges in India were (1) ensuring access for the poor and ethnic minorities, (2) governing the coexistence of a public and private healthcare system, and (3) a general lack of resources. In Ghana, Thailand and Mexico, both internal and external impulses of political willingness were identified, such as UHC being the main issue in the 2000 Ghanaian elections and the poor ranking on the 2010 WHO health report for Mexico. In addition, a progressive tax system, used in Ghana and Thailand, promotes equity and prevents financial hardship. Furthermore, the consideration of health as a social right forms a solid base for moving towards UHC.

**Discussion:** Comparison of the strategies of Ghana, Mexico and Thailand identified several important pillars for UHC strategies. First, political willingness is essential for ensuring long term effective policies and adequate public spending on health. Second, inequalities should be addressed to ensure access to health for all. Third, the consideration of health as a social right forms a strong base for further investment in UHC. Finally, empowerment of the population, through education and involvement in decision-making and agenda setting, is needed to increase overall health. This study provides insights into how analyzing opportunities and challenges in achieving UHC from other countries might aid the development and implementation of successful strategies in India.

### A Review to Identify Major Determinants of Unsafe Abortion in Africa and Compare between South Africa and Kenya of Varying Incidents

#### Lwin Phone Myat

Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: phone.l@fph.tu.ac.th

#### ABSTRACT

**Background:** Unsafe abortion is a global health problem contributing to 13% of maternal mortality rate. According to World Health Organization (WHO), 97% of all unsafe abortion occurs in developing countries. Africa bears one of the highest numbers of unsafe abortions with over 4 million cases annually. Unsafe abortion rates in Africa vary by country to country: Kenya has the highest unsafe abortion rate with 49 cases per 1000 women; the lowest rate is in South Africa with 15 cases per 1000 women.

**Objective:** This study examined the major determinants of unsafe abortion in Africa in order to understand why Kenya has rates three-fold higher than the South Africa.

**Methodology:** A systematic literature search returned 22 relevant articles, theses and reports. Inclusion was determined by: peer reviewed articles, published between 2012 to 2019, a discussion of unsafe abortion and its major determinants, a primary focus on South Africa and Kenya. Articles on unsafe abortion discussing about its health consequences are excluded.

**Results:** The major determinants responsible for the varying unsafe abortion rates in Kenya and South Africa are political, unmet needs for modern contraceptives and the stigma surrounding the concept of abortion. Abortion legality plays a major role. South Africa legalized abortion in 1997 and the rates of complications of unsafe abortion in the country declined by nearly 90%. In contrast, Kenya has very strict abortion law allowing it only when the life of the mother is in danger. These laws lead women to undergo unsafe abortions. Cultural norms and values are also associated with the matter of enforcing the legislation of abortion law. For example, Kenya banned the educational media raising awareness for safe abortion services and contraceptives, accusing it of promoting women to undergo abortion. Nearly, 90% of all unsafe abortions are of women with unmet need for contraception, meaning that the women never have enough information or accessibility to modern contraceptives even if they want to delay the pregnancy or do not want any more child. In Kenya, 70% of women who undergo unsafe abortion are unmet needs. The methods are stigmatized or religiously unaccepted in the community.

**Conclusions:** The determinants of policy and law increase the cases of unsafe abortions in the countries with strict abortion laws like Kenya compared to their counterparts with liberal laws such as South Africa. Stigmatization is also a major factor that increases the numbers of women with unmet need for contraception, but when tackled through education as in South Africa, unmet needs are less.

### Prevalence and Social Determinants of Tobacco Use among Health Professional Students in Southeast Asia

Manatee Jitanan <sup>1</sup>, Kwanjai Amnatsatsue <sup>2</sup>, Patcharaporn Kerdmongkol <sup>2</sup>, Farizah Binti Mohd Hairi <sup>3</sup>, Pimpan Silapasuwarn <sup>2</sup> and Nithat Sirichotiratana <sup>2</sup> <sup>1</sup> Faculty of Public Health and Faculty of Graduate Studies, Mahidol University E-mail: manatee.jit@student.mahidol.ac.th <sup>2</sup> Faculty of Public Health, Mahidol University

<sup>3</sup> Faculty of Medicine, University of Malaya

#### ABSTRACT

Socioeconomic inequality and its impact on health is a global health concern. Tobacco use has been the single biggest cause of inequality in morbidity and mortality in South East Asia region (SEA). This mixed method research was conducted to examine tobacco use and its social determinants among health professional students in Thailand, Indonesia, and Malaysia. Multi-stage sampling was done to recruit subjects. After document analysis of international and national policy related to tobacco use, the Global Health Professional Students Survey questionnaire was modified and validated. After IRB approval, the 3rd-4th yea health professional students from the selected universities joined an online survey. A total of 698 health professional students joined the survey with the response rate varied from 40% in Indonesia to 45% in Thailand. Then, in-depth interviews were conducted with an administrative representative assigned by the Dean of the selected universities. Thirty-three subjects (4.7%) reported using tobacco in the past 30 days. Public health students reported the highest prevalence of current tobacco use (5.8%), while medical students and nursing students reported 4.3% and 1.6%. According to multiple logistic regression analysis, adjusted odds ratios for current tobacco use after controlling other cofactors, was significantly higher for females, ethnicity (Thai), and low self-efficacy. Multi-level interventions for tobacco use prevention and control ranged from educational programs to anti-tobacco student network. Key success factors for university implemented smoke-free campus policy were leadership and multipartner collaboration. These findings demonstrate a minor impact of social determinants (gender and ethnicity) on current tobacco use. The findings of this current study can be used to advocate tobacco use control and prevention in order to strengthen smoke-free campus policy in SEA. However, the intervention should focus more on self-efficacy promotion among female health professional students to prevent tobacco use.

#### BACKGROUND

Although the overall prevalence of smoking in South East Asia region (SEA) tended to be decreased, youth smokers tended to be increasing as a result of shifts in marketing to target populations (U.S. Department of Health and Human Services, 2014). Health professional students were recognized as important human resources for tobacco control (WHO, 2005), but their tobacco use reported in the literature varied, with the highest prevalence found in public health students (8.2%) (Pitayarungsit, S., et al, 2018). However, there was a lack of evidence on social determinants as predictors of tobacco use among health professional students in SEA.

#### **OBJECTIVE**

The objective of this research was to examine prevalence of tobacco use and its social determinants among health professional students in South East Asia.



Figure 1: Conceptual Framework

#### **METHODOLOGY**

A conceptual framework (Figure 1) was applied using a social determinants of health model. Independent variables included demographic factors, individual lifestyle factors, social and community networks, living and working conditions, general socio-economic, cultural and environmental conditions. The dependent variable was tobacco use among health professional students.

For research methods, this study applied mixed method research design with three phases. Phase 1 began with Document analysis to prepare the scope/background for the study. Phase 2, after IRB approval, used an online survey conducted among 698 heath professional students who enrolled in the third and fourth year of selected universities in Indonesia, Thailand and Malaysia. Phase 3, representatives who met the criteria and were assigned by their Dean were interviewed about tobacco use policy and interventions.



Figure 2: Multi-stage sampling

Multi-stage sampling was done to select universities following figure 2. First, three countries were selected according to prevalence of tobacco use and country income level. Second, six universities were selected from Asian University Network (AUN) with locations in rural and urban areas. Third, third and fourth year students enrolled in the 2017 Academic year who met the inclusion criteria were invited to participate in the online survey.

For research instrument, the online survey questionnaire was developed by modifying the Global Health Professional Students (GHPS) survey for quantitative data. It had eight parts which included general information, tobacco use among health professional students, stress, Health behaviors, self-efficacy, knowledge on harmful effects of smoking, peer influence, and perception of tobacco use prevention and control policy. In the qualitative part, guidelines for in-depth interviews included policy and strategies, interventions/program/project, successful factors, obstacles, and suggestions related to tobacco use and control. The validity of the research instrument was assessed by three experts with the acceptable Content Validity index (CVI) of 0.8.

Back translation was performed to confirm the similarity of the content between Indonesian, Thai, and Malaysian version. The acceptable Cronbach's alpha of 0.7-0.94 was obtained.

#### RESULTS

For the results, a total of 698 health professional students joined the survey with a response rate that varied from 40% in Indonesia to 45% in Thailand. Thirty-three subjects (4.7%) reported using tobacco in the past 30 days.



### Figure 3: Prevalence of tobacco use in each study program comparing with the previous study in 2011

Public health students reported the highest prevalence of current tobacco use (5.8%) (Figure 3), while medical students and nursing students reported 4.3% and 1.6% respectively. The trend of tobacco use in public health and nursing students seems to be decreasing. However, the trend of tobacco use in medical students has increased compared with the previous study in 2011 (Pitayarungsit, S., et al, 2018). However, the prevalence in Indonesia decreased from 49.6% reported in 2012 (Venkatesh S. and Sinha DN., 2012) to 2.9% from this study. Thailand had a nearly imperceptible change from 2011 with 8.2% (Pitayarungsit, S., et al, 2018) to 8.3%. Malaysia had decreasing trend from 3.3% in 2011 (Rashid AK1 and Azizah AM., 2011) to 2.8%.

l l	Variables	Non-tobacco user	Tobacco user	
		(n=665)	(n=33)	
Sex	Female	537) 80.8)	19 (57.6)	
	Male	128 (19.2)	14 (42.4)	
Age	19-21	474 (71.3)	23 (69.7)	
	22-24	191 (28.7)	10 (30.3)	
Education	Third	462 (69.5)	26 (78.8)	
	Fourth	203 (30.5)	7 (21.2)	
Religion	Islam	258 (38.8)	9 (27.3)	

Table 1: Characteristics of subjects classified by tobacco use (n=698).

Variables		Non-tobacco user (n=665)	Tobacco user (n=33)	
	Buddhism	219 (32.9)	19 (57.6)	
	Other	188 (28.3)	5 (15.1)	
Ethnicity	Indonesia	338 (50.8)	10 (30.3)	
	Thailand	221 (33.2)	20 (60.6)	
	Malaysia	106 (16)	3 (9.1)	
Stress	Low	88 (13.2)	9 (27.3)	
-Level	Middle	522 (78.5)	2 (66.7)	
-From effort	High	55 (8.3)	2 (6)	
reward, overcom	Low	101 (15.2)	7 (21.2)	
mitment	Middle	430 (64.7)	20 (60.6)	
	High	134 (20.1)	6 (18.2)	
Health behaviors	Low	43 (6.5)	5 (15.2)	
	Middle	562 (84.5)	23 (69.7)	
	High	60 (9)	5 (15.1)	
Self-efficacy	Low	141 (21.2)	11 (33.3)	
	Middle	82 (12.3)	5 (15.2)	
	High	442 (66.5)	17 (51.5)	
Knowledge	Low	14 (2.1)	1 (3)	
	Middle	237 (35.6)	15 (45.5)	
	High	414 (62.3)	17 (51.5)	
Place of residence	Urban	520 (78.2)	25 (75.8)	
	Rural	145 (21.8)	8 (24.2)	
Family income	0 to 500	255 (38.3)	7 (21.2)	
(USD)	501 to 1000	214 (32.2)	7 (21.2)	
	1000+	196 (29.5)	19 (57.6)	
Tobacco use in	Father	199 (29.9)	9 (27.3)	
family	Mom	4 (0.6)	0 (0)	

Table 1: Characteristics of subjects classified by tobacco use (n=698) (cont.)

Variables		Non-tobacco user	Tobacco user
		(n=665)	(n=33)
	Sibling	111 (16.7)	5 (15.2)
Peer influence	Low	103 (15.5)	4 (12.1)
	Middle	394 (59.2)	20 (60.6)
	High	168 (25.3)	9 (27.3)
Perception of	Low	150 (22.6)	6 (18.2)
international smoking policy	Middle	303 (45.6)	19 (57.6)
	High	212 (31.8)	8 (24.2)
Perception of	Low	158 (23.8)	8 (24.2)
policy	Middle	250 (37.6)	15 (45.5)
	High	257 (38.6)	10 (30.3)
Perception of	Low	143 (21.5)	5 (15.2)
smoke free campus policy	Middle	311 (46.8)	16 (48.5)
	High	210 (31.7)	12 (36.3)

Table 1: Characteristics of subjects classified by tobacco use (n=698) (cont.)

From Table 1: it was found that most of the tobacco users were female, came from the aged group of 19 to 21. They were mostly third year students; most student tobacco users identified as Buddhist; they came from Thailand, and reported middle level of stress. Most of them reported health behaviors in middle level and high level for self-efficacy; had a high level of knowledge of the harmful effects of tobacco use, and had middle knowledge of national and international tobacco policies. A large majority (75%) of respondents lived in urban surroundings and came from high income families. There was little evidence of family involvement in tobacco use (i.e., only 27% had a father who used tobacco). In this regard, peers may have had greater influence as 60.6% noted middle level peer influence.

|--|

		В	Std. Error	Wald	Df	Sig.	Exp(B)
Sex	Female	1.187	0.436	7.413	1	0.006	3.278
	Male (R)						
Ethnicity	Indonesia	-2.469	1.867	1.749	1	0.186	0.085
	Thailand	-4.613	2.253	4.193	1	0.041	0.010
	Malaysia (R)						
Self-efficacy	Low	-1.737	0.580	8.977	1	0.003	0.176
	Middle	-0.278	0.589	0.223	1	0.637	0.757
	High (R)						

Table 2 showed minor impacts of social determinants on tobacco use among health professional students in SEA countries. According to multiple logistic regression analysis, adjusted odds ratios for current tobacco use after controlling other cofactors, was significantly higher for females, ethnicity (Thai), and low self-efficacy.

	Indonesia		Thailand		Malaysia	
International MPOWER policy		WHO FCTC/MPOWER (since 2005)		WHO FCTC/MPOWER (since 2005)		
National Health law, National policy/ Health Insurance		Tobacco Products Control Act 2017, Ministry of public health notice		Declaration of Non- Smoking Area 2015, Control of tobacco product regulations 2018		
Smoke free Campus	Yes		Yes		Yes	
Intervention	Student network, campaign a smoke free day	providing brochure about tobacco use	Ambassador of non- tobacco use curriculum/ quit line	Social media about tobacco issue	Promoted smoke free environment	Developed programs for educating the public
Successful Support from high level Factor person Collaboration with parents and staffs		leader ship, good network, Professional council / THPF Support from high level person		Collaboration/working with students IT and electronic media		

Tuble of I offered and bacceborar factors among bereeted countries	<b>Table 3: Policies</b>	and successful	factors among	selected countries
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The WHO Framework Convention of Tobacco Control has been signed by Thailand and Malaysia but not by Indonesia (WHO, 2017). (Table 3) All three countries used national policy with health laws and tobacco control regulation. These countries had implemented MPOWER strategies and smoke free campus policy. Indonesia had implemented a student network campaign and smoke-free day with the successful factor of high level person supporter. Thailand promoted non-tobacco use in curriculum and leadership network as successful factor. Malaysia promoted smoke-free environment with IT support.

In conclusion, these findings demonstrate only impact of gender and ethnicity on current tobacco use among health professional students in SEA countries. Other socio-demographic factors, such as age, place of residence, education, wealth index, and knowledge on harmful effects of smoking were not significant. The findings of this current study can be used to advocate tobacco use control and prevention to strengthen smoke free campus policy in SEA. Further research will be needed to develop new strategies related to the gender and cultural context of the country. Multiuniversities network should be established to serve as a platform to develop new strategies to reduce and prevent tobacco use among students in SEA.

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### Nicotine Deliverance Systems: A New Threat of an Old Challenge

#### **Romen Ranjit**

Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: romen.r@fph.tu.ac.th

#### ABSTRACT

**Background:** The electronic cigarette (e-cigarette) industry has seen an exponential growth worldwide since its commercial introduction in China in 2004. The e-cigarette is a nicotine deliverance system advertised as an aid in smoking cessation and a healthy alternative to conventional tobacco smoking, for continued use, though the research on its long-term health hazards is lacking. In addition, the development of the flavored e-cigarette has made it possible to target this product at a new generation of non-smoking adolescents, exposing them to possible nicotine addiction while sustaining the steady rise in the number of users observed globally. The rise in nicotine addiction could prove to be a hindrance to on-going tobacco control measures (e.g., the World Health Organization Framework Convention for Tobacco Control (WHO FCTC)) that aim to prevent and reduce nicotine addiction, tobacco consumption and exposure to tobacco smoke. Ironically, the nicotine deliverance systems could act as a gateway to conventional tobacco smoking.

**Methodology:** A review of emerging research published on the use of e-cigarettes was done. Online databases, such as the Lancet, PubMed and ScienceDirect, were searched for peer reviewed articles for full free text in English; other relevant materials from reputable sources were collected using the key words nicotine addiction, e-cigarette and vaping. A total of 258 sources were returned of which 14 were relevant to the study question and reviewed in depth.

**Results:** The addictiveness of nicotine has been well established. However, multinational tobacco companies are taking over the newly emerging e-cigarette industry and marketing the product as a healthy alternative to conventional cigarette smoking. The nicotine deliverance system has had many makeovers to create a new product that sounds less like a cigarette (i.e., use "Vape" or "JUUL" for 'vaping' instead of 'smoking') while utilizing the same principle as cigarettes to deliver nicotine. The level of nicotine delivered through the product is self-adjusted by the user meaning nicotine deliverance could be increased over time as tolerance develops. Longitudinal studies have shown a positive correlation between the use of e-cigarettes and future conventional tobacco smoking. Moreover, research indicates that the effectiveness of e-cigarettes as aids for smoking cessation has not been significant.

**Conclusions:** Manufacturers of the newer nicotine deliverance products use marketing under the name of "Vape" (with product use called "Vaping" instead of "smoking") to alienate the product from the already demonized "cigarette" and its use. Normalization of this addictive substance deliverance product and the relative ease for all age groups to buy it has been a main reason for the increase in users seen all over the world. The lack of research showing the safety of its long term use, along with the worrying association between vaping and conventional tobacco smoking, calls for attention to improving product controls and the need for further research.

### Health Literacy of Third Year Students at Thang Long University of Hanoi, Vietnam in 2017

Hien Thi Thu Ngo<sup>1</sup> and Quoc Anh Truong<sup>1</sup>

<sup>1</sup> Department of Public Health, Thang Long University, Hanoi, Vietnam, Postcode 100000 E-mail: ngohien.res@gmail.com E-mail: quocanh.trupng.94@gmail.com

#### ABSTRACT

**Background:** One of the most important indicators in evaluating the outcomes of healthcare services is health literacy. Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in ways which promote and maintain good health during the life course. Inadequate health literacy has been variously found to be a predictor of patient disengagement, inappropriateness of care, increased health care costs, and higher mortality rates. However, research related to health literacy have been mainly done in Western regions. While in Asia, specifically in Vietnam, to date the evidences on the level of health literacy still quite modest and lack of comparison.

**Methodology:** Cross-sectional studies was carried out on 400 third year students at Thang Long University, Hanoi, Vietnam in 2017, using a stratified random sampling technique to measure health literacy of the third-year students at Thang Long University and identify associated factors. The validated questionnaire of Asian Health Literacy Survey (based on the European Health Literacy Survey) was used in this study. Study subjects were requested to response to the structured questionnaire. The internal consistency of the questionnaire was assessed through the Cronbach's alpha coefficients (0.726 <  $\alpha$  <0.91). Chi-square test, spearman's Rho correlations were used to determine the association between variables. P-values <0.05 were considered statistically significant.

**Results:** The mean general health literacy score of study subjects was  $28.5 \pm 5.7$ , in which health promotion literacy was  $28.7 \pm 6.7$ , followed by health prevention literacy at  $27.3 \pm 6.3$ , and health care literacy at  $26.1 \pm 6.8$ . Additionally, 29.8% of the surveyed students showed to have inadequate general health literacy understanding, 54.3% were problematic, 14.1% were adequate and 1.8% was excellent. Findings also showed that gender, place of living, having a family member works/study in health-related fields, frequency of participants visit the doctor with their family member and friends, frequency of students watching TV programs that related to health care, the frequency of searching health-related information and frequency of participation in community activities were the factors that were statistically significant correlateed with their health literacy understanding.

**Discussion:** The study found a relatively high number of participants in the inadequate and problematic health literacy levels, particularly in health care literacy. These findings were higher than some previous studies conducted among adults in Vietnam, in Asia and European countries.

**Conclusions:** Appropriate intervention activities should be considered to improve health literacy among students.

Key words: Health literacy, students, Thang Long University

### Have Men been Left Behind? Explaining Health Inequalities Faced by Male Adolescents in Different Settings

#### **Daniel Beattie**

Maastricht University, The Netherlands E-mail: danielrbeattie@gmail.com

#### ABSTRACT

**Background:** Much of the contemporary focus of reducing gender-based health inequalities has been targeted towards advancing female health. Consequentially, many issues faced by men have been overlooked and are often left silenced in many global and national health policies and programmes. Even in patriarchal countries where the male gender may accrue an array of social benefits, men have been shown to have worse health outcomes than their female counterparts. Men tend to have a significantly lower life expectancy at birth, have a higher level of DALYs due to morbidity and have greater levels of exposure to risk behaviours and occupational risks such as alcohol abuse or injuries resulting from violence. The highest levels of disparity exist in industrialised countries such as Russia and Latin America as well as LMICs including many African countries. Aside from direct measures of health, boys are shown to have lower levels of educational attainment and higher levels of school dropout, both of which act as predictors of adult health outcomes. This demands the question, what are the causes of these health inequalities faced by males?

**Methodology:** A literature review was conducted on quantitative and qualitative studies which focus on identifying and explaining risk behaviours for gender health disparities faced by men. Also literature on national health policy for men was searched. In particular, the effect of gender socialisation in adolescence was examined as this is a key age group for promoting change. Terms searched for included 'gender health inequalities', 'men and health policy' and 'masculinity and health'. Articles focussing on women's health were excluded. In total, 10 articles were reviewed and results examined.

**Results:** Results show many studies suggesting that male health inequalities are socially rooted; linking constructs of masculinity as an explanation for many male risk behaviours such as risky sexual activity, high alcohol consumption and refusal to access health services. Such beliefs are often initiated in adolescence and reinforced into adulthood. Alcohol consumption, pressure to engage in sexual activity and many other risk behaviours are expected of young men in these communities. Furthermore, policies analysed worldwide indicated that only three countries have direct strategies targeting men's health.

**Conclusions:** Concepts of masculinity play a key role in explaining health inequalities faced by men. Young men are especially at risk as it is during this stage in life where masculinity is reinforced. There is a need for prioritisation of men's health on national and global agendas. Specific policies should focus on targeting male adolescents in order to reduce disparities later in life."
## Corporal Punishment of Children by Parents and Teachers in South Asia

#### Prarthana Koirala

Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: prarthana.k@fph.tu.ac.th

## ABSTRACT

**Background:** Violence against children is a violation of children's rights that is prevalent worldwide. South Asia is no exception (UNICEF, 2014). Global evidence indicates that six in ten children regularly face violent punishment by their parents, teachers and caregivers (Shiva Kumar et al., 2017). The sheer size of the population of Asia has contributed to an estimate of numbers of children experiencing violence that is almost twice as high as all other regions combined (Hillis et al., 2016).Violence in early childhood not only impairs learning and cognitive development, but may also trigger other mental health problems like depression, aggression, self-harm, and anti- social behavior later in life (Lilleston et al., 2017). In South Asia, corporal punishment in schools and homes is still practiced and socially accepted as normative behavior despite legal provisions against it (Global Initiative to End All Corporal Punishment to Children, 2018).This paper examines the socio-cultural factors that contribute to acceptance of and adherence to such violent modes of discipline, and why they persist in South Asian Society (Proctor, 2015).

**Methodology:** PRISMA was used with the key words of "Corporal punishment of children", "Determinants of social acceptance" and "South Asia"; along with inclusion and exclusion criteria to identify 425 relevant peer reviewed journal articles, of which 52 research reports published between 2012 and 2018 were reviewed and 23 were used.

**Findings:** Parents who faced corporal punishment in their childhood were found more likely to use corporal punishment on their own children and spouse, considering it to be a normal way of 'learning' discipline (Gershoff & Grogan-Kaylor, 2016). Female teachers, who often lack authority and respect in a patriarchal society, tend to use violence against students, especially boys, in order to establish control. Male teachers, given respect by default (Proctor, 2015), also punish boys more than girls believing that girls by virtue of their gender are obedient and docile; boys are assumed to be more aggressive and untamed. As a result, parents and teachers who do not wish to employ corporal punishment are at a disadvantage and seen as disturbing the "system". They have no answer to society's assumptions and predictions that children in their care will grow up to be "irresponsible" citizens.

**Conclusions:** Parents and teachers critical of the practice of corporal punishment lack knowledge and support about "where to draw the line" between appropriate discipline and the application of violence and abuse (Proctor, 2015). Further education of parents and teachers is needed as is research specific to the South Asian context on the value of 'positive parenting' that corrects children's' misbehavior while protecting their rights and sustaining their self-esteem (Durrant & Stewart-Tufescu, 2017).

## **INTRODUCTION**

'Corporal' or 'physical' punishment is any punishment in which "physical force is used and intended to cause some degree of pain or discomfort, however light. Most involves hitting ('smacking', 'slapping', 'spanking') children, with the hand or with an implement - a whip, stick, belt, shoe, wooden spoon, etc. But it can also involve, for example, kicking, shaking or throwing children, scratching, pinching, biting, pulling hair or boxing ears, forcing children to stay in uncomfortable positions, burning, scalding or forced ingestion (for example, washing children's mouths out with soap or forcing them to swallow hot spices)."

"In addition, there are other non-physical forms of punishment that are also cruel and degrading and thus incompatible with the Convention [on the Rights of the Child]. These include, for example, punishment which belittles, humiliates, denigrates, scapegoats, threatens, scares or ridicules the child." (United Nations Children's Fund, 2014).

A meta-analysis done in 2016 showed that lawful corporal punishment in childhood had mental health impacts in childhood that added to poor moral internalization, internalizing behavorial problems, externalizing behavorial problems, and to poor quality of relationship between parent and child. These traits carried into adulthood and often manifested as other forms of mental health problems in adulthood: aggression, abuse of child and spouse, violence, criminal or antisocial behavior. (Gershoff & Grogan-Kaylor, 2016). No studies have found evidence of any benefits of employing corporal punishment as a method of discipline for children (Global Initiative to End All Corporal Punishment of Children [GIEACPC], 2016).

Despite that such facts are already established and that many countries have legal provisions against this practice, corporal punishment of children is socially accepted and still prevalent in South Asia. Thus it becomes more important to understand the reasons of acceptance and adherence of such violent modes of discipline in the society.

## METHODOLOGY

## **RESEARCH QUESTIONS**

- 1. What socio-cultural factors contribute to maintain the social acceptance and practice of corporal punishments to discipline children in South Asia?
- 2. How can a Human Rights Based Approach (HRBA) help to tackle the acceptance and practice of corporal punishment of children in South Asia?

## DATA SEARCH AND MANAGEMENT

**Search words:** "Corporal punishment of children", "South Asia", "Determinants of social acceptance" The sources of materials used were peer reviewed journal articles and information from reputable international organizations.

## **Inclusion criteria**

Articles and research reports in English published between 2012 and 2018 interrelating and discussing the following issues in South Asia were used as inclusion criteria:

- 1. Practice of corporal punishment of children in South Asia
- 2. Sociocultural determinants leading to acceptance and practice of corporal punishment of children in South Asia
- 3. Child Rights and corporal punishment in South Asia

## **Exclusion criteria**

Literature published before 2012 were not used unless the facts were universal and interrelating the issues in South Asia. Again, this paper looks into the data of South Asia only, excluding other parts of Asia and other continents unless the paper at any point requires to take a global reference to the topic. Hence following were used as exclusion criteria:

- 1. Articles focusing on parts of the other than South Asia
- 2. Other forms of child abuse like sexual abuse, neglect, child labor etc
- 3. Articles whose full texts were not available
- 4. Articles that are not focused on our keywords
- 5. Duplicated articles

**Identification of the actual number of articles for review:** Preferred Reporting Items for Systematic reviews and Meta-Analyses PRISMA



## LIMITATION(S) OF THIS WORK

It became evident during the article search that very limited data was available regarding corporal punishment of children in Maldives, Bhutan and Sri Lanka. Thus for reference purposes, articles from the year 2011 and 2010 one each, were included despite it being against the exclusion criteria. The studies that have been conducted are mostly focused on corporal punishment in school; there is a significant lack of study done regarding corporal punishment at home in South Asia. Since corporal punishment is only a part of the bigger problem of "Child Abuse", other aspects of child abuse like child sexual violence, neglect, child trafficking, child labor, etc., which may intersect with corporal punishment were not examined.

## FINDINGS

## 1. Corporal Punishment at Home

## 1.1 Corporal Punishment- Power, Heirarchy and Parent-Children Relationship

Children in the South Asian society are not identified as human being with their own rights. They are usually seen as immature and incapable of making their own decisions. Hence, adults must make decisions for them. (Mishra et al., 2010). It has been observed in almost all the cultures across South Asia there are hierarchies inside the family. Thus, respect seems to come from obedience to rules. Thus breaking rules would automatically imply disrespect and corporal

punishment is an accepted method to discipline children into order. Therefore, in this context violence is "the sign of a struggle for the maintenance of certain fantasies of identity and power" (Proctor, 2015).

In South Asia corporal punishment is employed at home by both parents. The punishment may range from slapping and spanking to biting and hanging the child by hands. Children have received threatening abuses of getting beaten or burnt, and have also been subjected to extreme abuses like threatening with or even using knife or a gun in a child (Proctor, 2015). In some countries like Pakistan, the scarce data that was available indicated that emotional neglect was the most prevalent kind of child maltreatment (Malik et al., 2011).

In the home both boys and girls are subjected to violent disciplinary actions, though in general boys receive more extreme physical punishment than girls. However, the outcomes and effects are more severe in girls in that they show more behavioral and emotional problems than boys. Due to the patriarchal structure of families, boys were given more preference over girls in general treatment and basic needs like food, education and healthcare when resources were scarce. The emotional and psychosocial needs of girls is often neglected. There is an acceptance of this discriminatory action and it mainly depends on the parent's level of education, socioeconomic status and the size of the family. When economic stress causes deprivation, parents (especially the father) put a high value on unquestioned obedience and use physical punishment to obtain it (Malik et al., 2011).

The father has been labelled as an authoritarian figure seen as "ethnocentric, antidemocratic, compulsively conventional, punitive and condescending"; however, the sensitivity to the mother's method of "rejection" was higher among children. Children who perceived more parental rejection like absence or withdrawal of affection, nurturance, concern, or support, had a higher emotional and psychological impact when faced with emotionally and psychologically hurtful treatment, (Malik, 2012).

Some fathers believe that 'bachche marne se hi seekhte hain'; that is, children will learn only if you hit them. This was part of the societal tradition: "In our time, they had canes of green bamboo and hit us a lot". There has not been a change in the parenting style of some parents. Frequently, those abusing their children are the ones who were themselves abused or neglected in childhood (Malik, 2012).

Table 1. Trequency and refeentages on Demographic variables (N=100)						
Variables	Abused	Nonabused	Total			
	n (%)	n (%)	n (%)			
Age (in years)						
8	03(6)	05(10)	08(8)			
9	09(18)	10(20)	19(19)			
10	12(24)	11(22)	23(23)			
11	15(30)	12(24)	27(27)			
12	11(22)	12(24)	23(23)			

#### Intermediary Determinants of Corporal Violence to children Table 1: Frequency and Percentages on Demographic Variables (N=100)

Variables	Abused	Nonabused	Total
	n (%)	n (%)	n (%)
Grade			
4	18(36)	18(36)	36(36)
5	13(26)	13(26)	29(29)
6	08(16)	12(24)	20(20)
7	06(12)	04(8)	10(10)
8	05(10)	03(6)	05(5)
Gender			
Boys	25(50)	25(50)	25(50)
Girls	25(50)	25(50)	25(50)
SES (Family's monthly income in Rs.)			
Upper (51,000-above)	14(28)	14(28)	28(28)
Middle (16,000-50,000)	13(26)	28(56)	41(41)
Lower (below-15,000)	23(46)	08(16)	31(31)
Family System			
Nuclear	20(40)	28(56)	48(48)
Joint	30(60)	22(44)	52(52)
Family Size (no. of children)			
Small (1-2)	20(40)	14(28)	34(34)
Medium (3-5)	09(18)	13(26)	22(22)
Large (6-above)	21(42)	23(46)	44(44)
Fathers' education			
Illiterate	15(30)	07(14)	22(22)
Less Educated (below-12 <sup>th</sup> grade)	24(48)	24(48)	48(48)
Highly Educated (graduation-above)	11(22)	19(22)	30(30)
Mothers' education			
Illiterate	24(48)	03(06)	27(27)
Less Educated (below-12 <sup>th</sup> grade)	18(36)	24(48)	42(42)
Highly Educated (graduation-above)	08(16)	23(38)	31(31)

Table 1: Frequency and Percentages on Demographic Variables (N=100) (cont.)

## 2. Corporal Punishment at Schools

Corporal punishment takes violent turns in some cases. In India, in December 2005, Akanksha, who was only seven years old, died from a blow to the head. Her teacher, Amar Singh Dohrey, beat her because she did not bring her Hindi textbook to school (New Delhi Television Limited [NDTV 2009]). Again in April 2009, Shanno Khan's teacher allegedly punished her for not knowing her English alphabet by beating her, then making her stand in the sun for hours. Shanno, who was only eleven, slipped into a coma and died a few days later" (Proctor, 2015).

Why a teacher punishes children in school (Pakistan) (Malik, 2012).

Box	<b>2:</b> Why a teacher punishes children in school: $^{37}$		
1.	Not coming to school in neat school uniforms.		
2.	Not coming to school on time.		
3.	Not doing their homework.		
4.	Not paying school fees promptly.		
5.	Not respecting teachers.		
6.	Not memorizing an assigned lesson.		
7.	Misbehaving, fighting or quarrelling in class.		
8.	Disturbing class or falling asleep in class		
9.	Destroying school's property.		
10.	Writing unacceptable things on the school		
	premises.		
11.	Skiping classes.		
12.	Failling in an examination.		
13.	Stealling something.		
14.	Forgetting to bring stationeries in classroom		
15.	Fail in an examination.		

16. Cheating in exams.

Many teachers think that the best way of punishing children is to humiliate them and expose them to peer ridicule. Humiliation being both physical and emotional, was seen as an effective tool to break the child emotionally, if not physically always. As summarized by Proctor (2015), the idea of breaking the child's will by force or connivance in order that he or she can be controlled is no stranger to education, which is structured around the power relationships between adults and children"

### Common punishment given to children in school (Malik, 2012).

Вох	1: Common punishment given to children in School <sup>4,5</sup>			
Physical Punishments:				
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	Beating: with a stick, cane, belt, pipe, fist, wet stinging nettles, duster etc. Pulling ears and the hair of the temples. Making them to stand up for the whole day in the sun. Kneel down and do the work and then enter the class room. Making them stand up on the bench. Making them to raise hands. Pressing a pencil between two fingers. Holding their ears with hands passed under the legs. Tying their hands. Making them to sit-ups. Caning and pinching cheeks or arms.			
Emo	otional Punishments:			
1. 2. 3. 4. 5. 6. 7. 8.	Slapping by the opposite sex. Scolding, abusing and humiliating. Giving animal names: donkey, monkey, ox, bitch, buffalo. Calling parents to the school. Suspending them for a couple of days. Pinning paper on their back and labeling them "I am a fool". Ordering students especially girls to stand in the rain. Making student stand completely naked in the classroom.			
Neg	ative Reinforcement:			
1. 2. 3. 4. 5. 6. 7. 8. 9.	Detention during the break and lunch. Locking them in a dark room. Asking the children to bring explanatory letters from the parents. Sending them home or keeping the children outside the gate. Making the children sit on the floor on the classroom. Making the child clean the premises. Giving oral warnings and letters in the diary or calendar. Sending the children to the principal. Making them teach in the class. Making them stand till the teacher comes.			
	Box Phys. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. <i>Emoc</i> 1. 2. 3. 4. 5. 6. 7. 8. 9. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 2. 3. 4. 5. 6. 7. 8. 9. 10. 10. 11. 2. 3. 4. 5. 6. 7. 8. 9. 1. 2. 3. 4. 5. 6. 7. 8. 9. 1. 2. 3. 4. 5. 6. 7. 8. 9. 1. 2. 3. 4. 5. 6. 7. 8. 9. 1. 2. 3. 4. 5. 6. 7. 8. 9. 1. 2. 3. 4. 5. 6. 7. 8. 9. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 2. 3. 4. 5. 6. 7. 8. 9. 10. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			

#### 2.1 Corporal Punishment - Power and Gender Relation

The principals of femininity and masculinity, and power instituted through corporal punishment and violence against children is justified and normalized within the school system. Gender in its heteronormative form plays a part for both teachers and the students. It was found that female teachers believed that in order to command respect and obedience from boys, boys needed beating. Male teachers were automatically entitled to respect because they were men in a patriarchal society; they need not use violence to command obedience and control. Both male and female teachers agreed that girls did not require beating because of their inherent obedience and docility.

Thus, there existed a preconceived notion of masculinity and femininity that implied that female teachers lacked the respect of their students by virtue of them being women and hence required to resort to violence, while male teachers by virtue of being men commanded authority instantaneously. Thus, due to the implication of violence by the female teachers it may seem as though there has been a disruption of the normative gender character, but their actions are in fact "colluding in their own subordination". Masculinity in the context of male students is hence portrayed as a characteristic that in its natural form is wild and disobedient and hence, needs to be restrained and beaten into shape by violence (Proctor, 2015).

## 2.2 Justification by Students

Students appreciate teachers who were "friendly but not friends". This is elaborated as teachers who would beat only for good reasons and not punish students unjustly. Thus students did not view this form of punishment as violence but a professional method of maintaining order which is required and hence was justified (Proctor, 2015).

## 3. Laws Against Corporal Punishment in South Asia

Not all countries in South Asia have laws for the protection of children. Hence, laws against corporal punishment are rare. Some laws that exist also have obvious loopholes. {"The Juvenile Justice (Care and Protection of Children) Bill(India)," 2015; "Juvenile Law(Juvenile Code) Official Gazette(Afghanistan)," 2005; "The Child Care and Protection Act of Bhutan," 2011; "Children Act (Bangladesh)",1974; "Children's Act (Nepal)",1992 ; "Law on the Protection of the Rights of the Child (Maldives)"1991; }

For example : In an older version of the Child Act (1992, in force 1993, but subsequently removed in a recent version) of Nepal, it was stated that "no child shall be subject to torture or cruel treatment" but also that "any act by the mother, father, family member, guardian or teacher to scold the child or give him/her minor beating for the sake of his or her interests shall not be deemed to have violated this Section" (Mishra et al., 2010). Although a recent ban on corporal punishment has been made in 18th September 2018, the efficacy of the ban is yet untested. In India, though corporal punishment is illegal it is still a common practice (Proctor, 2015). In Pakistan, "no official statistics are available from any government agency on corporal punishment" (Malik, 2012).

## 4. Human Rights Approach

Human rights are the inherent fundamental rights of every human being regardless of age, gender, socioeconomic status, of all races and religions around the world. Hence, it is universal and applicable to all. The instruments of the international human rights framework is the Universal Declaration of Human Rights and its six core human rights treaties, one of which is the **Convention on the Rights of the Child (CRC)**.

It is through these instruments that the rights they outline are supposed to legally oblige the states and countries bound by them. Thus, in the case of violation of human rights by a state, the framework can establish legal mechanism to hold the state or country accountable. (United Nations Children's Fund [UNICEF], 2014) In 1989, (in "The Age of Children's Rights" after the United Nations' adoption of the Convention on the Rights of the Child (UN General Assembly, 1989)), for the first time in history children were recognized as full human beings, entitled to their own personhood with fundamental rights (Durrant & Stewart-Tufescu, 2017).

## DISCUSSION

# **1.** Convention on the Rights of the Child (CRC) and Human Rights Based Approach for Better Practice of Discipline

The Latin word "disciplina" meant "instruction, teaching, learning and knowledge" rather than obedience, submission or punishment. From the perspective of the CRC, a human rights based approach ought to be applied to obtain a positive version and the true meaning of disciple so that all children may thrive. For this purpose, the articles from the CRC imply the following Principles: "(1) Non-violence; (2) Respect for children's evolving capacities; (3) Respect for children's

individuality; (4) Engagement of children's participation; and (5) Respect for children's dignity" (Durrant & Stewart-Tufescu, 2017).

**Principle 1: Discipline is Non-violent:** The <u>Article 19</u> of the CRC, guarantees children protection 'from all forms of physical and mental violence' (United Nations Children's Fund, 2013). Any form of discipline that hurts the child physically or emotionally is a violation of her human rights; this includes any form of physical punishment regardless of its form, frequency or intensity. Thus, the most common forms of violence faced by children in South Asia including physical infliction of pain, as well as rejection and humiliation may be addressed here. The intent of this is to create an environment free from threat and fear that automatically promotes learning and cognition and prevents stress and anxiety mechanisms from being activated. Therefore, constructive discipline rests first on the foundation of the child's right to protection.

**Principle 2: Discipline Respects Children's Evolving Capacities**: <u>Articles 5 and 14</u> of the CRC set out the responsibility of adults to guide children through their process of learning and growing. 'Discipline' is to act as a developmental process (United Nations Children's Fund, 2013). However, although children may be innately driven to learn and be curious, these spontaneous drives can be inhibited if adults do not identify the autonomy of the children and their desire to experience and explore (Van Petegem et al.,2015). Caregivers may show psychologically controlling behavior like withdrawal of love and affection if the perspective of the child is not in tune with theirs. This creates a 'consistently negative and inhibiting experience for children'. When children are engaged as persons with their own perspectives, even when those perspectives differ from the adult's, the adult should guide and teach them in a way that scaffolds their learning, values their contributions, respects their participation and promotes their healthy development.

**Principle 3: Discipline Respects the Child's Individuality** Under <u>Article 29</u> of the CRC, 'the education of the child shall be directed to the development of the child's personality, talents and mental and physical abilities to their fullest potential" (United Nations Children's Fund, 2013). Through this article, adults are obligated to understand children's individuality. Individuality here may relate to their creativity (e.g., creative answers), which may sometimes be considered distracting and hence dismissed by the teachers. This is again reinforced by the reward-and-punishment system that redirects the child's mind to getting rewards or avoiding punishments rather than exploring their creativity and talents. The punishment system may be the adult's own experience of punishment. Therefore rights-based discipline is focused on the development of the child based on their temperament, talent and individual characteristics. It also avoids a punishment system, where adults are otherwise comfortable to implement the same punishment that they faced in their childhood. It is important that a safe environment is created for trial and error.

**Principle 4: Discipline Fosters Children's Participation:** An imposed discipline prescribes what is "appropriate" and what is "inappropriate". In case of an outburst from a child, a parent often employs a disciplinary action until the child fatigues, instead of trying to understand the cause of the child's outburst by the means of concern and affection. The child thus feels misunderstood and frightened and the parent-child relation is eroded. From a rights-based approach, though, a child will be the agency of his emotions, and parents will be inclined to identify the source of the distress and help the child solve the underlying problem. This approach

will not only prevent potential distress in the child, but will also improve the relationship between parents and children.

**Principle 5: Discipline Respects the Child's Dignity:** Dignity refers to "the innate right to be treated ethically and as worthy of respect". Many punishments as already discussed put humiliation and abuse at the core, thus instantaneously removing the child's dignity. A human rights-based approach views "problems as problems", instead of "people as problems" and is more focused on conflict resolution and empathy. This practice is based on mutual respect and dignity and prioritizes a two-way conversation, agency, dependence on each other, relationships and responsibility over fulfillment of individual goals.

## 2. Conceptual Framework



## CONCLUSION

As it has been observed the patriarchal system in South Asia has put both the parents and children at a disadvantage. Parents who faced corporal punishment in their own childhood seem to be more likely to use corporal punishment on their own children. These children are physically and psychologically affected negatively and behave in ways that attract more reasons for punishment; thus, they create a vicious cycle. They then grow up with the psychological impact of their experience, and inflict the same violence on their children and spouse, considering it to be a normal way of making them "learn" discipline.

Female teachers who feel the lack of authority and respect in the (patriarchal) society simply because they are female, tend to use violence against students, especially boys, in order to establish authority, while male teachers seem to have been given respect by default. In either case, boys are more likely to receive physical punishment than girls with a preconceived idea that girls by the virtue of their gender are obedient and docile. Boys are hence assumed to be more aggressive and untamed by the preconceived nature of their gender as well.

This leaves the parents and teachers who do not wish to employ corporal punishment at a disadvantage as they are seen as disturbing the "system". By doing so, they are wrongly judged by the society that makes assumptions and predictions of such children as likely not growing up to be the "responsible" citizens as intended.

While most South Asian countries do not have a separate child protection act, those that do are still weak in implementing it. Although global and regional initiatives (i.e., the "Global Initiative to End All Corporal Punishment of Children"; "South Asia Initiative to End Violence Against Children (SAIEVAC)") have been launched, corporal punishment continues to exist in homes, and is not seen as a violation of human rights in any South Asian countries (except in Nepal recently). It may be illegal in the school setting in some countries, but still is a common practice despite the presence of this law.

Many parents and teachers, even those critical of capital punishment, are confused as to "where to draw the line?" so that discipline can be maintained without the application of violence and abuse. Awareness must be spread regarding the harmful impact of corporal punishment on child development and well-being, as well as on adulthood. Its acceptance as a 'social norm' must be disrupted. A Human Rights based Approach, and the application of good discipline through 'positive parenting' must be employed to identify and tackle corporal punishment and its impact on the health and wellbeing of children for which parents, teachers, counselors , physicians/pediatricians and the society as a whole must be involved.

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## Equity Perspective on Myanmar's National Strategic Plan for Tuberculosis (2016-2020): Systematic Literature Review

## Thazin La

Faculty of Public Health, Thammasat University, Thailand E-mail: thazin.l@fph.tu.ac.th

## ABSTRACT

**Background:** In Myanmar, a lower-income country, TB causes a heavy health burden. The National TB Program's (NTP) National Strategic Plan for TB (NSP-TB) (2016-2020) is income dependent as interventions require cash inputs for complete implementation.

**Methodology:** This study used a systemic critical literature review to analyze the NSP-TB in Myanmar for the strengths and weaknesses of its equity focus. Fourteen (14) articles were selected for inclusion in this study.

**Results:** This review identified the key social determinants of health (SDH) that contributed to an increase in the TB burden in Myanmar. Increased out-of-pocket expenditure led to incomplete treatment for those seeking care, and an increase in drug resistant TB as a consequence that impacted on treatment success rates. Furthermore, the limited and inequitable distribution of public facilities for TB diagnosis and treatment resulted in limited access by vulnerable groups in some regions to adequate TB care.

**Conclusions:** Though the NSP-TB identifies vulnerable people, there is a lack of specific interventions from an equity perspective targeted at those who are poorest and near poor. NSP-TB acknowledged that TB health services should be included under Universal Health Coverage (UHC), which is a very important program for social protection to overcome SDH barriers. If SDH barriers are not removed, the goal of ending the TB epidemic in Myanmar will not be achieved.

Key words: Myanmar, tuberculosis, disparities, social determinants and poverty.

## **INTRODUCTION**

Tuberculosis (TB) is a global health crisis since it is one of the top leading causes of death from a single infectious disease, which is higher than HIV/AIDS (World Health Organization, 2018). Globally, millions of people suffer from TB every year and in 2017, 1.3 million died because of TB alone. (WHO, 2018). In addition, 300,000 people died by coinfection with Human Immunodeficiency Virus (TB/ HIV) (WHO, 2018). The prevalence of TB is estimated by WHO at 10 million people worldwide (WHO, 2018). 87% of the total global cases developed in the 30 world's highest TB burden countries (WHO, 2018). Moreover, the prevalence of drug resistant TB cases is getting higher and has become a public health concern. In 2017, worldwide, 3.5% of new TB cases and 18% of the people with a history of treatment for TB developed Multi-drug and Rifampicin Resistant TB (MDR/RR TB) (WHO, 2018); further 8.5 % of all MDR/RR TB cases developed extensive drug-resistant TB (XDR TB) (WHO, 2018).

Myanmar, a country in South-east Asia, is one of the poorest low-income countries with a population of 53 million (Wai et al., 2017 & WHO, 2018). The Ministry of Health and Sports (MoHS) is the main ministry responsible for the health sector in its role as governing agency as well as the main health care provider (NTP, 2016). Myanmar's TB incidence rate of 358/100,000 population ranks it as one of the 30 highest burden countries globally for all three categories: TB, TB/MDR TB, and TB/HIV (WHO, 2018). According to the WHO TB Global Report 2018, there was 40 or more deaths per 100,000 population from TB in Myanmar. Nationally, there are approximately 180,000 new cases annually, 9,000 are MDR/TB and 20,000 cases are co-infections with HIV (TB/ HIV) (Khan et al., 2016). Under MoHS's guidance to combat the TB crisis, the National TB program (NTP) developed the "National Strategic Plan for Tuberculosis in Myanmar (2016-2020)" (NSP-TB) with WHO, funded by USAID. The NSP-TB is aligned with the WHO End TB strategy (NTP, 2016). The results of this review are aimed to strengthen the National Strategic Plan for TB from an equity perspective in Myanmar.

## METHODOLOGY

1. Review question

What defines the equity perspective of Myanmar's National Strategic Plan (2016-2020) for Tuberculosis?

2. Review purpose

To contribute to a critical review of the National Strategic Plan for Tuberculosis (2016-2020) in Myanmar in order to strengthen its equity focus.

## 3. Review objective

To critically analyze the National Strategic Plan for Tuberculosis (2016-2020) in Myanmar for the strengths and weaknesses of its equity focus

## 4. Data selection and management

While searching the articles to review, four search strings were used: (1) Myanmar AND tuberculosis AND "disparities OR inequalities"; (2) Myanmar AND tuberculosis AND "barriers to care"; (3) Myanmar AND tuberculosis AND "social determinants"; and (4) Myanmar AND tuberculosis AND poverty. The articles were searched on google scholar, PubMed and Lancet Online site.

Inclusion and exclusion criteria as follow:

Sr. No	Inclusion criteria	Sr. No.	Exclusion criteria
1	Grey literature (technical report) published 2012-present providing relevant analysis of social determinants and/or disparities of TB in Myanmar, and policy response	1	Study published before 2012], unless useful to contextualize the analysis
2	Studies – qualitative and quantitative - published 2012-present providing relevant analysis of social determinants and/or disparities of TB in Myanmar, and policy response.	2	Published in other language than English and the official translation is not available
3	Published abstracts with access to full text	3	Published abstracts without access to full text
4	Systematic/ critical review on National Strategic Plan for TB in Myanmar or multi-countries studies that include Myanmar	4	National or multi-country studies providing only epidemiological information about TB in Myanmar without analysis of disparities and their determinants

Identification of the actual number of articles for review:



## Figure 1: Prisma Flow Chart for reviewing articles

## 5. Limitations

There are several limitations of this review 1) limited available articles whether due to inaccessibility on line, or inadequate existing data. Moreover, search strings were also limited

due to time constraint; 2) the eligible articles were selected by using inclusion and exclusion criteria, meaning that documents published in local language (Burmese) on the internet were not included in this study. These constraints, limit the scope of the study, with effect on the analysis, discussion and conclusions.

#### FINDINGS

#### 1. Social Gradient

TB is one of the most common diseases in the world, particularly among poor families given the high economic burden it places on all TB effected people and their families (Montagu et al., 2013). According to Siroka (2016), the lowest quintile household is twice as likely to get TB than the highest quintile in Myanmar. In low-income country like Myanmar, both direct and indirect costs for TB patients are high (Siroka, 2016). Even though Myanmar's NTP provides services free-ofcharge for TB diagnosis and treatment, this support is insufficient for the TB-affected families who must pay out-of-pocket for the transportation, accommodation, and food expenses associated with hospital and clinic visits (Siroka, 2016). In addition, as a result of the disease, they cannot work leading to loss of income (Siroka, 2016). Opportunity costs are also high. Patients suffering from the disease must take leave to go for health care and the resulting absenteeism can lead to loss of job with the major economic effect of loss of earnings (WHO, 2018). Moreover, accessibility to nutritious food essential for the immune response to combat TB infection and accelerate recovery, is also reduced (Olaleye & Beke, 2018). Nationally, 65% of TB-affected households face catastrophic costs, mainly because they cannot work and are unable to meet expenses for "food and nutritional supplement" (Siroka, 2016). Patients from the first economic quintile encounter this kind of financial crisis between 4.76 and 15 times more often than those in the highest quintile in Myanmar (Siroka, 2016).

#### 2. Lack of sufficient Primary Health Care

Untreated TB cases are still high in Myanmar even though NTP provides free services for diagnosis and treatment. Patients are reluctant to use public health facilities because of the transportation costs and long waiting time. As a result, poorer patients go to private clinics which may be more accessible but where the cost for medicines is much higher. (Montagu et al., 2013). However, the quality of care may be less, leading, not uncommonly, to incorrect diagnoses and treatment in private health settings. (Montagu et al., 2013). One of the reasons for underutilization of public health services is geographical. (Montagu et al., 2013). TB patients choose to go to the private clinic because it is within a convenient distance. Confidentiality is also seen as greater in the private system, which makes it more desirable even though the service is not the best (Khan et al., 2017b). Moreover, in Myanmar, the public health system is not strong enough to keep up with the rapidly growing urban population; another one of the contributing factors to the MDR TB crisis (Cousins, 2017).

#### 3. Fragmentation of private health service delivery

As a consequence, the private sector in Myanmar is the first place that most TB patients seek for health care and has become a strong pillar in the health care system (Khan et al., 2017b). However, the medications chosen by multiple health care providers in Myanmar are not consistent between general practitioners (GPs) (Cousins, 2017). Moreover, private health care providers do not follow the treatment management guidelines when they diagnose and treat TB because of the weak control activities and oversight by NTP under the MoHS rules and regulations (Khan et al., 2017a). The combination of a weak health system and a vast poorly regulated private health sector without specific and enforced rules for TB management have led to the dramatic increase in MDR TB (Khan et al., 2017a).

## DISCUSSION

1. Conceptual framework

TB is one of the main public health problems in Myanmar and the National TB program is taking the lead role under MoHS guidance to solve it by developing National Strategic Plan for TB (2016-2020). A conceptual framework has been constructed from the analysis of findings from this study. The findings were put under SDH, which was then categorized into two groupings: structural and intermediate. The structural determinants contribute to intermediate factors which are leading to the burden of TB disease in Myanmar. To achieve substantive equity and the sustainable development goal by combating TB, only focusing on a curative approach is not enough. It must be enhanced by identifying health disparities and removing the barriers that emerge from the social determinants of health SDH as needed. Therefore, NTP needs to develop the NSP-TB from an equity perspective using data to identify disadvantaged groups and the causal pathways of their inequity. Moreover, it is important to encourage all stakeholders and sectors to actively participate in developing and implementing the plan to accomplish substantive health equity and sustainable development goal by addressing the SDH. The process should not be linear but on-going as is suitable for a systems approach. Gaps and opportunities to strengthen NSP-TB from an equity focus will be discussed detail below.



Source: Thazin La, 2019

2. Weaknesses in equity focus

In NSP-TB, NTP addressed the financial crisis of TB affected families by including free health care services and financing schemes for TB in UHC. However, to achieve UHC, a strong and well coordinated health system is needed to serve as a foundation for overcoming barriers to universal and equitable care. In NSP-TB, apart from TB services and social protection policies, no other determinant was addressed. The barriers should be identified and overcome in order for

vulnerable people to get TB treatment by assuring the availability and accessibility of health services (Montagu et al., 2013).

As one of the interventions, NTPs has worked together with GPs. However, there are still a large number of private health providers left who have not received any training or monitoring from NTP (NTP, 2016). One of the concerns for developing DR-TB is the lack of a regulated private health sector (Khan et al., 2017a). Khan (2017b) supported that both public and private health facilities should be consistent with NTP guidelines in their treatment of TB patients. However, there was no specific action or plan to tackle the problem. To prevent the enormous and emerging problem of DR-TB cases, treatment guidelines should be developed, distributed and their implementation monitored in order to guarantee that the private health (and public) providers follow them under the supervision of NTP and MoHS in Myanmar.

## 3. Opportunities to strengthen the equity focus of the plan

TB is a global burden disease associated strongly with poverty (Andrade et al., 2018. Therefore, an intervention is needed to strengthen social protection and poverty alleviation (Siroka, 2016). The NSP-TB has acknowledged that out-of-pocket health expenditures are one of the main barriers to treatment in the lowest quintiles. NTP will ensure that the free TB health care services and financial scheme will be included in UHC to address the problem.

In addition, to implement the interventions for promotion, prevention and cure, a multi-sectoral approach is needed. Removing the barriers of social determinants of health is important to achieve health equity with the inclusion of different stakeholders and sectors (Cordell., 2012). There are some non-health sectors stated in NSP-TB, but no clear description of roles and responsivities for each sector. Both health and non-health sectors should be involved, starting from the planning stage to gain the sense of ownership, awareness of the importance of their participation and responsibility in implementation and monitoring.

In NSP-TB, one of the strategies is focused on research to identify the program challenges. This offers an excellent opportunity to get the evidenced-based data from qualitative and quantitative methods for analysis on the progress of NSP-TB, to understand the causes of inequity as they relate to the SDH. If the equity gaps cannot be identified, then this will also become a weakness in the program.

## CONCLUSION

The findings from the literature review highlight the importance of an equity focus in addressing the TB crisis in Myanmar. It emphasizes that inequity should be addressed by identifying barriers arising from the SDH. From an equity perspective, there are some weaknesses and some opportunities to strengthen NSP-TB. Inclusion in UHC along with support to quantitative and qualitative research are both strengths of the plan; the weaknesses include a poor monitoring system of the private health sector and a lack of standardized treatment guidelines in that setting. Since the multi-sectoral approach is involved in NSP-TB, it means there is awareness of participations of all health and non-health sectors. However, they should be included from the start of developing the plan, and clear about their roles and responsibilities for effective collaboration. This review cannot address all social determinants causing TB crisis because of the limitation in resources for searching the literature, and accessing all relevant documents. The author suggests that more research should be conducted and NTP should use the data from these studies to identify a causal profile of inequity in order to develop and implement a plan by addressing the social determinants of health.

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## Social Constructs of Mental Illness: Barriers to Care and Treatment for Women with Anxiety Disorders and Depression Kendra Gore

Faculty of Public Health, Thammasat University, Thailand E-mail: Kendra.g@fph.tu.ac.th

## ABSTRACT

**Background:** Although mental ill-health accounts for a growing proportion of the worldwide burden of disease, the issue remains marginalized. A global movement for mental health seeks to redress this deficit by exporting a biomedical approach based on Western psychiatry. However, the dominant biomedical model needs to be re-examined, considering a different range of solutions and explanations, before exporting these approaches to low- and middle-income countries.

**Objectives:** This research seeks to provide a systematic literature review which will problematize this dominant model with two main objectives. One is to identify factors that influence the social construction of different groups of American women with anxiety disorders or depression. The second is to examine whether and how these social constructs may contribute to barriers to care and support for different groups of women in the United States.

**Methodology:** A search for relevant literature was conducted using three online databases; PubMed, PsychINFO, and PsychARTICLES, resulting in the retrieval of 874 records. An additional 36 records were retrieved from other sources. Articles were included in the review if they contributed to a discourse on the following issues: factors that influence social constructs of mental illness in the United States, impact of these constructs on barriers to care or treatment for different groups of women, and challenges to the dominant social constructs. In all 26 papers were chosen for full review.

**Results:** Underlying psychosocial risk factors, including experiences of abuse and neglect in childhood and lifetime exposure to gender-based violence, lead to the onset of emotional distress, which is later socially constructed as mental illness.

**Discussion:** A variety of factors affect social constructs of American women with depression and anxiety disorders and shed light on how social constructs can act as barriers to care and treatment. These factors include negative societal stereotypes of mental illness, stigma associated with traumatic experiences such as rape and intimate partner violence, and intersectional stressors experienced by low income and ethnic minority women.

**Conclusion:** Mental health should shift from medicalization and medication of all women who demonstrate symptoms of emotional distress to place greater emphasis on addressing the root causes as well as the stigma and self-stigma of mental illness, thus giving recognition to the psychosocial risk factors and social determinants of emotional distress that become socially constructed as mental illness.

#### **INTRODUCTION**

In the United States today, definitions of and responses to mental ill-health are heavily influenced by the neoliberal state and the interests of large pharmaceutical companies, which are instrumental in directing the flow of research funding and creating social constructs regarding what constitutes mental illness and proper response to the phenomenon of mental illness and those afflicted with mental disorders. The United States is one of only two countries in the world to allow direct to consumer advertising of psychopharmaceutical drugs, allowing drug companies to market a reductionist and oversimplified construct of mental illness as neurochemical imbalance or deficiency that can be easily corrected with medication. Psychopharmaceuticals are an industry representing billions of dollars in profit per year in the United States alone, and selective serotonin reuptake inhibitors (SSRI) as antidepressants are some of the most widely prescribed drugs on the prescription market, given their use in a wide range of commonly diagnosed maladies including various forms of depression and anxiety disorders (Greenslit & Kaptchuck, 2012).

There is a strongly gendered component to the issue of mental illness, as many commonly diagnosed disorders recognized in the Diagnostic and Statistical Manual of Mental Disorders (DSM) disproportionately affect women. Adverse or traumatic life events and other stressors lead to emotional distress that has multiple, complex, and usually harmful impacts on people's lives. This emotional distress is widely medicalized in society today and diagnosed as varieties of mental illness such as GAD (generalized anxiety disorder), panic disorder, and PTSD (post traumatic stress disorder). All forms of anxiety disorders are more prevalent among women than men and have a high rate of comorbidity with other mental illnesses, especially major depression (Hantsoo & Epperson, 2017). Some research has attempted to explain the higher prevalence of anxiety disorders in women. Possible explanations include biological factors such as hormonal fluctuations and sex differences in coping styles. Hantsoo and Epperson (2017) suggested that women and girls exhibit emotional coping styles more prone to rumination and worry than boys and men, and higher sensitivity to interpersonal stress. Research also suggests that women and girls experience higher rates of certain traumatic life events such as rape and neglect or abuse in childhood (Hantzoo & Epperson, 2017).

Mental illness is widely stigmatized and those who seek and receive care are susceptible to stigmatization. According to Marcussen et al., (2018) individuals with mental illness can experience a process of self-stigma, wherin they internalize and apply societal stereotypes about the mentally ill to themselves, resulting in a loss of self-esteem and self-efficacy. The medicalization and labeling of women's emotional distress as 'mental illness' often pathologizes women's reactions to the real conditions of their lives. The social constructs of women as mentally weak and incapable and emotional distress as pathology often combine and interact to produce additional harm (MacKay & Rutherford, 2012).

Social constructs that conceive of mental illness as something inherant to the individual, such as a "chemical imbalance", faulty wiring in the brain, or a purely genetic outcome fail to recognize the role of traumatic experiences and sociocultural realities in producing distressed emotional responses (Fullagar & O'Brian, 2012). This biomedical approach to common mental disorders has led to heavy reliance on pharmaceutical treatment, in spite of mixed outcomes and widespread suspicion on the part of patients about the effectiveness or desirability of psychiatric medications (McHugh et al., 2013). The biomedical and pharaceutical approach fails to address the root of

women's emotional struggles and silences their voices, giving them little power or choice in the treatment they receive (Fullagar & O'Brian, 2012).

## METHODOLOGY

This research seeks to provide a systematic literature review that will problematize whether there are social constructs of women with depression or anxiety disorders that contribute to barriers to care and support for different groups of women in the United States. The literature review has two main objectives. One is to identify factors that influence the social construction of different groups of American women with depression or anxiety disorders. The second is to examine whether and how these social constructs may contribute to barriers to care and support for different groups of women in the United States.

A search for relevant literature was conducted using three online databases: PubMed, PsychINFO, and PsychARTICLES. These databases were chosen for their wide selection of peer reviewed journal articles relevant to the context and subject matter of the study; 874 records were located by database searching. An additional 36 records were located from other sources, including several important and frequently cited works regarding social constructs and mental illness located from the reference sections of other articles. The following modified PRISMA demonstrates the selection process with inclusion and exclusion criteria:



## FINDINGS

A careful review of the relevant literature revealed supporting information for a theoretical framework showing several stages in the development and course of depression and anxiety disorders in the lives of American women as follows:

Figure 2.0 Stages of trauma and healing framework



In the first section of this framework, the findings show that there are many underlying psychosocial risk factors that lead the onset of emotional distress which is later labeled as mental illness in women. Neuman (2017) found that adverse experiences in childhood such as neglectful or emotionally abusive treatment from a caregiver are strong predictors of depression in adult life. According to Walsh et al., (2015) US women's lifetime exposure to gender-based violence is not only associated with higher risk for mood and anxiety disorders but does so in a dose-response fashion, with women exposed to a larger number or multiple types of gender-based violence having increased risk, and those who first experienced GBV at younger ages having dramatically increased risk of developing such disorders.

Kennedy and Prock (2018) additionally point out that many types of violence imbue survivors not only with increased risk of emotional distress labeled as mental illness later in life, but carry with them a strong sense of stigma and shame related to the trauma itself. The stigmatization experienced by female survivors of sexual assault, childhood abuse, and intimate partner violence plays a significant role in their ability to seek help and regain lost autonomy. Survivors often fear disclosure and meet with blame, disbelief and rejection not only from family and friends but in many instances from care providers and law enforcement. Such experiences are sometimes called the 'second rape' or 'secondary victimization' (Kennedy & Prock, 2018) and exacerbate development of Post Traumatic Stress Disorder (PTSD). They pose a serious hinderance to further help-seeking. Women who have experienced Intimate Partner Violence (IPV) face stigma due to societal beliefs that victims of IPV are weak and choose to remain in abusive relationships, as well as that they provoke their own abuse (Overstreet & Quinn, 2013). Thus, much recent literature supports the supposition that structural violence plays a strong role in contributing to high rates of anxiety and depression in women, and also that stigmatization stemming from victimization itself is a barrier to help-seeking and healing for many women.

Addressing the intermediate factors in the framework, it is clear that intersectional experiences of stigma and multiple oppressions differentially impact different groups of American women. African American women deal with multiple levels of structural violence including experiences of

racism and gendered racism. These factors are associated with a higher risk for depression, especially for populations with lower socioeconomic status who face even greater risks of gender and race-based violence (Carr et al., 2014). The longstanding existence of institutionalized racism leading to lack of economic opportunity, educational opportunities, and limited health services leads to additional barriers to care, especially in the rural south. Stigma against mental illness in the African American community and cultural mistrust of healthcare providers due to historical experiences of oppression have also been linked to underutilization of mental health care services amongst African American women even though rates of depression and anxiety are high in the population (Gaunt et al., 2018). Ward et al. (2013) reported high rates of mental illness stigma in the African American community and found that a majority of African Americans view help-seeking for mental illness as a sign of personal weakness.

Additional barriers to care and support also affect other ethnic minorities in the United States, immigrants, those of low socioeconomic status, and populations living in rural areas. There is a high prevalence of suicide and depression among Asian American women, yet utilization of mental health care in this community remains low. Augsberger et al., (2015) found that Asian American women are a particularly high-risk population but are reluctant to seek help because stigma is an especially strong factor for this population group and women fear bringing public shame on the family. In this context women are often discouraged from seeking care by unsupportive families because the community regards mental health care as taboo. Immigrants face large disparities in access to care due to cultural stigma and structural barriers such as cost, lacking transportation or insurance, language barriers, and fears of having immigration status exposed (Derr, 2016).

Poverty is additionally associate with increased exposure to violence, economic strains, family strain, and many other stressors that put women at higher risk of anxiety and depression. Since African Americans and other non-white ethnic groups as well as immigrants have higher rates of poverty as well as exposure to possible racial discrimination, they often carry multiple, intersecting risk factors as well as face additional barriers to care. In the context of the United States, the high cost of health care of all kinds is a significant barrier. This is especially true when dealing with mental health, which is often not covered even for those who do have insurance. Many low-income mothers face the fear of losing custody of their children should they be labeled mentally ill as this may indicate an unstable and unfit mother (Santiago et al., 2012) and may also face barriers to stable housing and employment (Brohan et al., 2012). In rural communities, these barriers are often further exacerbated by a lack of adequate access to providers and services for mental health care (El-Amin et al., 2018).

It is also well-established that people of all backgrounds face various forms of stigma when labeled with mental illness. Socially constructed stereotypes of the mentally ill may associate them with dangerousness, incompetence, or weakness. Although in some cases friend and family support networks can be instrumental in promoting help-seeking and recovery, often they also deliver unsupportive and stigmatizing messages. Fernandez Y-Garcia et al., (2012) reported that patients felt harmfully labeled by family members due to their depressive symptoms. The study reported patients' experiences of being judged negatively by family members, blamed for their symptoms, and told they should be able to "just get over it." Participants in the study also reported being shunned or rejected from social networks (Fernandez Y-Garcia et al., 2012).

The rejection, discrimination, and prejudice often experienced by those labeled mentally ill is defined as public stigma. Individuals who come to endorse and internalize these negative views of themselves experience self-stigma, which is usually associated with a loss of agency. Those who self-stigmatize may believe that they themselves are the problem and that they are wholly defined by mental illness. Believing themselves to be unworthy and incapable of such things as holding a good job or living independently, they experience what Corrigan and Rao (2012) term the 'why try' effect, which blocks agency and self esteem and prevents the accomplishment of life goals. Many studies have shown how a stigmatized identity can become central to the self, inflicting additional harm as negative stereotypes related to the labeling of their condition become a part of self-identification (Marcussen et al., 2017).

#### DISCUSSION

The findings identified many factors that affect social constructs of American women with depression and anxiety disorders and shed light on how social constructs can act as a barrier to care and treatment. These factors include negative societal stereotypes of mental illness, additional stigma associated with traumatic experiences such as rape and intimate partner violence, and intersectional, overlapping oppressions and stressors experienced by low income and ethnic minority women. In the United States, pharmaceutical companies also play a significant role in formulating social constructs regarding mental illness through direct-to-consumer advertising of psychopharmaceutical medications (Schoefield et al., 2015). The purely biomedical construct of mental illness as a brain-based disease or chemical imbalance is incomplete and fails to recognize the totality of women's experiences and needs. In the US, neuroscience is widely believed in the popular culture to have a monopoly on the 'truth' about mental illness, when in reality this truth is socially constructed and is not objective fact, as the science is contentious. It seems more likely that some types of chronic emotional distress that are currently medicalized have both a social and biological basis (Greenslit, 2012).

There are important challenges to the biomedical model. The disease-oriented conceptualization locates the problem only within the individual mind, constructing women themselves as the problem and treating the effects of systemic injustice mostly with pills, and not the root causes of structural violence and multiple oppressions. Fullagar and O'Brian (2012) strongly criticized this construct, saying that it decontextualizes women's suffering and does not recognize women's lived realities, knowledge, and experiences of the external world but instead locates the problem in the neurochemically deficient self alone. Thoits (1985) explored the role of emotional deviance in self-labeling of mental illness. This theory competes with the biomedical approach constructing mental illness as a social norm violation. Human beings are socialized to accept certain emotions as appropriate in certain situations. Violations of feeling norms can be interpreted as deviant and labeled as mental illness, thereby emphasizing the role of social context in constructing mental illness.

The modified labeling theory proposed by Link et al. (1980) situations mental illness as a socially constructed process situated within a social context. Building on Scheffs groundbreaking Labeling Theory of 1966, Link et al. proposed a Modified Labeling Theory. This is a theory wherein a person, once labeled, is subjected to particular responses and expectations from others. As the behavior of that individual conforms to the expectations set by others based on the label it becomes an internalized role or identity, resulting in chronic mental illness as the person who has internalized the negative label becomes vulnerable to future episodes of disorder.

Horowitz (2012) gave a thorough critique of DSM diagnostic criteria and methods, saying that they only claim to reflect 'natural' underlying pathologies that are in fact socially constructed. He argues that attributions of mental illness are largely due to cultural norms and values as well as political and economic power influences. According to this critique the current model keeps power in the hands of healthcare providers and enhances profits for large pharmaceutical companies. Horowitz argues that the DSM definitions, "pervasively confuse problematic but natural human emotions which develop in response to stress with mental disorders" (Horowitz, 2012). McCann (2012) offers a similar critique of the biomedical model, saying that though it claims to be value-neutral, positivism claims a monopoly on the 'truth' about mental illness that ignores the socially constructed nature of some components of the phenomenon.

## CONCLUSION

By re-arranging the underlying causes, intermediate factors, and outcomes in figure 2.0, one can see a how experiences contextualized in the complex social word can lead to a cycle of healing or a cycle of additional harm:



This framework proposed in this research does not entirely deny the possibility of a biological predisposition underlying depression or anxiety, but it includes multiple psychosocial factors that interact to lead to positive and negative outcomes. This framework attempts to problematize the dominant biopharmaceutical approach to treatment of mental illness, which results in the obscuration of the lived experiences in women's lives that lead to emotional distress, then labels that emotional distress as a disorder stemming from within the individual, decontextualized from the outside world. This results in a treatment approach that addresses the effects of trauma, mostly with medication, and ignores its root causes.

Care and medical support services for women experiencing anxiety and depression should recognize that women's suffering is real, but also construct them not as hopeless victims or sickly, chemically deficient selves but rather as women who can heal and regain their autonomy and self-determination. Mental health should problematize its dominant approach and shift the emphasis on enabling women first to accept that their anxiety or depression may be a response to what they have lived, and from there to regain their sense of empowerment. Current labels influence the health system to medicalize women who demonstrate symptoms of emotional distress and respond with medication. Medication can be helpful for some women, but it should not be the only option. It is necessary to place greater emphasis on addressing the root causes as well as the stigma and self-stigma of mental illness to help women move from the cycle of trauma into the cycle of healing. Continued support is needed to help them stay there.

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## Human Rights Violations and Global Health Consequences of the Italian Anti-Immigration Policies from 2002 to 2018

#### **Marco Angelo**

Maastricht University, P.O. Box 616 6200 MD Maastricht, The Netherlands E-mail: marco.angelo89@gmail.com

### ABSTRACT

The recent escalation of far right parties in European governments is modifying the immigration policies across the continent. One example is the newly elected Italian government, led by the farright party "The League", which built its popularity on anti-immigrant propaganda. However, the implementation of laws and policies aimed at the restriction of migration is not an exclusive characteristic of the lastly-elected government. From the Bossi-Fini law, written by the Berlusconi government in 2002, Italian legislation has seen an anti-immigration turn in the last twenty years. These attempts of restricting the flow of migrants were purchased by different governments, regardless of their political orientation. In the following article, the consequences on health equity and human rights of these anti-immigration policies will be evaluated and framed in the international context. It is important to understand how these policies impacted Health Equity and Human Rights, especially in consideration of the recent political changes in the EU. The Bossi-Fini (2002) law restricted the migrant requirements to obtain a regular permit to work and live in Italy, increasing the likeliness of irregular migration, which limited the migrant access to health care. Moreover, following the immigration crisis, in 2016 an international agreement was stipulated between the Libyan and the Italian government to enforce the borders, which led to several Human Rights violations. Finally, the Security Decree (2018) cancelled humanitarian-based asylum protection. We conclude that anti-immigration policies impacted negatively on Health Equity and Human Rights.

## **INTRODUCTION**

The recent escalation of far-right parties in European governments is modifying the immigration policies across the continent, provoking and fostering an anti-immigrant sentiment across the European Union. One such example is the newly elected Italian government, led by the far-right party The League, which built its popularity on anti-immigrant propaganda (Wirz et al., 2018).

Being one of the southernmost countries in the European Union, geographically close to the coasts of North Africa, Italy has always been the first destination for many irregular migrants from the African continent. These migrants, mostly from Sub-Saharan Africa, arrive to Libya after crossing the desert. Once there, through a network of human smugglers, they leave the Libyan coasts on overcrowded boats in precarious conditions. This trip exposes the migrants to severe risks, such as dehydration, burns, and drowning. After the perilous travel through the sea, they reach the isle of Lampedusa, part of the Italian territory, where they seek asylum. This phenomenon has been occurring for more than 20 years (Coluccello & Massey, 2007), and dramatically increased after 2012, causing international concern and mass media visibility, ultimately leading to the escalation of the far-right populist party The League, which is now leading the government. Attempts to restrict the flow of migrants, however, have been pursued by Italian governments since 2002, regardless of their political orientation, and implied numerous consequences on health equity and human rights (Salgado & Stavrakakis, 2018).

#### **AIM OF THE STUDY**

From a Global Health perspective, it is important to evaluate how immigration policies impact Health Equity and Human Rights. Evaluating the impact of anti-immigration policies is particularly relevant in consideration of the recent changes in European politics, and the consequent shift towards and a policy of border protection. Through the case-study of Italy, we aim to evaluate the consequences on health equity and human rights of anti-immigration policies. The national policies will be framed in the international context, highlighting the role of the economic crisis, the austerity policies and the European Union. The leading research questions of the study are: how did Italian immigration policies impact Health Equity and Human Rights from 2002 to 2018? How did the international context influence these policies?

## METHODOLOGY

The consequences of these policies were discovered through a literature review of scholarly articles, using the key search terms of immigration, policy, Italy, health access, and Human Rights. The software utilized for the research was Google Scholar. Articles were selected in accordance with the following inclusion criteria: relevance to the topic and age of material. Effects on health equity and Human Rights were evaluated by conformity to International Organization for Migration (IOM) guidelines and the European Convention on Human Rights (ECHR).

## FINDINGS

## 1. The Bossi-Fini Law (2002)

The current main norm that regulates immigration is the law n. 189 from 2002, better known as the Bossi-Fini law, implemented by the Berlusconi government in 2002. The law established that the demand of a residence permit was conditional to employment in Italy, and should be pursued from the country of origin. It also increased the penalty of imprisonment on breaching orders to leave the country, and restricted the possibility of residence permits, which was conditional to the maintenance of the employment (Akkerman, 2012; Castelli, 2003).

However, the law itself made the legal condition of the existing migrants more precarious. Furthermore, some researchers argued that the law ultimately increased the flow of irregular migration, as it made it very difficult to obtain a permit to migrate regularly to Italy (Algostino, 2019; Colucci, 2018). The increase of irregular migrants increased health inequity, as undocumented migrants in Italy cannot access the healthcare system, apart from emergency care (Calavita, 2005). The status of undocumented migrant also influences the health seeking behaviour of the person, who typically seek health care only when he cannot avoid it (Brindicci et al., 2015).

## 2. The pact with Libya (2017)

Between 2012 and 2017, a drastic increment of immigration from Sub-Saharan to the southernmost coasts of Italy, particularly Lampedusa and other minor islands, has been observed. The situation has been defined by the government opposition as the "migrant crisis". The government, led from a centre-left coalition with the Democratic Party being the main political force, was pressed from the increasing malcontent of the population, the critics from the media and the opposition, who asked to reject the migrants (Dessì & Olmastroni, 2017; Fillmore, 2016).

A solution for the crisis was found by the Minister of the Internal Affairs, Marco Minniti, who stipulated a pact with the Libyan government in June 2017. The pact included: the enforcement of Libyan borders, with tighter controls by the Coast Guard; the detention of the irregular migrants in specific detention camps, until their repatriation; and the financing of these operations by the Italian government. The pact caused an immediate effect on the flow of migrants, which was reduced consistently (Felsen, 2018; Micallef & Reitano, 2017).

Soon after the implementation of the pact, however, investigations from Amnesty International and the Human Rights Watch found out that numerous Human Rights violations were perpetrated in these camps. The migrants were constrained to live in overcrowded camps with one meal per day, in poor hygienic conditions. They were also subjected to forced labour, sexual abuse, tortures and beatings (Pascale, 2019). Whereas it is likely that, when the pact was made, the Italian government was not aware of the Human Rights violations perpetrated in the camps, it is also undeniable that the government did not change the terms of the Italian-Libyan agreement after these violation were found out (Albahari, 2017; Mancini, 2018)

## 3. International Context

The immigration crisis needs to be framed in the international context, as many factors influenced the implementation of the pact with Libya. The two main factor that were identified were the economic crisis and the implementation of the austerity measures, and the debate around the Dublin Regulation.

The immigration crisis (2009-2013) in Italy coincided with the immigration crisis. The economic crisis has been accompanied by a set of austerity measures, implemented by the Berlusconi government (2011), the Monti government (2011-2012), and the Renzi. These measures took place under the pressure of the EU, and were explicitly dictated by the European Central Bank, which sent a letter to the government stressing the need to take urgent action on fiscal consolidation, reform of pensions, liberalisation of services, privatisation public services and expansion of labour market flexibility (Culpepper, 2014; Verney & Bosco, 2013). It has been noted how the economic crisis and the application of austerity measures increased anti-immigration

sentiment as well as hindered the migrant's access to healthcare, in Italy as well as other European countries (Carastathis, 2015; Carney, 2017; Legido-Quigley et al., 2013; Vasilopoulou, Halikiopoulou, & Exadaktylos, 2014).

The Dublin regulation is a cluster of norms that determines which EU Member State is responsible for the examination of an application for asylum. The regulation was first written in 1990, and revised in 2006 and 2013. The law established the principle that the member state responsible for the application of asylum is the one where the asylum seeker arrives first.

The Dublin Regulations allowed the EU to refuse the requests from the Italian government to relocate part of the asylum seekers in other EU countries, as this was not in the other countries' best interest (Brekke & Brochmann, 2015). It has been argued that the Dublin Regulation have been used as an excuse from the other countries not to deal with the refugee crisis, leaving southern European countries (specifically Italy and Greece) to deal with that (Barslund & Ludolph, 2017).

When the pact between Italy and Libya was stipulated, despite initial critiques by some members states, the European Union eventuallysupported the enforcement of the Libyan borders. As this solution solved the migrant crisis effectively and without a violation of the Dublin Regulations, it was accepted by the EU council and even partially financed by the EU. This led the UN Human Rights commissioner Zeid Raad Al Hussein to accuse the EU of violation of Human Rights in November 2018 (Human Rights Watch, 2019).

## 4. The Security Decree (2018)

The last norm to discuss is the Decree-Law 113/2018, also known as the "Security and Immigration Decree", implemented by the Conte government in 2018 (Dante & Falco, 2018). The main promoter of the law was the Minister of the Internal Affairs Matteo Salvini, leader of the farright party The League, one of the two parties leading the current government.

The norm attracted the international attention because cancelled asylum protection on humanitarian grounds, restricting it to only a few cases (to people holding civil merits, to victims of exploitation and domestic abuses, and for health issues). Humanitarian-based protection had been previously used as a legislative tool to grant temporary visas to migrants when there are no other legal conditions for conceding the refugee status or the international protection. According to the Institute for the Study of International Politics, this change of regulation will increase the number of irregular migrants of at least 140.000 in the next two years, as humanitarian-based protection consist in approximately 25% of the asylum requests (Villa, 2018). Furthermore, the cancellation of Humanitarian-based protection opened a debate about the legality of this decree, as it might violate the international law on refugees (Dante & Falco, 2018).

## 5. The closure of the ports (2018-2019)

The current Italian government has been object of political debate within the EU for the decision, declared in June 2010 from the Interior Minister and Deputy Prime Minister Matteo Salvini, to close the ports to NGO ships and foreign-flagged merchant vessels carrying migrants.

Different NGOs operated in the Mediterranean sea since 2012, as many of the human-smuggling ships are subjected to shipwreck. The NGOs provided aid for the shipwreck victims, and carried them to the Italian coasts. Since 2016, these NGOs have been object of widespread criticism from

far-right politicians, being accused to act as a pull factor for migration and to facilitated human smuggling, and to ultimately be responsible for the increase in migrant arrivals. The closure of the ports to NGO ships was one of the main points of Mr. Salvini when he was part of the opposition. When he came to power, his decision to close the ports was widely critiqued from the EU and the civil society, and a debate arose about the legality of this decision (Cusumano & Gombeer, 2018). It has been argued that impeding the disembarkation of the migrants violates the norms of the ECHR, as it may affect the right to life, the prohibition of inhumane treatment and the prohibition of refoulement for those on board (Moreno-Lax, 2017). According to the literature another direct violation of the ECHR, specifically the prohibition on torture and illtreatment enshrined in Article 3, as the military personnel transports migrants back to Libyan territory, where they are subjected to Human Rights violations, as previously explained (Mancini, 2018).

## CONCLUSION

The article tried to frame the complex issue of immigration control in Italy. The implementation of anti-immigration policies, besides the moral and humanitarian implications, led to numerous violations of Human Rights, and negatively impacted the Right to Health of the migrants. However, the implementation of these policies and the rise of nationalist sentiment where deeply influenced by the international context, the economic crisis and the lack of support from the European Union for the immigration crisis.

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# Social factors contributing to stigmatisation of mental health in Sub Saharan Africa (SSA)

#### Kudzai Sharon Muchena

Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: kudzai.m@fph.tu.ac.th

## ABSTRACT

Mental health holds a huge burden of disease. In Africa, it accounts for up to 10% of the total burden of disease. Despite this burden, less than 10% of the population in SSA is able to access mental health services. Several factors contribute to this lack of access and utilisation of mental health services. A systematic literature review of articles from 2012 to 2017 was conducted using PubMed and Google Scholar for the key words: Stigma, Mental health, Barriers. Twenty-two full text articles were identified, of which, 13 had specific relevance to SSA. The findings showed that barriers to mental health in Africa were mostly caused by cultural beliefs, mental health illiteracy, inadequate funding, shortage of trained mental health practitioners, exclusion of mental health from primary health care, low research evidence and a lack of mental health policies. Low mental health literacy and lack of research evidence consistently relegates mental health to a low priority by poorly informed health policy makers. Fund allocations remain low as decision makers remain unaware of the impact of mental health on the national burden of disease. A lack of funding limits the provision of professional mental health services, increases the beliefs that mental health is untreatable and increases dependence on traditional healers.

### Abbreviations

*PLWMI- people living with mental illness SSA- Sub Saharan Africa* 

#### **INTRODUCTION**

Mental health problems are on the increase in SSA, carrying up to 10 % of the burden of disease. The most common of the diseases being depression, schizophrenia and substance abuse, with unipolar depressive disorder holding 4.3% of all DALYS and being the third leading cause of disease burden in the world (Ferrari et al., 2013). Africa is greatly affected, with almost 90 % of the total population in need of but without access to mental health services (Schneider et al 2016). The global annual rate of people who visit mental health facilities is 1051 per 100,000, in Africa it is 14 per 100,000 (Sankoh et al., 2018). The Africa Policy Review (2017/18) postulates that the proportion of people who suffer mental illness without getting treatment in South Africa is about 75%, ranging around 90% in both Nigeria and Ethiopia. In Sierra Leone, the proportion of those who need mental health services but without access to the treatment goes up to 98.8% (Sankoh et al., 2018).

In some cases, the medical help might not be available making access to mental health care difficult in SSA. People can go for years without accessing services for mental health. Several factors give room for the lack in access to and utilisation of mental health services in SSA. These include issues of stigma and discrimination. People suffering from mental health problems and their families usually suffer rejection, marginalisation and are socially excluded by society including by core workers and mental health practitioners. This reduces their self-esteem and reduces their potential for growth and ability to access medical help. The effects of public stigma inhibit people living with mental illness (PLWMI) from seeking help and act as barriers to access and utilisation of mental health services (Sweetland, 2014).

#### **RESEARCH PURPOSE**

To explore the social factors which create barriers to access to and utilisation of mental health services in SSA.

#### **METHODOLOGY**

#### **Inclusion criteria**

The researcher used 2012- 2018 articles. All literature search included Sub Saharan Africa. It included free and full text articles from PubMed. Articles which had information related to the research question and strings were selected after going through the abstracts. The researcher looked at information related to mental health services, causes of stigma and barriers to mental health. Forty-three articles remained after filtering abstracts for duplication and relevance, leaving 22 full text articles of which 13 had specific relevance to SSA.

### **Exclusion criteria**

All literature sources before 2012 were excluded from the research. Sources which did not include information from SSA were excluded from the search.

#### FINDINGS AND DISCUSSION

#### **Cultural beliefs and perceptions**

A lot of cultures in SSA still hold notions that mental illness is caused by demons or ancestral spirits with most reliance for treatment being on traditional healers. Twenty percent to 85 % of people in Africa first seek help from a traditional healer or at the same time as professional medical care (Monteiro 2015). Dako-Gyeke (2013) postulates that most Ghanaians lack

confidence in orthodox psychiatric services relying more on herbal preparations from traditional healers.

Traditional beliefs and perceptions mostly stem from lack of knowledge on how to assist a person with a mental disorder and from where to seek help. Most people in SSA are not aware that medical help can treat mental disorders. This increases dependence on traditional and spiritual practices and therefore reduces the reliance on formal mental health services and acts as a barrier to access and utilisation of mental health services.

## Mental health illiteracy

Mental health illiteracy is a major cause of stigma preventing people from accessing and using mental health services in SSA. There is very little knowledge regarding mental health in the general public. Such knowledge is still very poor. Knowledge on the causes, symptoms, sources of mental health care, and on the treatment of mental illness is still lacking (Atilola 2016). A South African study revealed that in people suffering from mood and anxiety disorders, participants had to wait a period of 3-5 years before they would look for help because of not knowing where to go or what had afflicted them. Families in some cases hid their ill relatives suffering from mental illness because they did not know how to help them and were also embarrassed about their relatives. Lack of mental health knowledge inhibits people from accessing mental health services as they are not aware of how to assist PLWMI (Monteiro, 2015).

Low mental health literacy results in a lack of public awareness of mental health and therefore relegates mental health to a low priority by health decision makers and policy makers. This explains the low funding of mental health because these decision makers are not cognisant of the impact of mental health on the global or national burden of disease. A lack of mental health literacy accompanied by a lack of research and evidence on mental health further widens the gap of lack of knowledge and health literacy.

## Low government spending on mental health

Most countries in Africa spend less than 1% of health budgets on mental health care (Monteiro 2015). There is a shortage of medication due to less funds being channelled to mental health. Lack of funding on mental health issues acts as a barrier to full access of mental health services and hence reinforces the stigma associated with mental health due to lack of medical treatment. Lack of funding affects recruitment of appropriate human resources and affects service provision. Untreated mental health problems in the population increase stigmatisation. According to Monteiro (2015), about a quarter of the countries in SSA hardly provide basic medication such as antidepressants in primary health care centres and this prevents utilisation of mental health services.

## Lack of research in mental health

Africa has a very limited research infrastructure. The lack of research in Africa accounts for the lack of accurate information on mental health (Schneider 2016). Research in Mozambique shows that there is little evidence based knowledge on mental health that could give mental health insight to policy and decision makers. A lack of research from individuals and communities in Africa acts as a barrier to the knowledge on mental health in Africa and hence enhances stigma due to a lack of information. Without research evidence on epidemiological data of mental illness, policy makers and decision makers remain unaware of the burden of disease that mental health

carries in their nations, which acts as a barrier to understanding the need to increase funding. As a result, mental health services remain underfunded, giving room for poor mental health services.

## Integration of mental health care into primary health care

Primary health care centres are the first line of help or contact for people when they feel unwell. It is important, therefore, that they are within easy reach of all families. However, most mental health facilities in SSA are still centralised (Atilola 2016). Services are found at district level and rarely in the rural areas. The time and cost it takes for someone to locate a mental health institution acts as a barrier to accessing mental health services. This increases the degree of illness, making these people more vulnerable to stigma; it increases the public reliance on traditional healers who are within people's reach. The same effect is seen from ths shortage of mental health workers in primary health care settings; a further decrease in utilisation of PHC servicds leading to greater reliance on traditional healers.

## Lack of policies

Findings reveal that almost half of the countries in Sub Saharan Africa lack clear policies on mental health (Monteiro 2015). A lack of these policies means a nation has no guidance on how to treat any matters arising from mental health related issues. It acts as a barrier to access and utilisation of mental health services. Where there is no governance in any area, structures and plans for implementing services and training health workers will not stand and PLWMI are bound to suffer lack of access to services including medication and treatment. The presence of mental health policies reduces stigmatisation as they provide advocacy for mental health issues, giving a voice to people's legitimate mental health problems and enabling mental health issues to be embraced by the public. Appropriate policies could institutionalize and incorporate mental health into all health issues and result in acceptance and reduction of the knowledge gap and eventually reduce discrimination against people suffering from mental illness.

## Shortage of mental health professionals

There is a great shortage of mental health professionals in SSA (Sweetland, 2014). Most SSA countries lack trained mental health care staff that are fully equipped to provide appropriate mental health care. A study carried out in Ethiopia found out that in one of the districts (i.e., Butajira district) mental health services were unavailable in the District Health Centre until 2001 when the hospital received 2 psychiatric nurses. The situation was the same in some parts of Nigeria, with PLWMI mostly relying on family and community support, having never received professional treatment (Chidarikire, 2018). Unavailability and lack of mental health practitioners reduced utilisation of mental health services as there is no guaranteed mental health assistance for those in need of care.

## Lack of human rights legislative laws

A lack of implementation of legislative laws protecting PLWMI and supporting their wellbeing paves the way to abuse and violation of their human rights and therefore exposes them to stigma. For example, in most psychiatric hospitals in some parts of Africa, patients are still kept in chains with several forms of abuse and neglect reported (Monteiro, 2015). If human rights laws were being valued in SSA, it is likely that such stigma would not be seen. In some places, PLWMI are seen as witches and, rather than being taken to mental health services, they are usually ridiculed or stoned because of the fear of witchcraft. (Mkhonto et al., 2017).Several laws, documents and conventions are there which protect PLWMI. Even in areas where laws are available, most African

nations do not value or consider these conventions. Generally, there is a lack of respect for individual rights of patients. Throughout Africa, boundaries between individuals and groups are weak and as a result there is very little respect for individual or group concerns. Poor respect for individuals will inhibit even relatives from taking the mentally ill to seek help.

### CONCLUSION

The contributing factors acting as barriers to access and utilisation of mental health are interrelated. Mental health illiteracy plays a major role in inhibiting access to mental health services as the public lacks knowledge on mental health. Lack of knowledge and research evidence on mental health has caused policy makers and decision makers to give less priority to mental health issues. Low budget allocations have also been the result of a lack of knowledge and inadequate research evidence on the prevalence and burden of disease carried by mental disorders. There is a lack of prioritisation of mental health issues being seen through a lack and implementation of policies, yet policies are an essential component in establishing the agenda for arranging and delivering mental health services. Limited allocation to mental health services increases the belief that mental illness is untreatable and further causes beliefs in traditional health services. The above factors will continue to act as barriers to utilisation and access to mental health care and health services. However, if mental health services could be integrated into primary health care and health promotion is done, people could become aware about mental health and services.

Collaborating with various gate keepers in communities (e.g., tribal chiefs) and taking para professionals as partners in health promotion to promote mental health awareness could reduce the knowledge gap on mental health, and increase access to and utilisation of mental health services in SSA.

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# A Predictive Model for Dengue Cases in Southern Lam Dong Province, Vietnam, 2007-2017

An Dao Thien Nguyen <sup>1</sup>, Uraiwan Kositanont <sup>1</sup>, Soawapak Hinjoy <sup>2</sup> and Sopon Lamsirithaworn <sup>2</sup>

 <sup>1</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Khlong 1, Khlong Luang, Pathumthani, Thailand 12121 E-mail: ndthienan1357@gmail.com
 <sup>2</sup> Department of Disease Control, Ministry of Public Health, 88/21 Tiwanon Rd. Talard-Kwan, Nonthaburi, Thailand 11000 E-mail: soapawak@gmail.com

## ABSTRACT

**Background:** Dengue is an arthropod-borne disease and one of the major causes of morbidity and fatality in the Western Pacific Region. Climate is considered one of the main factors for dengue transmission. Objective of the study is to determine correlations between climatic factors and dengue, using reported cases in southern Lam Dong Province, Vietnam, 2007-2017 and to validate the predictive model for number of dengue cases in 2017 using data from 2007 to 2016.

**Methodology:** This was a retrospective quantitative study. Spearman's Rank test was used to examine the correlation between each climatic factor and dengue reported cases. Seasonal Autoregressive Integrated Moving Average (SARIMA) model using data from 2007 to 2016, was applied to predict dengue cases during 2017. Data analysis was done using Excel and SPSS version 16.

**Results:** There were significant correlations between dengue cases and climatic factors, consisting of minimum temperature (r = 0.384, p < 0.01) and relative humidity (r = 0.372, p < 0.01). The SARIMA (1, 2, 1) x (1, 1, 1) 12 model at lag 1 month was the best fitted model for predicting dengue cases.

**Conclusion:** Predicted cases from time series model would be imperative for controlling and preventing the occurrence of dengue epidemics in the community.

#### **INTRODUCTION**

Dengue is a vector-borne disease and one of the primary public health problems in Vietnam and other tropical and subtropical countries (WHO, 2009, pp. 4-10). This is the most rapidly transmitting arthropod-borne viral disease in the world. The prevalence of dengue fever has increased steadily 30 times between 1960-2010 and continues to spread into other regions (WHO, 2009, p. 3). Between 2001 and 2008, the highest numbers of dengue morbidity and mortality was found in four nations in Western Pacific Region, including Vietnam (WHO, 2009, p. 6). According to Vietnam Ministry of Health, 43,000 cases were recorded in 53 Provinces, with 28 deaths in Vietnam (Vo et al., 2017, p. 67). Dengue is a year-round disease in Vietnam, but usually increases from June to November. In 2013, 66,000 dengue cases and 42 deaths have been reported. Over 85% of dengue cases and 90% of deaths occur in the southern provinces of Vietnam (WHO, 2018).

There is a wide range of risk factors inherent in the dengue cycle and dengue epidemic such as social-economic status of community, susceptibility of different groups, and ambient environmental conditions. Climate is believed to be one of the main factors affecting dengue transmission (Morin et al., 2013, pp. 1267-1270). Temperature, rainfall, and relative humidity are often used in statistical analysis to evaluate the association between dengue and weather factors, and to build the prediction model for dengue infection in some areas of the world (Gharbi et al., 2011, pp. 1-13; P. Guo et al., 2017, pp. 1-15). Several former studies assessed the association between dengue occurrence and climate factors in Southeast Asian countries (P. T. Nguyen et al., 2016, pp. 55-63; Vu et al., 2014, pp. 22-33). The correlation between dengue cases and climatic factors is specific for site and fluctuates within nations, regions or even within a Province (Arcari et al., 2007, pp. 254-269; Vu et al., 2014, pp. 28-32).

The association between climate and dengue was found in a study in Can Tho city, Vietnam but focused only on the hospitalized cases (P. T. Nguyen et al., 2016, pp. 55-63). Being aware of prevention is better than treatment, therefore this study aims to determine the correlation between dengue cases and climatic factors in order to create a dengue prediction model which would be useful for preparing against increasing dengue cases in a timely way based on local climate data.

#### **METHODOLOGY**

### Study area

Southern Lam Dong Province (latitude 11°38′31″ N and longitudes 108°26′0″ E) consists of five districts and one city. The area is in the tropical climate area with monsoon. The altitude varies from 400 meters to 1000 meters above sea level. There are two seasons in a year; dry season (December to April next year) and rainy season (May to November). The annual average temperature varies from 16.6 degree Celsius to 27.4 degree Celsius, the precipitation ranges from 2,500mm to 3,000mm and the humidity is normally above 80%. The population were 600,408 (in 2014) (T. C. Nguyen, 2015, pp. 23-46). These areas are composed of a variety of ethnic groups such as Kinh, K'ho, Tay, and Nung. The industry in southern Lam Dong includes tea, coffee production, textile manufacture and mining. This area was chosen to study because of similar characteristics in climatic condition and a high number of dengue cases which represented the whole area.



Figure 1: Southern Lam Dong Province

## Data collection

This was a retrospective quantitative study. Daily dengue cases and annually population data were obtained from Lam Dong Preventive Medicine Center. Daily climatic data were obtained from the National Center for Hydro-meteorological Forecasting. Identified data from Jan 2007 to Dec 2017 were collected in the study.

## Data analysis

After collecting, daily dengue cases and daily climatic data were aggregated into monthly figures. Descriptive analysis was used to describe distribution of dengue cases. Spearman's Rank test was used to examine the correlation between each climatic factor and reported dengue cases.

Seasonal Autoregressive Integrated Moving Average (SARIMA) model was used to predict number of dengue cases in 2017. There is a wide range of potential confounders for annual dengue epidemics such as mosquito ecology, population density, population immunity and dengue cycle. Among these factors, population density was chosen to support the model.

The model SARIMA (p,d,q) x (P,D,Q)s, an extension of ARIMA model, composing of non-seasonal part and seasonal part with Auto-Regressive AR (p), (P); Integrated I (d), (D) and Moving Average MA (q), (Q), respectively. "s" is length of the seasonal period; s=7 if a daily data time series is in weekly cycle or s=12 if a daily data time series is in monthly cycle. In this study, s=12 was used for analyzing.

The SARIMA models were used with the Box – Jenkins method. The first step of the approach was to examine whether the observations were stationary or non-stationary. If non-stationary, an appropriate degree of differencing (d) and (D) was applied to convert the time series into stationary. Then Auto-correlation function (ACF) and Partial Auto-correlation function (PACF) were tested to determine applicable values of p or P and q or Q. Two types of sets in the series were established that involve training data (from January 2007 to December 2016) and validation data (in 2017) to perform data analysis effectively.

Different formulations of the AR and MA terms were modelled. The final model was selected based on data analysis, previous researches and judging three measures: the root of mean square

error (RMSE), the mean absolute percentage error (MAPE) and Normalized Bayesian Information Criterion (BIC) (Etebong, 2014, pp. 214-216). Models with lower of BIC, RMSE as well as higher MAPE and R-Square value were used for predicted values in the training as well as validation dataset. The Ljung – Box statistic was used to exam the appropriateness and sufficiency of the model (Ljung & Box, 1978, pp. 297-303).

All analyses were performed using Excel software, SPSS software version 16.0 and the level of significance was set at 1%.



## RESULTS Distribution of dengue cases and dengue incidence

Figure 2: Distribution of dengue cases by year in Southern Lam Dong Province, Vietnam, 2007-2017

3038 dengue cases were reported during the study period. The highest (n=260) and lowest (n=8) number of cases were recorded in 2016 and 2011, respectively. The extraordinary peak was observed in 2016, followed by a sharp decline in 2017. Within the 11-year study period, peaks in the number of cases were observed in the months of June and August and then there was declined steadily by December of the same year.

Table 1: Correlation of climatic factorial						
Climatic factors	Modian	Moon+S D	Corre	Correlation		
chillatic factors	Meulan	Mean_5.D	r	Р		
Minimum temperature (°C)	21.60	21.05 <u>+</u> 1.53	.384**	.000		
Maximum temperature (°C)	29.83	30.12 <u>+</u> 1.43	118	.177		
Average temperature (°C)	24.48	24.46 <u>+</u> 1.06	.160	.067		
Average rainfall (mm)	12.52	12.28 <u>+</u> 5.81	0.153	0.082		
Average relative humidity (%)	84.83	83.65 <u>+</u> 5.35	.372**	.000		
Extreme wind velocity (m/s)	2.18	$2.24 \pm 0.64$	210*	.016		

Correlation of climatic factors and dengue reported cases

As shown in table 1, daily temperature ranged from 21.60°C to 29.83°C, precipitation was 12.28±5.81mm and the daily relative humidity was 83.65±5.53% during the period 2007-2017. Besides, there was a significant correlation of climatic factors and monthly dengue reported cases, including monthly minimum temperature and average relative humidity (p<0.000).

## Predictive model for dengue reported cases

The life cycle of Aedes mosquito last from 4 days to 1 month, depending on the climatic statement. Based on immune system and virus types, incubation and infection of dengue virus in human blood last 10-12 days and 4-13 days, respectively (CDC, 2018; Rodenhuis-Zybert et al., 2010, pp. 2773-2786). Therefore, total time for life cycle of *Aedes* mosquito and dengue virus lasts from 18 days to 2 months. In this study, lag 1 and 2 months were chosen to build the predictive model using monthly climatic data.

		AR	IMA	1			Model Fit statistics			Liung-Box 0 (18)		
(	p,d,	q)x	(P,E	),Q)	12		mouel i it statistics			2,ung 200 Q (10)		
р	d	q	Р	D	Q	R- squared	RMSE	MAPE	Normalized BIC	Statistics	df	Sig.
La	ig 1	mo	nth									
1	2	1	1	1	1	.776	21.513	151.258	6.533	14.882	14	.386
La	ig 2	mo	nth	S								
1	2	1	1	1	1	.767	21.920	139.035	6.571	13.573	14	.482

Table 2: Model statistic using correlatively climatic variables

Table 2 shows model fit statistics and significant value in Ljung-box test for each SARIMA model. The best model was SARIMA  $(1, 2, 1) \times (1, 1, 1) 12$  at lag 1 month, which fitted with the conditions. There was no significant difference in the value of the Ljung-Box Statistic (p=0.386), with a value of 14.882 for 14 d.f, hence failing to reject the null hypothesis of white noise, which means the model has sufficiently matched the correlation in the time series. Moreover, the model was better as it has the low value of RMSE and BIC and the high value of the R-square.



Figure 3: Predicting monthly total dengue cases in 2017 by training data from 2007 to 2016 in Southern Lam Dong Province, Vietnam

Model SARIMA using correlative variables at lag 1 month was established. The results showed that SARIMA (1, 2, 1) x (1, 1, 1) 12 using monthly relative humidity at lag 1 month was the most fitted model with low value RMSE of 21.338, BIC value of 6.429 and high value R-Square of 0.775. Estimation by Ljung-Box test with Q=14.364, 14 and p-value of 0.423 shown no autocorrelation between residuals at different lag times. *d*<sub>*f*</sub>



## Figure 4: Predicted cases for dengue reported cases in Southern Lam Dong Province, 2017

Figure 4 shows the distribution of dengue cases in 2017, both for real cases and predicted cases. The real cases were lower than the predicted cases from February to September. The correlation between the real cases and predicted cases was relatively strong (r=0.680, p=0.015).

## DISCUSSION

The purpose of this retrospective quantitative study was to build a predictive model for dengue case load using climatic variables in southern Lam Dong Province, Vietnam. Via data of dengue reported cases from 2007 to 2017, prediction was not obvious from the annual epidemic cycle for dengue cases in southern Lam Dong Province. In this period, the highest number of cases occurred in 2016, accounting for nearly a half of total cases of the past 11 years.

Rainfall is an advantage factor for creating Aedes breeding sites. However, extended rainfall has a negative effect on breeding grounds as it washes away the larva and eggs (Lim et al., 2013, pp. 157-166). However, the combination of high temperature and rainfall contributes to the significant growth of mosquitoes (Pham et al., 2015, pp. 543-548). This was appropriate to this study when most cases of dengue occurred in the rainy season, from May to November, with the peak observed from June to August. This was similar to previous studies that were conducted in Southeast Asia including such countries as Vietnam, Thailand, and the Philippines (Campbell et al., 2013, pp. 1066-1080; Tran et al., 2018, pp. 532-541; Undurraga et al., 2017, pp. 887–898).

The correlation between climate factors and dengue cases was found in the monthly minimum temperature and relative humidity. In Can Tho city, it was demonstrated that there was a positive correlation between dengue hospitalization rates and humidity with a lag of one month (P. T. Nguyen et al., 2016, pp. 60-62). In Ho Chi Minh city, there is a positive association between relative humidity and a negative association between temperature and dengue incidence, but not for rainfall. In Ha Noi capital, rainfall and temperature were positively correlated with dengue incidence (Vu et al., 2014, pp. 25-33).

The model SARIMA  $(1, 2, 1) \times (1, 1, 1) 12$  was found to be the most effective model for monthly dengue cases. The results of the model indicated that the predictive values were higher than the real values. This may be associated with population immunity and the epidemic cycle of dengue (C. Guo et al., 2017, pp. 1-11; Perera & Perera, 2018, pp. 1-18).

## CONCLUSION

From this study, SARIMA models using minimum temperature and relative humidity was established. SARIMA  $(1, 2, 1) \times (1, 1, 1) 12$  model is an excellent prediction model for dengue cases in southern Lam Dong province, Vietnam. Further studies are suggested to combine climatic and non-climatic factors such as entomological, virological and anthropological factors in the predictive model for dengue cases.

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# Changing Ecology of Deadly Nipah Virus and the Pathways of Outbreak in Bangladesh

Khandakar Md Jakaria

Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: khandakar.j@fph.tu.ac.th

## ABSTRACT

**Background:** Nipah virus is an emerging zoonotic threat in South and South-east Asia that has the potential for global pandemic spread. The virus, primarily carried by Pteropus fruit bats, later gets transmitted to other animals including humans. After the first case was detected in 2001 in Western Bangladesh, outbreaks occurred nearly every year. The latest outbreak occurred in a northwestern village in Bangladesh in February 2019. The Nipah Virus epidemic epitomizes the triumvirate of human, animal and environment. This study analyzes possible anthropogenic pathways of disease transmission to identify key points for intervention and prevention.

**Methodology:** A thorough systematic literature review was conducted of articles published between 2006-2019 in Google Scholar, PubMed and other relevant contemporary sources such as newspaper articles and organization reports (IEDCR, WHO & CDC). The following search terms were used; Nipah virus outbreak, Bangladesh, and Climate change. Out of a total of 106 articles retrieved, 19 papers were included in the final review.

**Results:** A total of 303 human cases of NiV infection were reported in Bangladesh from 14 outbreaks until 2018 with a case fatality rate of 40-75%. The epidemic, driven by man-made ecological changes, gradually moved from the Western to the Northwestern pastoral region, mostly during drier seasons due to a traditional practice of drinking raw date palm sap believed contaminated by fruit bat secretions. Airborne transmission through infected droplets was suspected as cases of human-to-human transmission were reported, possibly due to recent extreme temperatures and drought in the area; a result of rapid urbanization and deforestation.

**Discussion:** The loss and disruption of natural habitats has forced the reservoir fruit bats to migrate to areas with closer proximity to humans. To mitigate the risk of transmission, enhanced focus on human and bat surveillance, improved lab detection facilities, regulation of deforestation, and rigorous environmental assessments of impact on human health and animal behavior of any major deforestation operations are necessary.

**Conclusions:** Ecological factors and cultural practices play a crucial role in recurrent outbreaks of the disease in Bangladesh. The nature of the disease draws attention to different spheres of health. Hence, use of the One Health approach that brings together experts from human, animal and environmental health could strengthen the regulatory capacity in the health system needed to prevent the disease. In addition, the approach could promote screening of the infected bats and awareness building among rural people to change cultural practice that increase exposure to the pathogen.

# **Challenges for Malaria Elimination in Nepal**

Saugat Shrestha

Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: saugat.s@fph.tu.ac.th

### ABSTRACT

**Background:** Malaria is a priority public health concern in Nepal with an estimated 47.9 % of the total population still residing in malaria endemic zones. Nepal has made significant progress in controlling transmission with a declining trend of disease, though with sporadic outbreaks. The malaria trend analysis between 2002 and 2016 showed a 92% reduction in malaria cases, moving Nepal closer to achieving its national malaria elimination goal by 2026.

**Research objective:** The paper aims to identify the gaps and challenges for Malaria elimination in Nepal.

**Methodology:** A systematic literature review identified 23 full text references for in-depth review and content analysis. Google Scholar, The Lancet, and PubMed were searched for relevant articles. Most selected articles were published since 2012 and specifically focused on Malaria. Articles that covered clinical epidemiology were excluded.

**Results:** Major contributing factors to reemerging malaria in Nepal are: a lack of proper health systems; the poverty status of the population living in endemic regions; and population mobility in relation to imported malaria cases. Coordination gaps between public and private service providers has resulted in underreporting of malaria cases. Correspondingly, effects of climate change is increasing malaria incidence at higher altitudes

**Conclusions:** Malaria is an old world disease, which is still endemic in developing countries like Nepal. Although it has stepped forward in achieving in eliminating malaria, simple neglected issues halt the elimination process.

## INTRODUCTION

Nepal is a landlocked country with complex geographical terrain and diverse topography. The southern belt of Nepal covers the plain terrain with a warmer climate zone favorable for vectorborne disease like Malaria. Consequently, it has a larger case-load over these southern regions (Annual Report, DoHS, 2016/17).

Prior to the antimalaria activities initiation in Nepal, the country had an estimated two million cases of malaria annually, leading to death in 10% of the cases. (Akhtar et al., 2009) In the past few decades, Nepal has made significant progress in controlling transmission of the disease leading to a declining trend of malaria with only a few outbreaks (Dhimal et al., 2014a). The micro-stratification program of Nepal conducted in 2012 estimated that 47.9 % of the total population still resided in malaria-endemic zones (Nepal Malaria Strategic Plan, 2014-2025). Forty-eight percent of the total population of Nepal was reported to be living in higher risk areas for Malaria among the total population of 27.8 million (UCSF, 2015). The malaria trend analysis between 2002 to 2016 showed that there had been a 92% reduction in malaria cases moving Nepal closer to achieving the goal for eliminating malaria by 2026.

Nepal has been identified as a potential country to reach the target of eliminating malaria (World Health Organization, 2016). Various efforts have been put forth with the support of foreign assistant partners. Nepal's malaria control program has been under high priority, which has also been integrated into the national health system in order to implement efficient and sustainable control of the disease (Rijal et al., 2018). This study aimed to identify the gaps and challenges for Malaria elimination in Nepal.

### METHODOLOGY

### **Data selection and Management**

A systematic literature review identified 23 full-text references for in-depth review and content analysis. Google Scholar, The Lancet, and PubMed were searched for relevant articles. Key search words included: "Nepal" AND "malaria" AND "reemergence" AND "elimination". Most selected articles were published since 2012 in English and specifically focused on Malaria. Two relevant articles have been included in the study which has been published before 2012. Articles that covered clinical epidemiology were excluded.

S.no	Criteria	Inclusive	Exclusive
1	Date	Year of publication i.e. 2012-2018	• Year of publication < Jan 2012
	(Year of		
	Publication)		
2	Structure of	<ul> <li>Articles with full text</li> </ul>	• Articles for which full text was
	literature		not available
3	Type of	<ul> <li>Type of Publication: Peer reviewed as</li> </ul>	<ul> <li>Articles under clinical</li> </ul>
	Publication	well as gray literature by reputable	epidemiology
		sources	<ul> <li>YouTube categories.</li> </ul>
		<ul> <li>Articles which were specifically focused</li> </ul>	(Most of the searches in
		on Malaria rather than focusing on NTDs	Lancet under 'web extra' had
		as a whole.	youtube category videos
			which has been excluded)

S.no	Criteria	Inclusive	Exclusive
4	Geographic	<ul> <li>Articles and reports that discussed</li> </ul>	-
	location of	Malaria in Nepal.	
	Study		
5	Selection of	<ul> <li>Reemergence of Malaria in Nepal;</li> </ul>	-
	literatures	Malaria trend in Nepal; health system	
	based on	governance; Nepal malaria control	
		program; Malaria elimination.	



Figure 1: Prisma flow diagram of literature review process.

## FINDINGS

Malaria surveillance dates back to the 1970s when 14,647 malaria cases were documented in Nepal. In 1985, 42,321 malaria cases were reported. Which has been the highest malaria caseload ever recorded in Nepal (Dhimal et al., 2014a). The malaria cases declined to 12,786 cases in 2002, and 1,009 cases in 2016 (Rijal et al., 2018). According to Epidemiology Disease and Control Division (EDCD), 1,189 confirmed malaria cases were documented across the country in 2018 with a majority of cases in the southern belt. The elimination process has been disrupted as a result of multiple factors identified as follows:

## 1. Malaria association with population density and mobility of Nepal

The southern Terai region of Nepal is a malaria endemic region despite economic growth as new industries and townships develop in these areas (Ohara et al., 2015). The economic development activities like plantations, deforestation, constructions of infrastructures, etc. of this region have brought non-immune people into these endemic areas. A higher incidence of malaria is evident in the areas bordering India, resulting from an influx of cases crossing the border with consequently high morbidity (Ohara et al., 2015). This has been an important example of the impact that population mobility along with increased border porosity can have on malaria transmission and international health (Smith, 2014). The neighboring country, India, has been documented as holding 89% of confirmed malaria cases in the year 2015 in the South East Asia Region (SEAR). This poses a significant risk to Nepal for the influx of malaria cases across the border (Panda et al., 2017). There has been a gradual increase in cases of imported malaria in Nepal since 2001 from 18% (1,185/6,408) of imported malaria cases to 50% (502/1,009) of imported malaria cases in 2016 (Rijal et al., 2018). According to the Nepal Malaria Strategic Plan report 2014-2025, a majority of Nepalese visit malaria-endemic states of India such as Assam, Maharashtra, Gujarat, etc., and contribute 30-34% of the imported cases upon returning in the labor force (Smith & Whittaker, 2014). The proportion of imported malaria cases increased from 18% to 50 % between 2001 and 2016. This has contributed to the resurgence of malaria cases in the country and altered the malaria elimination goal in Nepal (Rijal et al., 2018).

## 2. Effect of climate change in the pattern of malaria

Malaria is one of the sensitive diseases in relation to climate change. The rising malaria transmission is closely related to the interplay between temperature, rainfall, humidity and the developmental cycles of anopheles mosquitoes (Mohammadkhani et al., 2016). There have been many theories on whether anthropogenic climate change is aggravating the malaria occurrence in different regions, especially in high altitude areas where transmission has previously been limited by low temperature. Cases are being spotted in higher altitude regions of Nepal. Humla, one of the districts in the northern belt of the country, lies more than 3000m above sea level yet reported seven cases of Malaria in the year 2016 (DoHS, Annual Report, 2016-17). This surge in temperature as a result of climate change can lead to vector species spreading into a newer breeding habitats in mountainous regions.

## 3. Socio-economic determinants and malaria

Nepal is one of the poorest developing countries in SEAR with 83% of the population living in rural areas with a poor road access, insufficient job opportunities, and a growing problem of emigration (Awasthi et al., 2018). The distribution of disease has been closely followed in relation to socioeconomic variables, including the attitudes and knowledge of people towards malaria prevention and control in the endemic areas of Nepal. Approximatly 25% of the male population

and 43% of the female population are illiterate (CBS, Census report, 2012). The knowledge, behavior and practices of the population living in the malaria endemic areas have been higher than of those living in non-endemic areas even though only 2% of the former have demonstrated knowledge on the use of insecticide-impregnated bed-nets (Khanal et al., 2015). A study has shown only 41.9% (502/1198) have knowledge of methods to protect from malaria (Joshi & Banjara, 2008). Poverty increases the malaria burden by increasing the hesitation to seek early treatment. The resulting delay in diagnosis and treatment increases the risk of mortality (Awasthi et al., 2018). Even though people had some knowledge and awareness about the use of bed nets and its effectiveness, nearly all were unable to purchase a bednet due to the cost (Regmi et al., 2016). In the Terai region, there is also evidence of caste discrimination where he lower caste community has been deprived of basic rights for education and employment (Awasthi et al., 2018).

## 4. Anti-malarial drug resistance in Nepal

Nepal has evidence of drug-resistance to chloroquine and the drug is no longer the first choice for treatment of malaria caused by P. falciparum. Currently, artemisinin-based combination therapy (ACT) is recommended for falciparum malaria. However, there are now reports of artemisinin-resistant malaria originating and spreading from the Thailand-Cambodia border to Viet Nam (Ohara et al., 2015). Social and structural aspects play a crucial role in drug resistance (Panda et al., 2017). People living in highly endemic regions of Nepal do not have access to interventions like diagnostic testing and ACT (Adhikari, 2014). The use of antimalarial drugs has been heterogeneous as a result of private sector purchasing. This has also altered the uniformity in distribution of the drugs resulting in unequal access across the country (Boni et al., 2016).

## 5. Health System of Nepal in controlling Malaria

The National Center for Global Health and Medicine (NCGM) report, 2013, identifies weak leadership and governance of the country evident in inadequate malaria program management capacity, the increase of malaria associated with population movement, the fragile health system in remote areas, and the weak relationship between medical institutions in the public and private sector and laboratories. There is minimal malaria case reporting from the private sector facilities, despite evidence of the large number of malaria cases being treated. This masks the actual number of malaria cases documented and reported (UCFS, 2015).

### **5.1 Service Delivery**

The health system ensures that the majority of the population receives health care services through the existing health facilities. The health system has also kept antimalarial drugs under the list of essential medicines in 2010, expanding to all 77 districts of Nepal. The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) has also provided Insecticide Treated Bed Nets (ITNs) and Long Lasting Impregnated Bed Nets (LLINs) along with mobile teams in the endemic areas for proper monitoring (Ohara et al., 2015). Antimalarial drugs are provided free of charge through the female community health volunteer (FCHV) network in high-risk areas according to the national treatment guidelines (DoHS, Annual Report, 2016-17). In malaria endemic areas, where there is no microscopy facility, rapid diagnostic tests are made available for the diagnosis.

Although, public health facilities have been providing service free of cost for malaria diagnosis and treatment, there is evidence that people have been paying money for malaria care according to Nepal Living Standard Survey (NLSS) 2010-2012 (Adhikari, 2014). Documentation shows that

only 92% of the laboratory confirmed cases received treatment, indicating the gap in service coverage (Adhikari. 2014). Lack of consistent supplies for malaria interventions in Nepal has also been one of the constraints for efficient service delivery. There have been irregular and inadequate supplies of antimalarial drugs.

Health workers are not fully oriented on the malaria program. This contributes to the irrational use of rapid diagnostic tests and malaria microscopy against national protocols with a lack of coordination between the microscopic networks and collection centers. This has ultimately affected the rural population's ability to access proper malaria care services, leading to inequality among the lower economic population. (DoHS, Annual Report, 2016-17). This particularly affects the mobile populations as they are hard-to-reach and completely isolated from local communities in relation to health care. There are elements in these communities who are engaged in illegal activities that ultimately prevents them from coming in contact with the health authorities (Smith & Whittaker, 2014).

## 5.2 Workforce

Trained FCHVs has been mobilized at the community level and integrated with the malaria control program. Efficient human resources are in place at the central level. However, gaps still persist in allocating human resources to the remote areas for malaria control program. According to the Annual Report of the DoHS, 2010-2011, the health workers are not fully oriented on the national malaria program, which is affecting the population in receiving better malaria care service (Adhikari, 2014). A study conducted in Nepal has also reported that 16.3% (of 1,130) respondents did not seek medical consultation while 16.1% consulted with traditional healers due to lack of health care professionals in the health facilities and also due to limited knowledge on where to go when an individual develops disease symptoms (Regmi et al., 2016). Nepal health system is providing basic orientation to put trained human resources and health workers in each health facility. However, frequent turnover of these trained health care providers has created a persistent challenge (DoHS, Annual Report, 2016/17)

## 5.3 Health Information System

Nepal has been using different information systems at different levels for reporting and recording the cases of Malaria. EDCD under Ministry of Health and Population (MoHP) Nepal has been using the Early Warning and Reporting System (EWARS), which reports cases of Malaria on a weekly basis along with two other vector-borne diseases (i.e., kala-azar, dengue). The Health Management Information System (HMIS) has also been collecting a range of service delivery data, including specific cases of malaria in relation to geo-referencing (Nepal Malaria Strategic Plan, 2014).

## DISCUSSION

Nepal shares a very long porous border with India with significant population movement across both the countries. Two different cross border malaria check posts have been in place to monitor the imported malaria cases across the border (Nepal Malaria Strategic Plan, 2014-2025). Having only two cross border malaria check posts is not sufficient. Nepal's health system needs to add more cross border malaria check posts to cover more border areas as the country shares another 20 additional bordering districts with India.

The mountainous region of Nepal has been sporadically reporting malaria cases where the nation is building a new environment, thus shifting the distribution of mosquito vectors. Studies show that the adaptation of malaria vectors has been recorded from 1,820 m to 2,310 m above sea level (Dhimal et al., 2014b). These areas also have the most difficult geographical terrain, giving rise to challenges for accessing malaria care service. Since the Terai plains of Nepal hold the larger number of malaria cases, more national programs and projects are focused there on the rural economic development, aimed at reducing the disease by lowering vector-human contacts (DoHS, Annual Report, 2016/17). Malaria programs are more focused in the endemic districts but at the same time, malaria cases are also being reported from non-endemic districts. Hence, nationwide coverage is needed for elimination of the disease.

The Nepal health system lacks proper coordination among the private health facilities, which have been treating malaria cases that are not reported to MoHP. A study highlights the fact that private sector health facilities treat a similar number of malaria cases as are treated by public facilities, indicating the annual malaria cases may be twice what is reported (UCFS, 2015). There are gaps in the sharing of information on government's updated regulations and protocols with the private sector (Bennet et al., 2017). These issue masks the malaria caseload, which will affect the effectiveness of malaria elimination program. These issues can be resolved to some extents with a systematic coordinated framework between private and public health networks. Secondly, it will ultimately affect the drug purchase at the national level.

The health system also lacks effective service delivery as there are insufficient trained human resources who are well oriented to the malaria program. Similarly, frequent turnover of trained human resource in the public health sector has also been a major challenge (Adhikari, 2014).

Nepal's social and economic contexts have been closely related to malaria care. Education and income level of the population have been acting as determinants of one another (Anyanwu et al., 2017). There are gaps in the health system for not providing sufficient basic orientation and knowledge on the use of antimalarial drug to the population. On the other hand, the private sector purchasing of the drugs has also resulted in uneven distribution across the country.

Studies also highlight the large number of Nepalis living in poverty (Awasthi et al., 2018). Poverty halts access to education for the lower economic population group, resulting in barriers to malaria control and prevention. These groups end up having the least knowledge of access to and utilization of services. The bottleneck of the health system in providing equal access to such interventions can be overcome by initiating a combined approach to make diagnosis and care of malaria accessible and cost-effective.

There is a need for MoHP to develop a formal proposal to the Government of India and its dedicated program (i.e., the National Vector Borne Disease Control program (NVBDCP)). The proposal must aim to track information on cross-border cases that needs to be shared by both the nations in order to identify location of origins and target foci on both sides of the border. The proposal should also address the need for collaborative actions and responses for containment of malaria cases. The goal of malaria elimination will only be possible after these gaps are fulfilled. The health system should increase the number of malaria check posts in the border for proper containment of malaria cases. This effort will also help in identifying the people at risk where malaria cases have been imported, which will help in identifying the needs for interventions. The

data on malaria-related information, practices, and behavior of the general population of rural and peri-urban regions of Nepal living in endemic territories are basic to create BCC messages and for delivering a strategy to avoid and control mosquito-borne disease in the nation.

### CONCLUSION

Malaria transmission can be suppressed by effective control measures. The number of malaria cases is not only limited to the disease occurrence but also are closely related to underlying structural determinants such as socioeconomic status, infrastructure, education, etc., which are the key findings. The ongoing malaria programs focus on better interventions with all technical fixes but still have room for improvement. They must be affordable and accessible to everyone. The health system needs to spot different dimensions of the social determinants of health that are causing the reemergence of malaria in Nepal. The key insight is that malaria programs should be included in all health-related policies and in a well-coordinated manner. The private sector health service providers need to come together with the public sector for proper documentation and reporting of malaria cases.

Over the past decade, Nepal has made significant progress in controlling the transmission of malaria. However, high-risk groups have not been focused on and have not received sufficient interventions and materials for malaria health literacy and behavior change communication. There is a need for providing basic knowledge for the population living in malaria-endemic regions and high-risk groups along with basic orientation to the health care providers. There is also a need to promote a cost-effective malaria intervention that can be accessible to all the population groups.

This study will help in identifying the core barriers for the malaria elimination program. This will also highlight the bottlenecks of the health system where it needs to be improved for its role in meeting the challenges in reemerging malaria in Nepal.

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#### ANNEX

#### Ward Level Risk Classification Map (MS 2018)



\*Others means National Parks, Conservative areas, Wildlife Reserves etc.

# Fig 1: Ward level Risk Classification Map for Malaria

Source: Nepal Malaria Micro-stratification report, 2018.

Year	Total population	Total malaria	Malaria cases per 10,000
2001	12,189,721	3,936	3.2
2002	12,763,391	5,460	4.3
2003	13,148,453	5,112	3.9
2004	13,077,980	4,687	3.6
2005	13,403,482	3,813	2.8
2006	13,737,146	3,965	2.9
2007	14,064,335	4,611	3.3
2008	14,384,513	2,215	1.5
2009	14,712,011	3,292	2.2
2010	14,722,522	2,647	1.8
2011	14,992,192	2,984	2.0
2012	15,256,737	2,263	1.5
2013	14,938,466	1,742	1.2
2014	15,014,411	1,389	0.9
2015	15,525,975	1,086	0.7
2016	15,947,113	830	0.5
2017	15,609,641	912	0.6

# Fig 2: Malaria cases per 10,000 at population risk from 2001 to 2017 (Gautam et al., 2019)

# The Relationship between Spiritual Well Being (SWB) and Quality of Life among Older Adults Who Live in the Retirement Home at Mojokerto, Indonesia

Dia Lailatul Fitria<sup>1</sup>, Ahmad Shodiq<sup>2</sup>, Siti Urifah<sup>1</sup> and Nasrudin<sup>1</sup>

<sup>1</sup> Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, 61481 E-mail: diafitria21@gmail.com E-mail: sitiurifah24@gmail.com E-mail: nasrudinbinsholeh@gmail.com
<sup>2</sup> Social Gerontology, Chulaborn International College of Medicine, Thamasat University E-mail: ahmadshodiiq@gmail.com

### ABSTRACT

**Background:** Spiritual Well Being (SWB) is a condition of a person who obtained of a state of happiness, the subjective experience of wellbeing as measured in psychology. SWB is needed for everyone including for older adults. Some researchers indicated that SWB could increase the quality of life among older adults. As we know older adults become more vulnerable to health problems both physically and psychologically, therefore affecting perceived quality of life. The aim of this study was to analyze the relationship between SWB and quality life among older adults who lived in the retirement home at Mojokerto, Indonesia.

**Methodology:** The research employed a cross sectional study design. In all 48 respondents were selected by using total sampling. Data were collected by using the Spiritual Health and Life Orientation Measures (SHALOM) and Quality of Life (WHOQOL-BREF) questionnaires. The data were analyzed by using Spearman statistical test with 5% significant level ( $\alpha = 0, 05$ ).

**Results:** This study found that most respondents were between 75-90 years of age. For Spiritual Well Being (SWB) measurement found that 70.9% of respondent got moderate and good level of SWB, in detail we found that 58.3% the participant said that they were happy to see the creations of God and 52.0% of those also mentioned that they feels being closed with their God. Moreover, 78.8% of pasrticipants also have high level and very high level of their QoL. In detail we found that 72.9% of participants said that they never need health therapy to improving their dailylife, 66.6% in term of psychological domain and in detail 66.7% of those said that they feels happy about their life, 47.9% in term of social domain and in detail 73.0% they said that they satisfied with their personal or social relationship, 70.9% in term of environmental domain and in detail 90.9% said that they satisfied with health care services in their environment. The Spearman test indicated a significant relationship between SWB and QOL among respondents (p=0.000).

**Conclusions:** A satisfactory level of SWB among older adults could improve their QOL. This in turn could be helpfull in decreasing health problems among older adults.

Key words: Spiritual Well Being (SWB), the Quality, Elderly

# Assessment of the Self-Perceived Health-Related Quality of Life of Pulmonary Tuberculosis Patients in Pakistan

Shahab E. Saqib <sup>1</sup>, Mokbul Morshed Ahmad <sup>2</sup>, Sanaullah Panezai <sup>3</sup> and JM Abdullah <sup>4</sup> <sup>1</sup> Regional and Rural Development Planning, Asian Institute of Technology, Thailand E-mail: shahabmomand@gmail.com <sup>2</sup> Department of Development and Sustainability, Regional and Rural Development Planning, Asian Institute of Technology, Thailand. E-mail: morshed@ait.asia <sup>3</sup> Department of Geography, University of Balochistan Quetta, Pakistan E-mail: sanaullah.panezai@gmail.com <sup>4</sup> Department of Public Administration, University of Rajshahi, Bangladesh E-mail: jmabdullah@gmail.com

## ABSTRACT

**Purpose:** There are limited studies that have addressed the Health-related Quality of Life (HRQoL) of general patients, and fewer still of TB patients from Pakistan. Therefore, this study is designed to (i) assess TB patients' quality of life and (ii) determine the relationship between the differences in quality of life and the socio-economic profiles of patients.

**Methodology:** A cross-sectional study was conducted and data were collected through a standardized questionnaire from 269 TB pulmonary patients, with 20 in-depth and 15 key informant interviews, and one focus group discussion.

**Results:** Patients scored lowest in the limitation-physical (10.32) and emotion (11.15) categories, while the highest scores were in mental health (45.30). Quality of life was lower among the elderly (i.e., the score was 34.32 for 15-20 years of age, and 21.39 for 51-60 years), females (male = 32.7 vs female= 28.80). Widows, patients of lower income, with no house ownership, also had lower quality of life.

**Conclusion:** With improvement and effectiveness in TB control strategies and parameters development, care providers should also pay attention to the non-medication aspects of TB management such as food, financial, social and psychological support.

Key words: quality of life, physical health, mental health, SF-36, tuberculosis, Pakistan

### **INTRODUCTION**

In spite of new treatment strategies and observations, tuberculosis (TB) remains one of the major causes of death worldwide (Mamani et al. 2014). Pakistan has one of the highest tuberculosis (TB) burdens in the world, ranking sixth among 22 countries, with an annual case incidence of 500,000 (World Health Organization 2015). Tuberculosis affects the health status and QoL of patients. For instance, TB causes psychological problems as well as fear, disturbance in daily activities, social dysfunction and anxiety (Awan et al. 2012).

Despite a cure for TB with medical therapy, there remains a sizeable impact on the lives and health status of patients. Most of the current attention to TB is spent on preventative or curative mechanisms such as drug therapy. However, the impact on health status and QoL is underestimated and rarely considered (Marra et al. 2004). Tuberculosis patients have low health-related quality of life in spite of new treatment strategies (Mamani et al. 2014). Traditional medical practice in TB focuses on laboratory tests and clinical diagnosis. However, assessment of a patient's QoL is often neglected. Keeping the full impact of TB in view, researchers in the health sector are compelled to assess the Patients' QoL. Therefore, this study evaluates the health-related quality of life of pulmonary TB patients in Khyber Pakhtunkhwa province, Pakistan.

### MATERIAL AND METHODOLOGY

## **Study Area & Participants**

District Mardan is purposely selected as study site, situated in the central part of Khyber Pakhtunkhwa, Pakistan. Data were collected over three months, from November 2016 to January 2017. Participants (269) were randomly selected from 1,019 total pulmonary TB patients registered in the third and fourth quarters of year 2016 in the district. A total of 269 participants were selected comprising 130 males and 139 females; participants' data were entered and analysed using SPSS-23 version (SPSS, Chicago, II). Only those patients who had pulmonary TB were selected. Interviews of Healthcare workers, KI and FGD included those who had five years of experience in the DOTS program. The extra pulmonary patients were excluded from the study population.

### Data collection, instrument validity, reliability, and credibility

Short Form (SF)-36, used in various studies, was considered a suitable instrument for data collection. For instrument validation and reliability, the questionnaire was pre-tested by collecting data from 30 participants. Qualitative data were collected through 20 in-depth interviews, 15 key informants and one Focus Group Discussion (FGD). The field notes were taken during data collection. The notes were translated from Pushto to English. The data were combined and read and reread. Then the statements were separated into categories and subcategories shown in Table 3. The study was approved by the Research Ethical Review Committee under reference no. RERC-2017/001.

### RESULTS

### **Results of quantitative data**

1. Socio-economic characteristics of participants

Results show that most of the patients were young, with an average age of 28.32 years. Of the total of 269 patients, 23.42% were aged 15-20 years, and 32.71% 21-30 years. The incidence of TB was almost equal in both genders; there were 139 female and 130 male participants, of which 60.2% were married and 33.8% unmarried. The majority of participants (54.27%) were illiterate;

the average years of schooling were 4.13. Most of the population in the district is rural. In addition, 54.65% of total patients' household income was <250 USD (Table 1).

Socio-Economic	Mean & St. Dev	Frequency	Percentage
Characteristics		-1	
Age Group			
15-20		63	23.42
21-30		88	32.71
31-40		54	20.1
41-50		45	16.72
51-60		19	7.06
	28.32 (11.60)		
Sex			
Female		139	51.67
Male		130	48.33
Marital Status			
Unmarried		91	33.8
Married		162	60.2
Widowed		16	6.00
Education			
Illiterate		146	54.27
Primary		9	3.34
Middle		49	18.22
Matric		27	10.02
Higher secondary		9	3.35
Bachelor		20	7.44
Masters		9	3.35
	4.13(5.00)		
Location			
Urban		101	37.55
Rural		168	62.45
Monthly Income (USD)			
<250		147	54.65
250-500		83	30.86
500-750		23	8.55
>750		16	5.94
	217.74(191.85)		
Source of Income			
Agriculture		77	28.63
Trader		41	15.24
Labourer		92	34.20
Servant		33	12.27
Others		26	9.66

# Table 1: Socio-economic Characteristics of Patients (n=269)

## 2. Mean scores of RAND-36 scales

Table 2 shows the health status of the TB patients in all eight categories, overall, and Cronbach's Alpha. Physical functioning has ten items. The patients scored very low in the categories limitation-physical and limitation-emotional, which were 10.32, Cronbach's Alpha=0.98, and 11.15 and Cronbach's Alpha=0.96 respectively. The highest score was in mental health, 45.30, SD=23.7, Cronbach's Alpha=0.77.

S. No	Categories	No of Items	Mean score (0-100)	Cronbach's Alpha
1	Physical Functioning	10	33.27(18.1)	0.82
2	Role Limitation-physical	4	10.32(29.6)	0.98
3	Role Limitation-emotional	3	11.15(30.6)	0.96
4	Vitality	4	35.40(23.7)	0.67
5	Mental Health	5	45.30(24.3)	0.77
6	Social Functioning	2	36.38(29.8)	0.76
7	Bodily Pain	2	39.78(30.9)	0.78
8	General Health	5	32.97(20.9)	0.71
	Total	35*	30.57(13.7)	0.85

Table 2: Eight categories SF-36 mean scores of the TB patients (n=269)

## **Results of qualitative data**

The in-depth interviews were held with the same patients who were willing and selected purposively due to low QoL and other important issues. Among 15 key-informants, average age of participants was 37.6 (SD=5.8), 100% were males, their average years of experience was 11, and average years of schooling was 14.9 years. Among seven FGD participants, one was female and six were males. The average age of participants was 36.3 years and had 10 years of average experience. Two of them had Bachelor's level of education whereas, four had Masters degree.

Table 3: Categorisation of different Ideas from in-depth interviews

Categories	Sub-categories
Quality of life	Physical functioning
	Role limitation physical and emotional
	Vitality
	Mental health
	Bodily pain

## Quality of life Physical functioning

*"I cannot carry the heavy things such as buckets full of wet cloths after washing. My health is deteriorating day by day".* (female TB patient age 26). Some patients also reported that they cannot walk and climb the stairs. A patient said; "*I feel pain in my legs, when I climb few stairs*". (male TB patient age 48).

#### Role limitations physical and emotional

"I was working the whole day in the fields before I was sick. Now after TB I can do work just one or two hours in the field." (male TB patient, age 43).

"I am not feeling weak. However due to this disease, I don't have mood to study. Whenever, I take these medicines in the morning, for the whole day I feel very bad". (male TB patient age 23)

#### Vitality

"This is very dangerous disease. I have no energy and disappointed too. This disease ends with death and I will die soon" (female TB patient, age 39)

#### Mental Health

"In my age, the people are playing and enjoying life. I don't know what I have done wrong for which I am punished and got TB. Due to TB, I am in a very desperate condition, because it is permanent and not curable disease". (male TB patient, 21 years)

#### DISCUSSION

Tuberculosis still leads to depression and anxiety, contributing to worsening of health status and persistence of disease. Patients lacked the knowledge that TB might have increased their anxiety and depression. Salomon et al. (1999) revealed that TB patients in New York City had no knowledge about TB treatment causing more anxiety and feelings of frustration, which decreases the QoL among patients. Some other studies such as Mamani et al. (2014), Unalan et al. (2008), and Duyan et al. (2005) have reported that the rate of depression among TB patients was higher than among a non-TB group. Moreover, depression was found to be highly associated with low QoL. All patients in the study were interviewed after at least one month of treatment. However, low QoL scores were reported by most of the patients. The reason for a low QoL can be attributed to the psychological impacts of the disease, like isolation from the community and circle of friends, due to the contagious nature of the disease.

Gender of the patients also has an influence on QoL of patients. Females have various problems with TB medication that weakened and modified their health, such as their menstrual cycle. Poor health status further aggravated their QoL. Hassan and Darwish (2010) revealed that about 66% of women under the study reported menstrual abnormalities.

Findings of this study show that there is a significant relationship between socio-economic characteristics and patients' QOL. Patients of lower economic status scored lower in QoL.. In Pakistan, males are generally the sole breadwinners of the family. The other household members are fully dependent on them. Whenever a patient is male and head of the family, it has adverse effects on the whole family. This leads to income and food insufficiency at the household level. Therefore, they are forced to work in ill health, which results in a lower QoL. Low income and poverty are compounded by other social and health problems, for example, poor education, disorganisation, domestic violence or substance abuse (Duyan et al. 2005). These poorer patients showed higher depression and anxiety (Awan et al. 2012; Duyan et al. 2005; Rosenfield 1992).

#### CONCLUSION

The study yielded that despite new technologies for diagnosis and strategies of medication, TB is still adversely affecting the QoL of patients in Pakistan. Patients' socio-economic characteristics have an influence on their QoL. Therefore, more attention should be given to improve patients' health status and QoL. With enhancements in TB control strategies and development of parameters for its effectiveness evaluation, care providers should also pay attention to the non-medication aspects of TB management.

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# The Basic Screening for Hypertension and Diabetes in the Elderly by High School Students in Phranakhon Si Ayutthaya Province

Noppawan Theerapuncharoen <sup>1</sup> and Weerapol Theerapuncharoen <sup>2</sup> <sup>1</sup> Science and Technology Faculty, Phranakhon Si Ayutthaya Rajabhat University, 96 Predeepanomyong Rd. Phranakhon Si Ayutthaya 13000 Thailand E-mail: tnoppawan@aru.ac.th <sup>2</sup> Faculty of Medical, Siam University, Phasi Charoen,Bangkok 10160 E-mail: Weethee@gmail.com

## ABSTRACT

Hypertension and diabetes are the major causes of death in Thailand. People who have knowledge of hypertension and diabetes should be able to perform basic screening for these diseases which will increase their awareness and urge them to seek treatment when needed.

The purposes of this Quasi-experimental study were to 1) improve knowledge of high school students regarding the diseases and vital signs detection of hypertension and diabetes, 2) provide training to high school students to perform basic hypertension and diabetes screening in the elderly and 3) evaluate learning outcomes of the disease screening program performed by high school students for the elderly.

The first group was 30 high school students from Pompet community school and the second group was 31 elderly from Wat-Suwandararam community. Both groups were selected by purposive sampling. The study was conducted from April 2017-March 2018. Data were collected by 1) questionnaires for students and elderly and 2) basic evaluation form of hypertension and diabetes screening (modified from that of Ministry of Public Health). Percentage, mean and standard deviation were used for statistical analysis.

The results showed that most of the students were 17-18 years old, female, and never educated in hypertension and diabetes. After training, the students were shown to have better knowledge of the diseases and vital signs (pre-test  $\square = 0.64$ , SD = .39  $\square = 0.72$ , SD = .41  $\square = 0.58$ , SD = .44; post-test  $\square = 0.97$ , SD = .18  $\square = 0.83$ , SD = .18  $\square = 0.73$ , SD = .34). The students were also found to be able to use the basic evaluation form for screening the diseases. Then, 31 elderly people were screened for the diseases by trained students and five of them were identified as having risk factors for hypertension and diabetes, of which three were confirmed to have hypertension and the rest with diabetes. The knowledge of the diseases in the elderly was improved by learning and watching a local Thai folk song "Lum Tad" demonstrated by the student (pre-test  $\square = 0.72$ , SD = .33; post-test  $\square = 0.81$ , SD = .26).

The study suggested that 1) knowledge on hypertension and diabetes in the elderly could be improved by a screening program performed by high school students, and 2) for future study, there should be two study groups, one using conventional teaching contents and another using both "Lum Tad" and conventional teaching, and the result should be compared for their learning outcome.

Key words: screening, elderly, hypertension, diabetes

### **INTRODUCTION**

While public health and medicine have continued to improve, they have created a population with increased longevity. This has caused the population structure to change as the proportion of the elderly increases. This population usually has health problems caused by the deterioration of the human body, especially for cardiovascular disease, hypertension and diabetes (Prakongsai, 2016).

The statistics of illness and death of Thai people since 2007-2014 indicate that the numbers of deaths caused by cardiovascular disease, ischemic heart disease, stroke, hypertension and diabetes continue to rise. By comparing the four main disease groups in the last seven years, the cardiovascular, cancer and diabetes groups were the first three groups that have continually shown the highest mortality rate. Similarly, the numbers of patients with hypertension, ischemic heart disease, stroke and diabetes in public health facilities during 2007-2014 also increased continuously (Bureau of non-communicable disease, 2016).

The data on the risk assessment of the non-communicable diseases from the Department of Disease Control at the regional health level in 2015 indicated that (2016) 74.1% of the elderly received a blood pressure screening while 64.0% received a blood sugar screening within a year from public health officials. It was found that 40% of the population in Phranakhon Si Ayutthya have not been screened. Hence, this group of people, including the elderly, lacked the opportunity and access to such services. (Ayutthaya Provincial Health Office, 2015). The problem of not being able to cover screening for hypertension and diabetesin this population will adversely affect their access to health services and prevent them from receiving appropriate advice and care.

For that reason, the researcher believed that there should be a study process for allowing the community, especially high school students, to participate in solving such problems. They study would test whether high school students could help in preliminary screening for hypertension and diabetes within their community, especially among the elderly, and whether they could also help provide advice to those who might be at risk of having such diseases, so that the elderly could receive proper treatment and appropriate prevention from local health facilities.

## **RESEARCH OBJECTIVES**

- 1. To improve knowledge of high school students regarding the diseases and vital signs detection.
- 2. To provide training to high school students to perform basic hypertension and diabetes screening in the elderly.
- 3. To evaluate learning outcomes of the disease screening program performed by high school students for the elderly.

## **RESEARCH METHODOLOGY**

**Sample group** The 1<sup>st</sup> sample group consisted of 30 high school students grade 9-12 (Mathayom Suksa 3-6) in Phra Nakhon Si Ayutthaya Province. The 2<sup>nd</sup> group was 31 elderly from Wat-Suwandararam club. Both groups were selected by purposive sampling.

### **Research methods**

1. This was a Quasi-experimental study.

- The tools consisted of 1) the test on the knowledge of Hypertension, diabetes and vital signs for the 1<sup>st</sup> sample group, 2) the questionnaire on the knowledge and behaviors of the 2<sup>nd</sup> group who were screened and 3) the report for practicing skills in screening for hypertension and diabetes.
- 3. The tools' quality testing; the IOC values of the student knowledge test and the elderly questionnaire were 0.67 and 0.58, respectively. For the reliability, alpha coefficients of .71 and .67 were obtained, respectively. As for the report for practicing skills in screening for the diseases, the researcher modified it from the verbal screening form for Hypertension and Diabetes from the Ministry of Public Health.
- 4. Statistics used were percentage, mean and standard deviation.
- 5. Scoring and interpretation

5.1 In terms of knowledge, the correct answer was given 1 point while the wrong answer was given 0 point. The score was then translated as follows.

- Low level: received a score between the lowest to  $\bar{x}$  1/2 S.D.
- Medium level: received a score between  $\bar{x} \pm 1/2$  S.D.
- High level: received a score between more than  $\bar{x} + 1/2$  S.D. to the maximum

5.2 As for the behaviors, the questions were rating scale type with 3 levels and were a mixture of positive and negative messages. The scoring and the interpretation were as follows.

Frequency	Positive Message	Negative Message
Regularly (≥4 times / week)	3	1
Sometimes (2-3 times / week)	2	2
Rarely (0-1 times / week)	1	3

The interpretation of behaviors was also divided into 3 levels by considering the means and standard deviations.

6. Procedures

6.1 **Arranged the training for the 1**<sup>st</sup> **sample group.** Their knowledge was tested before the start of the training. Then, the researcher provided the knowledge to this 1st sample group about 1) Hypertension and Diabetes, 2) the preliminary screening, 3) the observation of primary body abnormalities, 4) vital signs and blood pressure measurement, 5) complications, and 6) practicing on measuring vital signs under the supervision from the researcher. After the training was completed, their knowledge was tested again and their practice on preliminary screening for Hypertension and Diabetes was closely observed.

6.2 Encouraged the 1<sup>st</sup> sample group to measure vital signs and blood pressure as well as to observe the abnormalities from screening for the diseases on the elderly within the neighborhood. Each person in the 1<sup>st</sup> sample group was responsible for at least one older person and reported the results as specified in the form. In the cases of abnormal
results that associated with the diseases, as well as sending such information to the health care office.

The researcher then collaborated with local health officials so that the researcher and students could provide training to educate the older adults who had been screened for the diseases. Before and after training session was conducted, the screened older adults were tested on the knowledge and health care behaviors. The researcher then summarized the results and provided them to the local health office.

### 6.3 **Conducted a lessons-learned session** with those involved in the study.

### RESULTS

- 1. **General data of the 1**<sup>st</sup> **sample group.** Most were female (80.00%), aged 17-18 years old (56.67%), studying in grade 12 (36.67%), living in municipal areas (63.33%), never received any education on the diseases (96.67%), and having relatives who had been diagnosed with the diseases (63.33%).
- 2. **The 1**<sup>st</sup> **sample group' knowledge on hypertension data.** The mean of the knowledge score after the 1<sup>st</sup> sample group received the training was higher. Prior to the training, the mean score was at a medium level ( $\bar{x} = 0.64$ , S.D. = .39) while after the training, the mean score was at a high level ( $\bar{x} = 0.92$ , S.D. = .13).
- 3. The 1<sup>st</sup> sample group' knowledge on diabetes data. The mean of the knowledge score after the sample received the training was higher. Prior to the training, the mean score was at a medium level ( $\bar{x} = 0.72$ , S.D. = .41) while after the training, the mean score was at a high level ( $\bar{x} = 0.83$ , S.D. = .18).
- 4. **The 1**<sup>st</sup> **sample group' knowledge on vital signs data.** The mean of the knowledge score after the sample received the training was higher even though the mean score both before and after the training were at a medium level (before training  $\bar{x} = 0.58$ , S.D. = .44 and after training  $\bar{x} = 0.73$ , S.D. = .34).
- 5. The results of screening for the risk of hypertension and diabetes in the elderly by the 1<sup>st</sup> sample group. There were 31 cases of the screened elderly; most of them were female (75.00%), aged equally between 56-60 and 61-65 years old (22.50%), using universal health coverage (58.33%), weighted between 61-70 kilograms (35.00%), had no black marks or lesions (72.50%), never smoked (52.50%), never drank alcoholic beverages (55.00%), did not exercise at all (70.00%), liked tasteless foods (25.00%), did not know any illness records of their parents (57.50%), did not know any illness records of their parents (57.50%), had Hypertension, and the practice in case of having Hypertension was that they used to receive the treatment but either quit or took the medication by themselves without a prescription (50.00%).
- 6. The 2<sup>nd</sup> sample group's screened knowledge on hypertension and diabetes before and after the training data. 31 screened elderly people were provided with the necessary information about the diseases by researcher and the 1<sup>st</sup> sample group sample. Some of them delivered such knowledge in the form of Lam-tad made the 2<sup>nd</sup> group very

interested. Then, the average knowledge of them about Hypertension and Diabetes after training was higher than before training, even though the levels of knowledge were both at the medium level (before training  $\bar{x} = 0.72$ , S.D. = .33 and after training  $\bar{x} = 0.81$ , S.D. = .26).

7. Health care behaviors of the 2<sup>nd</sup> sample group data. The study found that the mean score of the overall elderly behaviors was at the "sometimes" (2-3 times/week). The regular behaviors (≥4 times/week) were (1) brushing teeth before going to bed every day (x̄ = 2.77, S.D. = .42), followed by (2) watching movies, drama, listening to music, or traveling with friends or grandchildren (x̄ = 2.74, S.D. = .45), (3) other exercises that are suitable for the elderly (x̄ = 2.45, S.D. = .68), (4) religious practice (x̄ = 2.45, S.D. = .62), (5) joining activities with neighbors or elderly clubs (x̄ = 2.32, S.D. = .70), (6) brushing teeth 3 times a day after meals (x̄ = 2.16, S.D. = .64), (7) eating sweet fruits (x̄ = 2.16, S.D. = .45), (8) having difficulty in falling asleep (x̄ = 2.13, S.D. = .81), (9) eating more than 3 meals/day (x̄ = 2.06, S.D. = .77), (10) eating salty foods or foods that contain MSG (x̄ = 1.97, S.D. = .75), and (11) having desserts, sweetened drinks, or carbonated drinks (x̄ = 1.81, S.D. = .60).

#### DISCUSSION

The fact that the 1<sup>st</sup> sample group had better knowledge and were able to do preliminary screening for hypertension and diabetes because they were trained and practiced until they gained the understanding of hypertension, diabetes, vital signs, and how to collect of data from. The process of this study emphasized on the collaboration from all stakeholders; the high school, the public health agencies, and the elderly clubs that researcher had contacted for information. All parties agreed that hypertension and diabetes were the important health issues. In addition to the volunteers in the village, the persons who could do the preliminary screening should be the ones who were close to the family members and the high school students were suitable for this task. It would also make the screening more comprehensive for all target groups and the elderly would feel more convenient and satisfied. (Pukdeeamnut and Likitthammarot, 2014; Rodjarkpai et al., 2014). When the elderly are aware, it will make a positive effect on their healthcare and promote appropriate health behaviors, which will reduce the risk of hypertension, diabetes and other health problems. (Sinsap et al., 2017),

For such process involved in this study, it was therefore consistent with the concept of collaboration and the study of Srithamrongsawat and Bunthamcharoen (2010) and Rattana's study (2009).

The elderly's overall level of healthcare behaviors was at the medium level. This result was in line with the research of Onseenoi et al. (2017) but was not consistent with Nakasaney's research (2016).

Therefore, it could be concluded that this study was consistent with the objectives because 1) the high school students participating in the study were developed to gain better knowledge on hypertension, diabetes, and vital signs; 2) the elderly received preliminary screening for hypertension and diabetes by the well-trained high school students; and 3) the elderly who were screened by the students gained better knowledge on the disease.

#### CONCLUSION

After the 1<sup>st</sup> sample group gained the understanding of Hypertension, Diabetes, and vital signs, it made them knowledgeable and able to perform the preliminary screening for both diseases on the 2nd sample group. If there were a training to provide knowledge about patient screening by using blood pressure monitors and fingertip blood collection in the future, the researcher strongly believed that high school students would be able to do so and would be of a great help for health agencies to screen for these diseases.

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**Poster Presentation** 

# Stigma among Medical Doctors Against People Living with HIV in Kathmandu

# Dhiraj Roka<sup>1</sup>, Jennifer Mathias<sup>1</sup> and Rajeev Banjara<sup>2</sup>

<sup>1</sup> Faculty of Management, National Open College, Pokhara University, Sanepa, Lalitpur, Nepal E-mail: rokadhiraj@gmail.com
<sup>2</sup> SNV Netherlands Development Organization, Nepalgunj, Banke, Nepal E-mail: rajeev.rajban@gmail.com, rbanjara@snv.org

### ABSTRACT

**Background:** Stigma is a dynamic process of devaluation that 'significantly discredits' an individual thus reducing that individual's status in the eye of society. Stigma against People Living with HIV (PLWHIV) is brought up by attitude of people judging how the person might have contracted the disease, irrational fear of contraction, eventually leading to discrimination. Nepal lacks information and data regarding study of stigma among medical doctors against PLWHIV. Studies conducted across countries having similar economic condition as Nepal have shown the presence of significant amount of stigma among health care providers against PLHIV. Hence this study was designed to uncover the facts about the existence of stigma among medical doctors in Nepal.

**Methodology:** A cross sectional study was done among the doctors working at five hospitals providing ART services in Kathmandu Valley. A self-administered structured questionnaire was adapted from USAID's Health Policy Project. Data collection was conducted in between May to July 2018 and a total of 195 doctors participated in the study. Data analysis was done using SPSS statistics 22.

**Results:** Study revealed the presence of stigma among 46% of the medical doctors. Stigma was seen in their infection control practice where about 83% of total respondents preferred to wear double gloves even when not necessary. About 82% of doctors had never received any training on HIV stigma and discrimination. Stigma was present in the opinions of the doctors against PLWHIV as 58% doctors believed that people get infected with HIV when they engage in irresponsible behaviors. Likewise about 85% of doctors believed that family of the HIV positive pregnant woman has the right to know about her status even without her will. More than three quarter (78%) of the doctors considered that pregnant women refusing HIV tests were irresponsible and more than two third (69%) of the doctors believed that an HIV positive patient while about 72% were worried to draw blood and about 74% of doctors were more sympathetic towards people getting AIDS from blood transfusion than those who got it from TV drug use.

**Conclusions:** The study revealed presence of high stigmatizing behaviors among medical doctors against PLWHIV and showed possible association of stigma with age, sex, ethnicity, religion and years of work experience of doctors, however they were not found statistically significant. Hence this study recommends further studies for better understanding of social determinants associated with stigma among medical doctors against PLWHIV.

Key words: HIV stigma, medical doctors, PLWHIV, Kathmandu Valley

# Malnutrition and Associated Factors after Discharge from Neonatal Intensive Care, a Cohort Study in Young Infants in Mungeli, India

# Rachel McDougall <sup>1</sup>, Gayatri Ganesh <sup>2</sup>, Richa John <sup>2</sup>, Namita Titus <sup>2</sup> and Melanshya Pears <sup>2</sup>

<sup>1</sup> School of Medicine, Dentistry & Biomedical Sciences, Northern Ireland E-mail: r.mcdougall@alumni.maastrichtuniversity.nl
<sup>2</sup> Christian Hospital Mungeli, Chhattisgarh 495334, India

# ABSTRACT

**Background:** Neonates discharged from the Neonatal Intensive Care Unit (NICU) are thought to have a high rate of mortality and malnutrition. However, studies in this population are scarce in India. This study aimed to assess infants, from four months old to one-year-old for malnutrition in the first year after discharge from a regional NICU in Chhattisgarh state, India and identify risk factors.

**Methodology:** This was a longitudinal study of low-birth weight infants who were hospitalized at Christian Hospital Mungeli NICU from January 2016 to January 2017. Those within 30km were identified using the NICU register. Cross-sectional data were collected using house visits to administer questionnaires and infant measurements.

**Results:** One-hundred infants were identified from records. 61 (61%) subjects were lost because they weren't at their last registered address. Of the 39 followed up, 30 (76.9%) were under-nourished. Although not statistically significant, some factors showed an 'under-nourished' trend: male infants, WHO-recommended breastfeeding, mother earning outside the home or mother was the sole carer.

**Conclusions:** This study demonstrated two issues: most NICU infants (61%) were lost to follow-up within 1 year of discharge and about 77% of those traced were malnourished. An expanded study is needed to find statistically significant factors.

# BACKGROUND

Child malnutrition, in particular malnutrition due to undernutrition, is a great concern for the world today. In 2015, it was estimated that 23.2% of the world's children under five years old were stunted and 7.4% of children were wasted because of malnutrition (UNICEF, WHO, & The World Bank, 2014).

Malnutrition is a serious threat to the physical and cognitive development of children (Lawn et al., 2014). Figure 1 depicts a nutritional framework created for a 2013 article (Black et al., 2013). This framework includes factors affecting nutrition, possible interventions that lead to optimal growth of children. It also shows how optimum childhood nutrition is beneficial throughout the life course.



Figure 1: Framework for actions to achieve optimum foetal and child nutrition and development, taken from Black et al., 2013

According to this framework, multiple factors contribute to optimum nutrition, such as breastfeeding and ease of access to medical care. There are a number of factors that act as barriers to exclusive breastfeeding in developing countries, such as mothers generating income outside of the home, lower levels of maternal education and older mothers (Omobolanle Balogun, Dagvadorj, Mathew Anigo, Ota, & Sasaki, n.d.). In circumstances where the mother is earning money, it is also important to consider that carers, such as older sisters, may not be sufficiently educated about the nutritional needs of infants (Kaul & Sankar, 2009). According to the current literature, other factors associated with malnutrition are sex and family SES (Bhutta et al., 2013; Gianini, Vieira, & Moreira, 2005; Kumari, n.d.; Pillai & Ortiz-Rodriguez, 2015; Sachdeva et al., 2016).

Malnutrition is highly prevalent in India amongst young infants who are discharged from the neonatal intensive care unit (NICU). Research into post-NICU discharge malnutrition in India is

scarce (UNICEF et al., 2013) as studies in this population have been carried out in primarily resource-rich settings (Hulst et al., 2004). Other Indian studies focused on the functionality of NICUs (Sundaram, Chirla, Panigrahy, & Kumar, 2014), rather than malnutrition in the population.

In order to develop or apply the necessary interventions in India, it is important to obtain insight into the factors associated with malnutrition in post-NICU discharge infants. Therefore, the objectives of this study were:

- 1. Evaluate the nutritional status of infants (former low birth weight neonates) within one year after NICU discharge.
- 2. Explore factors which might influence their nutritional status and thereby their risk of mortality.

# HYPOTHESIS

It is hypothesised that the following factors are associated with the presence of malnutrition in infants with low birth weight.: female, lower SES (as defined by the Kuppuswamy scale (Khairnar, Wadgave, & Shimpi, 2017; Kuppuswamy, 1981), exclusive breastfeeding time less than the WHO recommended 6 months, poor medical care access (greater than one hour walking distance (Blanford, Kumar, Luo, & Maceachren, 2012), that is 5 kilometres), a working mother and/or a carer other than the mother.

#### **METHODOLOGY**

The study was a retrospective longitudinal study, in which a cross-sectional part was imbedded. The sample was taken from the hospital records of the NICU at Christian Hospital Mungeli (CHM), in Mungeli, Chhattisgarh state. The research population was comprised of infants who were hospitalized at the CHM NICU from January 2016 to January 2017, and met the eligibility criteria below (Table 1). The infants were therefore between four months old and one-year-old in age.

Exclusion criteria
Neonates who were born in the NICU
after January 2017
Neonates who were discharged from
the NICU after January 2017
Neonates who died during their
hospital stay at NICU.
Infants and their carers who lived
outside a 30 km radius of CHM.
Former NICU patients who were
untraceable.

# Table 1: Eligibility Criteria for Study Population

Cross-sectional data were collected by means of house visits to administer questionnaires (using Kobo Collect) and infant measurements (performed by a hospital nurse), to gather the following data: socio-economic status (SES) according to the Kuppuswamy scale (Khairnar et al., 2017; Kuppuswamy, 1981), if the mother was earning outside of the home, carer for the child, breastfeeding and complementary feeding practices, access to medical care, mid-upper arm circumference (MUAC) of infants (if six-months-old or older) and weight-for-height z-score (WHZ) (WHO, n.d.-a, n.d.-b; WHO & UNICEF, 2009). The questionnaires were not self-administered due to the illiteracy of the population. Instead, the researcher verbally directed the questions to the infants' families, with the assistance of a nurse acting as a translator.

The recent nutritional status (under-nourished or sufficiently nourished), according to the WHO standards with MUAC (only for those above 6 months old) and WHZ measurements (UNICEF et al., 2014), were taken as a dichotomous outcome.

Exploratory data analyses were conducted with bar-charts and scatter-plots, depending on which would be most appropriate to identify any trends or associations with nutritional status. The crude associations between the determinants and the nutritional status of the infant (the main outcome variable) were determined by Chi-square test. Simple logistic regression models were applied, when appropriate, to determine crude odds ratios for the main outcome variable with each of the determinants (i.e., SES, access to medical care, breastfeeding practices, carer for the infant, if the mother is earning money and sex of the infant). A logistic multiple regression model was used to adjust for potential confounding effects. All analyses were conducted with SPSS (version 11).

# RESULTS

As the sample was small, forward procedure was used for selection of variables for the logistic multiple regression model. Multicollinearity tests were conducted accordingly.

Table 2 shows the participant characteristics of the study population, with respect to nutrition status. One-hundred infants were identified from the records in accordance with the eligibility criteria. Sixty-one (61%) subjects were lost because they were not at their last registered address. No infant mortalities were recorded in the sample. Of the 39 followed up, 30 ( $\sim$  77%) were under-nourished with a WHZ that was below the median WHZ as determined by the WHO figures for field use. These infants were compared to the rest of the sample, to suggest risk factors. A comparison population was not used. The study population included three sets of twins and both infants in each set of twins were malnourished.

#### **Table 2: Participant Characteristics of Study Population**

	Sufficiently Nourished (n=9)	Malnourished (n=30)
Sex of Infant		
Female	4 (20.0%)	16 (80.0%)
Male	4 (26.3%)	14 (73.7%)

	Sufficiently Nourished (n=9)	Malnourished (n=30)
Socio-Economic Status		
Lower and Upper Lower Socio-Economic Status	6 (22.2%)	21 (77.8%)
Lower Middle, Upper Middle and Upper Socio-Economic Status	3 (25.0%)	9 (75.0%)
Healthcare Access		
Healthcare within 5 kilometres	4 (17.4%)	19 (82.6%)
Healthcare not within 5 kilometres	5 (31.3%)	11 (68.8%)
Breastfeeding According to WHO		
Recommendations		
Yes	7 (25.9%)	20 (74.1%)
No	2 (16.7%)	10 (83.3%)
Mother Earning Money Outside of Home		
Yes	2 (18.2%)	9 (81.8%)
No	7 (25.0%)	21 (75.0%)
Carer for the Infant		
Mother as Sole Carer	4 (40.0%)	6 (60.0%)
Mother and Grandparents as Carers	5 (17.2%)	24 (82.8%)

### Table 2: Participant Characteristics of Study Population (cont.)

Table 3 shows the results for the multiple logistic regression model of this study. The crude and adjusted odds ratios do not suggest any statistically significant relationships between the nutrition status of the infant and any of the six dichotomous categorical variables investigated.

# Table 3: Associations between Nutrition Status of Infant and Investigated Risk Factors (n=39)

Indicators	Crude Odds Patia	95% Confidence Intervals (Crude)		95% Confidence Intervals (Crude)		95% Confidence Adjus Intervals (Crude) Odds		Adjusted* Odds Ratio	95% Co Inte (Adju	nfidence rvals sted)*
	Katio	Lower	Upper	-	Lower	Upper				
Sex of Infant										
Female	Reference	Reference	Reference	Reference	Reference	Reference				
Male	1.429	0.319	6.388	1.406	0.285	6.945				
Socio-Economic Status										
Lower and Upper Lower	Reference	Reference	Reference	Reference	Reference	Reference				

Socio-Economic Status

Crudo 95% Confidence		nfidanca		95% Confidence		
<b>T</b> 14 .	Crude	95% CO		Adjusted*	Intervals	
Indicators	Udds	intervals (crude)		Odds Ratio	(Adjusted)*	
	Ratio	Lower	Upper	-	Lower	Upper
Lower Middle, Upper	0.857	0.175	4.206	0.653	0.105	4.07
Middle and Upper Socio-						
Economic Status						
Healthcare Access						
Healthcare within 5	0.463	0.102	2.097	0.517	0.101	2.643
kilometres						
Healthcare not within 5	Reference	Reference	Reference	Reference	Reference	Reference
kilometres						
Breastfeeding According to						
WHO Recommendations						
Yes	Reference	Reference	Reference	Reference	Reference	Reference
No	1.750	0.306	10.022	252181556.7	0.000	
Mother Earning Money Outside						
of Home						
Yes	Reference	Reference	Reference	Reference	Reference	Reference
No	0.667	0.115	3.855	1.407	0.140	14.126
Carer for the Infant						
Mother as Sole Carer	Reference	Reference	Reference	Reference	Reference	Reference
Mother and Grandparents	0.313	0.064	1.533	0.308	0.046	2.042
as Carers						

Table 3: Associations between Nutrition Status of Infant and Investigated Risk Factors (n=39) (cont.)

\*Adjustments made for all factors in the table

#### DISCUSSION

The primary finding of this study was that the majority of the population (76.9% of participants) were malnourished. None of the investigated factors were proven to be statistically significant. However, the differences between the group 'sufficiently nourished' and 'malnourished' could be considered to indicate that 'under-nourished' status was less likely for the following: male infants, WHO-recommended breastfeeding practices, mother was earning outside the home or mother was the sole carer. These are in keeping with other literature and the framework in Figure 1, unlike the anomalous trend with healthcare access in this data.

An important strength of this study is that a number of methods were used to avoid bias. The same healthcare professional measured all infants to prevent measurement bias. Information bias was thought to be unlikely for established facts such as head of the household's educational attainment, but could be introduced with income. This was addressed by asking the question sensitively.

One strength was that a wide range of variables were included that were based on the framework from Black (2013). Sex of an infant was not listed in that framework as a factor associated with

nutrition status. It was included in this study because of evidence found in the literature with respect to sex preference found in India, where daughters were disadvantaged in healthcare and well-being because they were considered to be less important than sons (Pillai & Ortiz-Rodriguez, 2015).

The study was limited by its small sample size, so it was not possible to explore all of these variables and those examined were found to be statistically insignificant. However, given the significance of these factors in earlier studies (Gianini et al., 2005; Hulst et al., 2004; Loÿs et al., 2013), and the Framework used for this study (Black et al., 2013), context was provided for these results.

Another main strength was that the study indicates a problem with follow-up of study subjects in this community and consequent challenges for local health intervention programmes. This is crucial for global health practitioners.

The researchers recommend that a further study with a larger sample size should be conducted to examine any long-term association between these variables in this study design and the prevalence of malnutrition amongst infants discharged from the NICU.

### CONCLUSION

In summary, this study demonstrated two issues: the majority of NICU infants (61%) are lost to follow-up within 1 year of discharge and over three quarters of those who can be traced (about 77%) are malnourished.

This study does not demonstrate any statistically significant associations between the variables examined and the prevalence of malnutrition in this population. However, the majority of the study population were below the WHZ median score for their age-group and therefore were labelled as malnourished.

Considering this fact, the loss to follow-up and the additional information mentioned in the discussion section, the researchers recommend that a further study should be done with a large sample size. This would determine appropriate interventions for this population.

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# Health System in Zimbabwe and Delay in Seeking Health Care of Breast Cancer among Women in Zimbabwe

Elsie Gotora<sup>1</sup>, Nitaya Vajanapoom<sup>2</sup> and Wanapa Naravage<sup>2</sup>

<sup>1</sup> Room 407, Chayakorn Apartment, 74/99 Moo 1, Sukhumvit Road, Rayong, 21000 Thailand E-mail: elsiegotora.eg@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand

# ABSTRACT

Breast cancer is the most common cancer among women worldwide. The rate of breast cancer per 100 000 women is higher in high income countries than in low income countries. However, mortality rates are high in low income countries due to the delay in seeking health care. A systematic literature review was carried out to examine the health system implementation in Zimbabwe and its challenges that could be contributing to the delay in seeking health care for breast cancer among women in Zimbabwe. A content analysis was used to analyze articles; searching was done using a Boolean search strategy; articles from 2005 to 2018, which met the inclusion criteria, were considered. Factors such as: centralized services due to shortages of cancer specialists; lack of financial allocations for breast cancer health programs; shortage of screening and surgical equipment: lack of accurate data due to weak registration systems and health management information systems; and poor governance and leadership have all been found to be challenges in the health system of Zimbabwe.

Key words: Breast cancer, Health System, Delay in seeking health care

#### **INTRODUCTION**

According to WHO (2017), it is estimated that more than 450 000 breast cancer deaths occurred worldwide and over 1.1 million new cases were recorded. However, medical advances have shown that one third of cancer of the breast is preventable and a further one third of the cases can be cured if diagnosed on time.

Breast cancer in low to middle-income countries occurs 10-15 years earlier than in high income countries, presenting between the ages of 35-45 years as compared to 55- 65 years in high income countries. However, breast cancer care in high-income countries such as USA and Canada and other regions has been impressive with an approximate survival rate of 70- 89 % because of early detection by screening and timely effective treatment, which is lacking in low income countries especially in the African continent. Breast cancer survival rates in most African countries range from 10%-25% (Nkala, 2014)

Statistics from the Zimbabwe National Cancer Registry reveal that cancer of the breast accounts for 12.4% of the cases of cancer among women in Zimbabwe. It is the second most common cancer in Zimbabwean women, the highest being cancer of the cervix (30.2%). Breast cancer cases are increasing by almost 30% yearly. The reported cases are probably an underestimate as many breast cancer cases are not captured because most patients do not seek health care (CAZ, 2015). Breast cancer is a major cause of morbidity and mortality as well as premature deaths among women in Zimbabwe with over 3 000 new diagnoses and over 6,500 deaths per year. Only 31% are diagnosed at an early stage when chances are high to cure the cancer while the other 69% delay seeking health care, which is a major determinant of breast cancer survival (Chokunonga., 2016). The women who delay present for treatment at a late stage (usually stage 3 and 4), which is the main cause of the increase in premature deaths from breast cancer (Nkala, 2014). Delay in seeking health care is defined as the time lag from when women notice signs and symptoms of tumor(s) in their breast and the time they seek health care. (American Cancer Society, 2017)

Cancer cases are expected to rise due to increasing ageing population and HIV and AIDS since Zimbabwe is in the top 22 of the countries in the world that have the highest burden of HIV. Although the association is unclear in the literature, many breast cancer cases in Zimbabwe are related to HIV infection, therefore, the country is faced by a big breast cancer challenge (Chokunonga, 2016)

#### **OBJECTIVES**

To identify challenges to the health system that contribute to a delay in seeking health care for breast cancer among women in Zimbabwe.

#### **METHODOLOGY**

A systematic literature review was used to analyze published articles to identify the determinants of delay in seeking health care for breast cancer among women of Zimbabwe. Only articles, reports and research published between 2005 and 2018 written in English were taken into consideration. Searching for relevant articles was done across a wide range of databases which include: PubMed, Cochrane, Science Direct among others. A Boolean search was used for identification of relevant articles. Some articles were identified through snowballing from articles which provided relevant information. Data were translated using content analysis by collecting

and collating data from both qualitative and quantitative sources relevant to the study question to identify interventions common between studies.

#### FINDINGS

According to WHO, a good health system is one that delivers quality services to everyone in the population whenever they need them. (WHO, 2016). In Zimbabwe, the health system faces a number of challenges which hinder its ability to create and support breast cancer health care programs that can reduce the delay in seeking health care of breast cancer and improve breast cancer outcomes through early detection of breast cancer. In addition to the financial and organizational problems inherent in any health care system, the main challenges faced by the Zimbabwean health system are:

- Centralized services that do not extend to other remote areas of the country where delay in seeking health care for breast cancer is high. The majority of the population lives in rural areas and does not have access to cancer services due to transportation and accommodation challenges that lead to the delay in seeking health care of breast cancer (CAZ, 2015).
- An underfunded health system leads to shortage of drugs and medical equipment for breast cancer. As a result people need to purchase drugs privately, which most people cannot afford considering the economic hardships in the country; hence the delay in seeking health care for breast cancer. Improving breast cancer treatment outcomes in Zimbabwe requires a significant increase in social spending and macroeconomic policies that prioritize breast cancer in financial allocations (MoHCW, 2013). Figure 1 shows that of all the Southern African countries, Zimbabwe's general government expenditure on health was reduced significantly between 1998 and 2007, and though it increased from 2007 to 2013, it remains the lowest among other Southern Africa countries. Low expenditure on health in Zimbabwe is associated with high breast cancer mortality due to shortage of drugs and medical equipment (Nyakabau, 2014).



# Figure 1: General Government expenditure on health in Southern African Countries 2013

Source: National Health Accounts, Southern African Countries 2014

• There is shortage of cancer specialists in the country. Due to underfunded health system, there is no money to train more workers health workers including cancer specialists whereas the few that are available are not equally distributed, they are based in major hospitals which are located in urban areas and they are burdened with heavy workloads. Therefore, eradicating the delay in seeking health care of breast cancer becomes difficult (Chokunonga, 2016).

Table 1 summarizes the national shortage of health staff per cadre in 2009. There was a shortage of 6 940 staff members, meaning Zimbabwe's health system is just 57% staffed to capacity in 2009 and the projection is that the situation is even worse in 2018 because of continued economic hardships from 2009 up to date. In the public and private sectors, health workers are moved more rapidly than training institutions are able to replace them.

Cadre	# of Staff for Full Health System Operations	# of Staff in Place as of January 2009	Shortfall	% of Cadre Staffed
Doctor	1505	508	997	34%
Nurses (RGN)	7688	5087	2601	66%
Primary care nurse	2500	1778	722	71%
Pharmacists	132	37	95	28%

#### Table 1: Shortfall of Health Staff per Selected Cadre, 2010

Cadre	# of Staff for Full Health System Operations	# of Staff in Place as of January 2009	Shortfall	% of Cadre Staffed
Pharmacy technician	185	90	95	49%
Laboratory scientists	385	245	140	64%
State-certified medical	120	31	89	26%
laboratory technician				
Environmental health officers	277	64	213	23%
Health services administrator	62	28	34	45%
Total for all cadres	16049	9109	6940	
nationally*				

Table 1: Shortfall of Health Staff per Selected Cadre, 2010 (cont.)

Source: Zimbabwe Health System Assessment 2010 (MoHCW)

- Limited access to medical products leading to shortage of screening and surgical equipment such as: laboratory services, surgery, radiotherapy and chemotherapy equipment, and drug supplies due to the underfunded health system (CAZ, 2016).
- Lack of accurate data due to weak registration system and health management information system, which yields misleading breast cancer health indicators; measuring the performance of health system on reducing breast cancer burden as well as reducing the delay in seeking health care of breast cancer becomes difficult (CAZ, 2015).
- Poor governance and leadership, resulting in poor resource allocation, and an on-going lack of political will to channel scarce resources to purchase cancer drugs and medical equipment, and to cover the recurrent costs of health workers in rural and marginalized areas where delay in seeking health care is high. (MoHCW, 2014).
- Poor health service delivery due to centralized services that result from an underfunded health system. People have to wait in long queues before they receive services, and, in cases of breast cancer, most patients are referred to the provincial hospitals where the expenses of transport and accommodation pose barriers to early access to necessary health care.

# DISCUSSION

There is no perfect health care system that exists even in wealthier countries. For example, there is an annual increase in breast cancer incidence of 30-40% in Latin America (Nahila, 2013) compared to 30% annual increase in Zimbabwe. Among the problems that contribute to the existing burden in Latin America is the health care system: limited access to treatment, insufficient physical and human resources for clinical care, and poor quality control of health services. Cancer data in Latin America are scarce, specifically in Mexico where there is no national cancer registry, and time intervals for medical attention to patients with breast cancer are unavailable. These shortcomings lead to delays in seeking health care and contribute to to the breast cancer burden (Donkor, Lathlean, Wiafe, Verna, Fenlon, Yarney et al., 2016)

Underfunding of the Zimbabwean health system is one of the main challenges leading to the delay in seeking health care for breast cancer. Figure 1 above shows that out of five Southern Africa countries) i.e., South Africa, Zambia, Mozambique and Botswana), Zimbabwe has the most underfunded health system from 2004 -2014 (NHA, 214). On the other hand, other African countries like Malawi, Rwanda and Zambia are doing well in their efforts to improve their health systems. They are some of the few countries that have met the Abuja declaration target to allocate at least 15% of their annual budget to health care by 2015 (WHO. 2016). Due to the underfunded health system in Zimbabwe, however, the health service delivery is poor and the country cannot meet the WHO recommendations because of the shortage of health care providers especially cancer specialists as well as shortage of medical equipment and drugs. The Ministry of Health cannot afford to train more health workers and to pay those who are already in the system. The MOH does not provide enough drugs and medical equipment to the health care centers at the community level, which leads to the centralization services in urban centers with increasing difficulty in access for marginalized populations. (CAZ, 2015). Tanzania is also facing a similar shortage of health care providers because 30% of the country's healthcare professionals leave the health sector after receiving medical training because of poor incentives. This has a profound affect on the well-functioning of the Tanzanian health system causing a rise in breast cancer deaths that are projected to increase by 80% in that country by 2030 (Burson et al., 2010).

#### CONCLUSION

The findings indicate that the Zimbabwean health care system faces challenges in providing health services to prevent and control breast cancer cases, mainly because of the underfunded health system. The underfunding of the health system is a serious matter since it leads to the delay in seeking health care for breast cancer, which then results in the increase of breast cancer prevalence and mortality seen among women of Zimbabwe. A stop-gap measure would be for available private or non-profit services in the community to fill the gaps left by the government health services and address the issue of delay in seeking health care for breast cancer patients.

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# Successful Family Planning in Bangladesh: Lessons to be Learned for Nepal

# Sharada Basnet<sup>1</sup>, Marc Van der Putten<sup>2</sup> and Li Liang<sup>2</sup>

<sup>1</sup> Chemonics International (GHSC-PSM project) Metropark Building Uttardhoka-Lazimpat, Kathmandu, Nepal <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathumthani, 12121, Thailand

# ABSTRACT

**Introduction:** Globally the use of modern contraception has risen slightly however the unmet need for contraception remains high in low and middle-income countries. Notwithstanding Nepal's Total Fertility Rate (TFR) has decreased however, remains high with women having an average of 2.6 children. Bangladesh has made remarkable achievements in bringing down its TFR which is currently the lowest in South Asia.

**Methodology:** A comprehensive documentary review applying a descriptive approach to both qualitative and quantitative data on FP programs in Nepal and Bangladesh; employing key success factors and replicability criteria as analysis frameworks to take stock of lessons learned for Nepal's FP efforts.

**Results:** Bangladesh has made outstanding progress over the past 6 decades in population control. Key factors contributing to success in FP in Bangladesh include: political will, a shift in focus of IEC to target men by mobilizing religious leaders' support, and joint efforts across public-private-NGO providers made the difference.

**Conclusion:** Replicability of best practice as demonstrated in Bangladesh, Nepal need to ensure: appropriate IEC campaigns targeting men, more community involvement, services scale up to the grassroots, social marketing strategies, government commitment, adopting a SWA, infrastructure and trained human resources.

Key words: Bangladesh, Nepal, family planning

#### **INTRODUCTION**

Global projections of population growth predict that the human population will keep growing until at least 2050, reaching 9 billion (UN, 2015a). Improvements in child survival and increased life expectancy fuel population growth. Hence, Family Planning (FP) was adopted as a strategy to control population growth. Although the World Health Organization (WHO) reports that: "Globally, the use of modern contraception has risen slightly, from 54 percent in 1990 to 57.4 percent in 2015" (WHO, 2015), the unmet need for contraception remains high in Low and Middle Income Countries (LMICs). According to WHO, "Women with unmet need are those who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child" (WHO, 2017a). About 17 percent or 140 million, of women have an unmet need for modern contraception (Paudel & amp; Budhathoki, 2011).

#### FAMILY PLANNING IN THE CONTEXT OF NEPAL

The national FP program in Nepal has achieved progress in the past 45 years. The fertility rate in Nepal, although decreased over the past decades, remains high, with women having an average of 2.6 children. Fertility rate is different among ecological zones in Nepal showing significant disparities in fertility with 3.4 births per woman in the mountains zone and 2.5 births per woman in the Terai (MoHP, 2012). Likewise, the percentage of contraceptive usage increased 50 percent in 2011 from 2.9 percent in 1976 (UNFPA, 2010). As per the NDHS 2011, the total demand for family planning is 77 percent of the Married Women of Reproductive Age (MWRA) of which 50 percent is met; which leaves 27 percent of need not yet met (MoHP, 2012). The key social determinants of family planning include: policy and law, economic status, access to education, societal and cultural barriers, awareness and knowledge on FP, and access to FP services.

#### FAMILY PLANNING IN THE CONTEXT OF BANGLADESH

Bangladesh, one of the developing countries, had begun its FP programme in 1950s and has made commendable success in decreasing its TFR from 6.3 to 2.3 children per women, likewise, the CPR (all methods) increased from 7.7 to 61.2 percent in same period (Saharty, Ahsan, & amp; May, 2014). Currently, 12 percent married women in Bangladesh have an unmet need for FP where 5 percent have need for spacing and 7 percent have need for limiting births (NIPORT, Mitra. a., & amp; ICF,2016). According to the World Bank (2003) the TFR was above seven in the early 1970s, while it is today merely 2.2. Currently Bangladesh has the lowest TFR in South Asia. This raises the question whether other developing countries in South Asia could learn from the Bangladesh experience?

#### **METHODOLOGY**

This study was designed as a comprehensive documentary review applying a descriptive approach to both qualitative and quantitative data from 105 national and international program evaluations reports, journal papers and population and FP policy brief on family planning programs in Nepal and Bangladesh published between 2001 and 2017; employing key success factors and replicability criteria as analysis frameworks to take stock of lessons learned and arrive at recommendations for Nepal's family planning efforts.

#### **RESULTS AND FINDINGS**

Bangladesh, being a small and one of the developing countries in the world has achieved remarkable improvement in its health status. There have been many policy shifts and changes in Bangladesh's health system and the improvement in reproductive health and family planning demonstrates its progress. One of the impressive progresses is a sevenfold increase in the contraceptive prevalence rate in Bangladesh. FP effort began with a voluntary effort of a group of social and medical workers in the early 1950s and later the FP program was adopted by the government with objectives to control population growth as a strategy for economic development (Randall, 2012). The Bangladesh FP program has gone through a series of transitional phases during the past 6 decades. Bangladesh's success story in FP has been chosen in this study, where it was able to manage increasing CPR and reducing TFR and unmet need in FP through successful and innovative FP programs. The author applying the concept of replicability of Bangladesh success factors in FP based on the construct discussed in the literature (Ng & amp; Colombani, 2015; Douet, et al., 2014; Metz, Bowie, & amp; Blase, 2007). Nepal and Bangladesh situate in South Asia having similar socio-cultural contexts, therefore reflecting on success factors in Bangladesh's FP program while adopting a replicability perspective would allow for tuning success factors to Nepal's context. Despite having similar FP program goals and core intervention components the question remains as to what factors explain success in the Bangladesh FP program and what conditions are essential to support replicability in Nepal?

### 1. Core Components of Family Planning Programs

#### Intervention components and approaches to intervention

FP intervention involves IEC, provision of contraceptives and counselling in FP decision-making integrated into reproductive health services. Although both countries offer the same FP core components differences can be observed in target audiences. Being a dominant Muslim and patriarchal society, over time Bangladesh shifted from its traditional target audience, WRA, to men. In terms of approaches to implementation, differences situate in capacity building, infrastructure, and community mobilization. Capacity building in Bangladesh seems to be more systemic, further Bangladesh has FP infrastructure up to the grassroots which is further supported by the private and NGO sectors, while the mountainous terrain poses significant challenges in the provision of FP infrastructure for the GON. For community mobilization both countries are able to use Female Village Volunteers, however the GOB clearly has the benefit of the support from religious leaders therefore far better equipped to target a male audience.

#### 2. Key conditions for FP intervention

#### Socio-cultural aspects

As illustrated by Table 6 below socio-cultural aspects of FP involves geography and public transport, society and culture, and stakeholders' support. Comparing both countries is becomes evident that Nepal is clearly challenged by its geographical terrain and its less developed road infrastructure and public transport systems. Despite socio-cultural similarities translating in gender inequities, the main differences are in terms of religion Muslim vs. Hinduism and Buddhism where the latter provide more freedom in movement as an advantage for Nepali women. However, Bangladesh was able to better deal with sociocultural challenges by a shift in FP target audience. As for stakeholders' support the traditional actors are the same for both countries, however as pointed out above, Bangladesh was able to mobilize and obtain support from Muslim religious leaders in advocating FP among men.

### 3. Target audiences

The target audiences in FP involve adolescents, WRA, and men. Both countries face challenges in targeting adolescents in terms of coverage, user friendly services, and focusing on girls only. As for WRA, a similar approach can be observed for both countries. However, one should note that well accepted microfinancing programs empower women in Bangladesh by making them less dependent. A clear difference in targeting men can be seen between Bangladesh and Nepal. Bangladesh focuses specifically men through mobilizing support from Muslim religious leaders in doing so, whereas in Nepal, despite their key role in FP decision-making, men remain overlooked in awareness-raising.

In summary, key success factors in Bangladesh's FP programme are political will, infrastructure, capable human resources, collaboration between public-private and NGO sectors, appropriate target audiences, and community mobilization. Replicability of the Bangladesh approach to FP requires political commitment, strategies to overcome terrain challenges in ensuring service coverage, a human resource management plan, the adoption of SWAps, targeting the appropriate audience(s), and consideration on how to best reach these audiences.

# CONCLUSION

Nepal has started its family planning programme in the early 1950s, earlier than Bangladesh. Notwithstanding both countries experienced fertility declines over the past decades, Bangladesh performed better in terms of achievements in TFR, CPR and unmet needs. Nepal and Bangladesh show similarities in terms of culture, funding sources, and stakeholders in FP program, replicability of best practice as demonstrated in Bangladesh, Nepal need to ensure: appropriate awareness campaigns targeting men, more community involvement, delivery of services up to the grassroots, and social marketing strategies. Implementation-wise this means genuine government commitment, adopting a sector-wide approach and the provision of a service delivery infrastructure including trained human resources.

# RECOMMENDATION

- Government commitment to control population growth in terms of priority given, policy development, and resource allocation.
- Advocate for Public private partnership approach to engage in any sector relevant to FP.
- IEC campaigns must target men.
- Mullahs and Imams need to be mobilized and get involved in advocating FP in Nepal.
- To overcome the geographical barriers to access Long Action and Permanent Methods (LAMP) could be encouraged for rural and remote clients.

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# Biomedical Hazardous Waste Management in Nepal: An Outlook of International Principles and Its Implementation in National Practice

Nikita Pokharel<sup>1</sup>, Uma Langkulsen<sup>2</sup> and Sarina Pradhan<sup>2</sup>

<sup>1</sup> Nepal Email: nikitapokhrel9216@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathumthani, 12121, Thailand

### ABSTRACT

Hospital waste generation and management has become a prime concern globally due to its multidimensional ramifications as a risk factor for disease transmission. In Nepal, the majority of Health Care Institutions (HCI) practice an improper methods for waste segregation, storage, transportation and disposal. Several international guidelines have been adopted and efforts have been made in introducing national guidelines for sound management of biomedical hazardous waste management (BMHWM). However, the existing guidelines are not strictly applied in practical settings. This study follows a documentary review strategy using thematic content analysis. Data from 2000 to 2018 was included for the study. Documents only with abstract, blogs, incomplete information were excluded. The guidelines provide essential theoretical guidance that has been in place and well circulated to HCIs. However, the majority of the health care institutions have not adopted the correct methods for the management of waste. As a result, huge gaps exist in every step from waste segregation to its final disposal. A large quantum of biomedical waste gets produced, intensifying the risk of infection and injury. Despite many efforts made by the government, the problem still persists and not much has been done to standardize the status of waste management. Thus gaps exist right from policy level to implementation at institutional level and this affects the compliance and sustainability of BMHWM in Nepal.

*Key words:* Biomedical hazardous waste, international guidelines, national guidelines, Nepal, health care practices.

#### **INTRODUCTION**

Biomedical waste includes all kinds of waste generated from medical activities: diagnosis, treatment and immunization of human beings or animals that represent a real problem for human world and living nature. World Health Organization (WHO, 2018) has categorized biomedical waste into hazardous and non-hazardous waste, out of which 85% of the waste accounts for non-hazardous whereas the remaining 15% is considered as hazardous waste. Health care waste generation and management have become a multidimensional problem and a major concern globally due to its increased risk for human health and the environment. From a global outlook, biomedical hazardous waste management (BMHWM) is considered as one of the important issues countries need to address. (Chhabra, Agarwal, & Gopal, 2015).

The entire world is directing its focus towards the proper management of biomedical waste. WHO has developed guidelines and principles related to safe management that involve approaches for awareness, segregation, and disposal methods (Chabra et al., 2015). Finally, legislation holds a key role in establishing standards, creating systems for both monitoring and surveillance, and securing financial aid for the development of a sustainable waste management system (WHO, 1994).

The Government of Nepal has recognized medical waste management as a pressing issue to be taken into account. It has made several efforts to consider key determinants for effective implementation. At present, Health Care Facilities (HCF) in Nepal are struggling in the area of biomedical waste management practices. It is a big challenge for Nepal to follow the classification and guidelines by WHO for proper management of biomedical waste (MOHP, 2014).

Biomedical waste poses a great threat to global health as large volumes of biomedical waste directly affect human health. Improper waste management exists in many parts of the world but is more pronounced in the developing world. The guidelines provided by WHO have essential theoretical guidance that have been in place and are well circulated to Health Care Institutions (HCIs). However Implementation of the guidelines remain a major challenge in practice (Dangi et al., 2015). In Nepal, the majority of the HCIs have not yet adopted the correct methods for the management of waste. As a result, huge gaps exist in every step starting from waste segregation to its final disposal. The generated waste easily gets mixed with biomedical waste in open dumping sites.

The generation of biomedical waste is different from country to country and within a country. According to MOH, Nepal generates approximately 36,735 kg of medical waste per day (1.35 kg/patient/day) out of which 37% of the waste is hazardous. There are 5,290 health care facilities in Nepal, out of which 4,122 are public institutions owned by the government (central, regional, district, zonal, health post, primary health care) and 1,168 are private (WHO,2017). Table 1 shows waste generation from three major hospitals in Nepal along with waste type and amount.

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Types of waste	General waste (%)	Hazardous (%)	Sharps (%)
Patan Hospital	63.5	27.8	8.8
National kidney centre	50	17	33

Table 1: Waste generation in three major hospitals in Nepal

# Table 1: Waste generation in three major hospitals in Nepal (cont.)

Types of waste	General waste (%)	Hazardous (%)	Sharps (%)
Koshi Zonal Hospital	68.4	28.4	3.1

Source: Biomedical waste management in Nepal (Chaudhary et al., 2014)

The volume of hazardous waste is increasing with an increasing number of health care facilities. The increased volume of general waste results in higher hazardous waste. Properly managed hazardous waste should pose no threat to human health or environment but the problem arises when the hazardous waste is mixed up with general waste making the latter totally hazardous (Rijal & Deshpande, 2007).

The world is getting smaller. Interconnected population growth, migration and globalization are all factors that play a significant role in shaping the nature of the global health arena. Developing countries are already experiencing numerous public health issues, and are even more vulnerable to the emerging problems related to waste management. With effective biomedical hazardous waste management being a current priority, this study presents a detailed summary of the adoption of existing national guidelines in Nepal, as well as compliance with the guidelines at different levels of national system.

# OBJECTIVES

- 1. To identify the practices involved in biomedical hazardous waste management in Nepal
- 2. To study the application of existing national and international guidelines developed for biomedical hazardous waste management in Nepal.
- 3. To explore the gaps in implementation and compliance of existing national biomedical hazardous waste management in Health Care Facilities in Nepal.

# METHODOLOGY

# **Study Design**

A documentary review strategy including qualitative approach was adopted to identify the existing international and national guidelines introduced for the management of biomedical hazardous waste and compliance at national level in Nepal.

# Samples and Strategy

Information sources included journal publications, books, assessment reports, reports from government agencies (e.g., Ministries of Health), non-government reports and international organizations (e.g., WHO).

# **Ethical Procedure**

The study was based on documentary review. Therefore no ethical approval was required.

# **Reference and Data Analysis**

Data was translated using thematic or content analysis to identify the compliance with guidelines. Analysis was carried out to establish content of articles and documents to determine words, concepts and themes. The data was reviewed and analyzed based on the identified themes.

#### Inclusion criteria

- Articles, reports and publications focusing on international and national guidelines for hazardous hospital waste management
- Studies conducted at national and international level
- Documents published in English and/or Nepali language during the period of 2000-2018

# **Exclusion criteria**

• Documents with abstracts only, or without a conclusion, blogs and incomplete reports

### RESULTS

There are numerous international guidelines that have been developed for the management of biomedical waste. The guidelines developed have been adopted widely as a guiding factor for creating a national action plan, developing national Health Care Waste Management (HCWM) guidelines and capacity building at national level to improve the health care waste management process used in low income countries (WHO, 2018). The guidelines provide detailed information on defining health care waste and managing it in a health institution and further.

The fundamentals of waste management primarily follow waste minimization. The next step involves segregation, which means separating waste according to different categories of hazardous waste. Segregation is one of the most important steps in managing waste at source. The segregated waste should be transported into different trolleys separating infectious and hazardous waste and the trolleys must be well labeled for easy identification. The waste then should be treated according to its type. Hazardous/infectious waste should be treated at a level which is considered acceptable as non-risk Health Care Waste (HCW) after treatment. This waste can be directly disposed through incineration or a sterilization process like autoclaving. The aim is to treat this waste at source to avoid unwanted disposal at landfill sites (WHO, 2018).

In 2014, MOHP developed Nepal's first national guidelines for HCWM (MOHP, 2014). Additionally, Nepal has made some international agreement that helps them to govern in safe management of hazardous waste. Although these guiding documents has been disseminated to institutions, the majority of health care units have shown poor implementation and compliance with guidelines and standards of Nepal (Joshi et al., 2017).

More than 90% of health care institutions do not practice safe treatment process and there is a lack of central treatment facilities in Nepal. A large number of health care facilities does not segregate the waste and mixes-up potentially infectious waste along with general waste producing large amounts of hazardous waste. This leaves a possible threat to workers who handle the waste (Chaudhary et al., 2014).

Many health care institutions fund treatment facilities such as incinerators and autoclaves with foreign aid. However, the operation of such instruments is below desired level (WHO, 2017). Generally the waste is either burned openly or in an incinerator, or makeshift constructed machines like drums.(MHOP,2014) A health care facility involves all kind of hazardous waste and the absence of proper treatment facilities creates a situation where health care units dump the waste in a disorganized way (NHRC, 2007).

The waste produced from health care waste is mostly handed over to municipal waste collectors. The majority of HCIs do not practice the pre-treatment of biomedical waste at site. As a result, both biomedical waste as well as municipal waste end up in common disposal sites (MOHP, 2014).

Nepal has substantial public health challenges regarding hospital waste management. Significant challenges persist for unsafe and poor management of biomedical waste, which increases the magnitude of the problem. Nepal lacks infrastructure, resources, and skilled manpower to invest and sustain the management process (Dangi, Schoenberger, & Boland, 2015). One of the important factors is the lack of emphasis given at the policy level. In Nepal, solid waste is more emphasized as a major issue. The formulation of existing guidelines by Ministry of Health is only limited to drafts and they are non-functional (DOHS, 2017). Therefore medical waste management is still a neglected area in Nepal (MOHP, 2014).

Hospital type	No. of hospitals	Total bed	HCW* (tons/year)	HCRW* (tons/year)
Government Hospital including	92	6,601	-	-
Teaching under MoHP				
Government Hospital including under	3	1,036	-	-
other Ministry				
Government Total	95	7,637	3,080.19	905.94
Private Hospitals	157	9,207	-	-
Private Teaching Hospitals	14	8,626	-	-
Private Total	171	17,833	7,192.49	2,115.44
Mission Hospitals	872.60	612	246.83	72.60
Country Hospital	274	26,082	10,519.51	3,093.98

Table 2: Health care institutions along with their capacity and waste generation

\* HCW = Health care waste; HCRW = health care risk waste.

Source: Health care waste management guideline (MOHP, 2014)

Table 2 shows that biomedical hazardous waste is produced in huge volumes and managed poorly. In the context of Nepal, the increasing population and demand for health care institutions (HCIs) leads to increased quantity of biomedical hazardous waste. The descriptive presentations of selected HCIs provides a snap shot of waste generation and amount of hazardous waste and helps to visualize the threat and potential of its effects on human health and environment (Onta et al., 2007). Focus is mostly given towards solid and liquid waste (including chemicals) yet laboratory waste is often neglected (MOHP, 2014).

Over past few decades, the generation of biomedical waste has increased exponentially with 90% of the HCI having poor waste management systems (Rijal & Deshpande, 2007). The waste produced from health care institutions is mostly handed over to municipal waste collectors. The majority of health care institutions do not practice the pre-treatment of biomedical waste at site. As a result, both biomedical waste as well as municipal waste end up in common disposal sites (MOHP, 2014).

#### DISCUSSION

In Nepal, there is no national policy or legislations regarding the management of biomedical waste. The government of Nepal has only focused on HCWM in recent time. The national guidelines developed by MOHP were distributed to health care facilities for proper management of health care waste. However, not much has been done to improve the status of biomedical waste management in different health care settings.

Health care facilities in Nepal generate 1.7 kg/person/day which eventually add up to a large mass of medical waste. It is of great concern for a country like Nepal that a systematic framework for biomedical waste management is lacking. Additionally, 26 % of the hazardous waste is produced and majority of the health care units mixes general waste along with hazardous waste increasing the volume of hazardous waste (MOHP, 2014). The available policies and strategies recognize waste based on the nature and volume rather than the categories they fall into (NHRC, 2007). Due to lack of concrete planning in waste management, municipalities at present take charge of waste of every kind. About 60% of the big hospitals use municipal waste disposal systems (MOHP, 2014).

Many of the HCIs face socio-economic challenges hence cannot afford the charges required to conduct BMHWM. Lack of infrastructure and resources hinders compliance with safe methods for HCWM (NHRC, 2007). Approximately, 30% of health care facilities receive state funding for waste management. The rest (70%) have to rely on the available methods or have to adopt local techniques to treat hazardous waste (WHO, 2017). Few health care units use treatment facilities such as incinerator and autoclave for their waste. However, no guidelines are enforced for their use. In some HCF the working temperature is even found below the required value (Visvanathan & Norbu, 2006). Additionally, lack of knowledge and training in health care workers exacerbate the problem of poor waste management (Timilshina et al., 2010).

#### CONCLUSION

Biomedical hazardous waste management has become one of the challenging issues for a developing nation like Nepal. The increased number of HCIs along with population growth leads to increased quantity of medical waste. Majority of HCIs have been practicing improper methods for waste segregation, storage, transportation and disposal. As a result huge amounts of biomedical waste get mixed up with general waste and end up in open dumping sites. This intensifies the spread of infections and injuries, and increases the magnitude of the problem. The problem has existed for many years and not much has been done to standardize the status of waste management.

Governance acts as a pillar for structuring and regulating policies and practices in different settings. The government of Nepal realizes the magnitude of the problem and it has made some efforts to introduce national guidelines, which were disseminated to HCIs for sound management of waste. However, the existing guidelines are not strictly applied in practical settings.

There is a crucial need for government to impose a systematic approach towards waste management. HCIs are the primary source of large amounts of hazardous waste. Therefore, concrete policy enforcement can direct medical staff and auxiliary workers to undertake correct procedures for waste management and slowly improve the status of BMHWM.

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# Type and Quantity of Bacteria in Classroom Air, Srinakharinwirot University Ongkharak Campus

Pareena Nakprasom <sup>1</sup>, Dollaya Sangsuwan <sup>1</sup>, Natawan Noicharoen <sup>1</sup>, Apisara Sommatas <sup>1</sup> and Pattakorn Buppan <sup>1</sup>

<sup>1</sup> Faculty of Physical Therapy, Srinakharinwirot University, Thailand E-mail: Pattakorn.b@gmail.com

#### ABSTRACT

**Background:** The presence of microorganisms in a classroom air environment could pose a serious health problem to students, because they spend around 10 hours per day in the classroom. Indoor air microorganisms can grow in numbers with sufficient moisture in the environment. Precise determination of various groups of indoor microorganisms is required for estimating health hazard and establishing indoor air quality standards.

**Objective:** To examine microbial concentrations in classroom air of Srinakharinwirot University Ongkharak Campus.

**Methodology:** This study was conducted to identify the main types of bacteria in classrooms air at Srinakharinwirot University Ongkharak Campus. A total of 144 samples were collected from November to December 2018, using passive air sampling with open Petri-dishes containing different culture media. All of the open Petri-dishes were placed in the classrooms for 60 minutes in the morning and afternoon in the 5 buildings located in different areas of the university. The identification of isolated microorganisms was based on macroscopic, microscopic and biochemical characters.

**Results:** The results showed that the average amount of bacteria in the morning samples from the 5 buildings were 10.1 - 93.1 CFU/m3/plate, and the afternoon samples were 4.9 - 63.9 CFU/m3/plate. Six types of airborne pathogens were found: Bacillus sp., Staphylococcus aureus, Enterobacteriaceae., Streptococus spp., Clostridium spp. and Pseudomonas spp. The average amounts of bacteria in the 5 buildings were significantly different (p <0.05). The mean number of microorganisms observed in the morning and afternoon are also statistically significant difference (p <0.05).

**Conclusions:** The presence of various microorganisms in classrooms at Srinakharinwirot University Ongkharak Campus could have adverse health effects to students and staff of the university. Investigation of factors contributing to classroom air contamination is recommended, so that clean classroom air environment can be promoting.

# HIV Risk Factors for Women Married to Men Who Inject Drugs: A Qualitative Case Study from Kachin State, Myanmar

Ye Htut Oo<sup>1</sup> and Gyaw Htet Doe<sup>2</sup>

<sup>1</sup> Faculty of Graduate School, Khon Kaen University, Thailand E-mail: yehtutoo@kkumail.com
<sup>2</sup> Substance Abuse Research Association, 18/A, Thiri Mon 9th St., Thiri Mon Housing, Mayangone Tsp., Yangon, 11062 E-mail: ghdoe09@gmail.com

### ABSTRACT

Women who are married to injection drug users may be at increased risk for HIV infection. However, limited information about them was available in Kachin State in Myanmar. Only a few harm reduction services were available to them, and their needs had not been effectively addressed. Thus, this study aimed to explore HIV risk factors for these women. Ten in-depth interviews and four focus group discussions with the women, as well as seven interviews with key informants were conducted. The data was collected in five townships of Kachin State where the drop-in centers of a local non-governmental organization were situated. Participants were recruited using purposive sampling method. Thematic analysis was carried out using "Atlas.ti 6" software. Unawareness of HIV status of their husbands, not practicing protected sex, lack of HIV knowledge, unequal power relations between the women and their husbands, limited access to health services, and language barriers were identified as the risk factors. It was shown that condom-use decisions were made by their husbands and the women had to comply with their decision even if they had knowledge of HIV transmission. Thus, services are needed to reduce gender inequality and increase decision making capacity of women on condom use negotiation.

#### **INTRODUCTION**

According to the Ministry of Health and Sports (2017), the prevalence of HIV in Myanmar was among the highest in the Asia-Pacific region. Moreover, the 2014 Integrated Biological and Behavioural Surveillance (IBBS) survey of people who inject drugs (PWID) showed that HIV prevalence and incidence among those populations were estimated to be 28.5% and 28% respectively. The survey also reported that Kachin state was a high HIV prevalence region among male PWID respondents.

Although the HIV epidemic of PWID was the highest among key populations, HIV testing coverage and HIV knowledge were the lowest compared to female sex workers and men who have sex with men (AIDS Data Hub, 2016). Moreover, the World Health Organization (WHO) (2015) reported that condom-use by PWID was the lowest, causing their spouses to be in a high risk population. The Substance Abuse Research Association (2016) also showed that 38% of married PWID were infected with HIV (468 out of 1248 male clients) in Myitkyina, Hopin, Namatee, Moe Hnyin and Moe Mauk townships in Kachin State. On top of that, there were increased services for PWID but accessibility to those services by their female spouses was very limited (Aung et al., 2016, p.13).

As stated in UNODC (2010), women who were married to male injection drug users may be victims of physical and sexual violence and were vulnerable to HIV. Because of all the above facts, women who married male injection drug users were more vulnerable to psychological impacts as well, and they could 'voluntarily' withdraw themselves from getting access to the testing services. However, limited information about the women were available in Kachin State. Currently, only a few harm reduction services such as HIV and Hepatitis B Virus (HBV) testing were available for them and their needs have not been effectively addressed. Thus, it was crucial to examine the HIV risk factors for the women.



# **Figure 1: Percentage of Condom Use by Key Populations**

Source: WHO, 2015. Country Fact Sheet: HIV/AIDS in Myanmar

#### **OBJECTIVES**

The objective of this study is to identify HIV risk factors for women who are married to male injection drug users to implement HIV prevention interventions and to find out support mechanisms for them.

#### METHODOLOGY

A cross-section qualitative case study was employed using in-depth interviews (IDI) and focus group discussion (FGD) with women who were married to male injection drug users. Moreover, key informant interviews (KII) with parents-in-law, an intimate friend, an army nurse, a camp religious leader and a ward authority who was a secretary of the drug abuse eradication team of a village were conducted. The study was carried out in five townships where the Drop-in centers
(DICs) of a local non-governmental organization were situated. The women were recruited purposively through their PWID husbands who registered in those DICs.

No	Field Site	No. of KI	No. of IDI	No. of Participants for FGD	Total No. of Participants
1.	Myitkyina	1	2	6	9
2.	Hopin	2	2	6	10
3.	Moe Hnyin	1	1	5	7
4.	Namatee	1	2	5	8
5.	Moemauk	2	3	-	5
		7	10	22	39

Table 1: Study Participants

Data transcription from the audio-recorder in Myanmar language was done and typed into a Word document. Thematic analysis was carried out using "Atlas.ti 6" software. Analysis was completed in Myanmar language and key findings were written in English. Selected quotations were translated into English. Verbal informed consent was taken from each participant. Confidentiality and anonymity of the participants were guaranteed. With permission of the participants, the interviews were audio-recorded and noted down, without their names.

# RESULTS

A total of 32 women: 8, 8, 7, 6 and 3 from Myitkyina, Hopin, Namatee, Moe Hnyin and Moemauk respectively, participated in IDI and FGD. Following is the table for the background information of the women.

Variables	<b>Total Number of Participants</b>		
Age of Participant			
Mean(minimum-maximum)	32 (20-55) years		
Education			
No Education	2		
Primary Education	9		
Secondary Education	17		
Passed Matriculation Exam	3		
Tertiary Education	1		
Occupation			
Dependent	6		
Unskilled Workers	13		
Farmer	12		
Teacher	1		

Table 2: Background information of women married to men who inject drugs

Variables	Total Number of Participants		
Residence			
Urban	13		
Rural	19		
Duration of marriage			
Mean (minimum-maximum)	10 (1-25) years		
Type of family			
Nuclear	12		
Extended	20		
HIV Testing & Results			
Tested, Positive	9		
Tested, Negative	16		
Not tested	7		

Table 2: Background information of women married to men who inject drugs (cont.)



A focus group discussion with the women in Namatee Township

# HIV RISK FACTORS

#### a) Unawareness of husbands' HIV status

Many women were not aware of the HIV status of their spouses or became aware only after they attended a hospital for serious illness or pregnancy where they knew they already had HIV. Not only HIV status was known later to them than to others, but also drug injection by their husbands. Occupations of their husbands such as driving trucks or working in mines, also had negative impact on them as they were unable to be with them for a long time.

"They knew their husbands did drugs later than others (neighbors) did. So, when it comes to AIDS, they have no time for prevention. They only knew they had the disease when they went to the centers for illness and got tested."

Army nurse from Moe Hnyin

#### b) Not practicing protected sex

Condom utilization was very low among the couples and only 9% of the participants reported that they used condoms regularly. Some people mentioned that they used condoms if they received them from the center but did not voluntarily ask for or buy them when they had none. There were many reasons for having condom-less sex: dislike for condoms because of reduced

sensation or its smell; trust in their husbands; desire to have a child, difficulties in accessing condoms; sheer embarrassment to obtain condoms and being in monogamous relationship. Few women had intention to use female condoms but did not ensure their spouses would agree to it. It was also impossible for most of them to refuse sex with their husbands if they did not want to use condoms.

# "The smell is very strong. How can we remove that? Also, it is very oily and irritates us. That's why we don't want to use."

#### A participant from focus group discussion in Myitkyina

# c) Lack of HIV knowledge

Many participants did not know about HIV/AIDS, its transmission and how to protect themselves from the disease. Such women were less likely to know the HIV status of their husbands, which made them vulnerable to contracting HIV.

# "I had no HIV knowledge before. A few months ago, I came here for the test and knew that I was infected. Then I asked my husband for taking the test, but he didn't listen to me... but at last, he underwent testing and was informed of the disease."

#### A participant from focus group discussion in Hopin

Some women had limited HIV knowledge, and misconceptions on protection of the disease were common. Dearth of knowledge by their husband also increased the vulnerability of the women. A participant stated her HIV-positive husband's willingness to have another child, but she thought it would be dangerous for her and the baby, and thus, decided to take oral contraceptives.

# "I don't think they knew about HIV when they lived in mining zone." Father-in-law of a women married to male injection drug users from Hopin

# d) Unequal power relations between men and women

Many women experienced sexual violence and became more susceptible to HIV/AIDS. Owing to unequal power relations between married couples, wives of IDUs were inferior to their husbands and unable to negotiate for a safe sex which increased their risk of contracting HIV infection. Numerous findings in terms of patriarchal gender roles particularly associated with condom use were identified: women were motivated to prove their fertility; marriage equated with the end of condom use as the act may indicate infidelity and distrust; husband, the head of household, had reproductive control and female had to comply his decision.

# *"My mom-in-law told me why I married if I don't wanna bear a child. She kept on telling that many times. So, I took a second pregnancy."*

#### A 36-year-old participant from Moe Mauk

A painful experience of a participant best describes the effect of patriarchy in transmission of HIV from a PWID husband to his wife. From the following conversation, it was evident that the husband had control over his wife, with involvement of usual violence. On the other hand, the women, upholding a dominant ideal of femininity, condoned and endured the violent behavior of her husband instead of defying this.

"I accompanied my husband to a hospital for tuberculosis treatment and found out he also had HIV. I was then tested, but the result was negative. A doctor gave us condoms to prevent transmission. But he didn't want to use them. So, I asked him to go back to the hospital for consultation. He refused that too. I thought it was better not to discuss the issue again because that would upset him. When I was pregnant and screened again, the result was positive."

#### A 42-year-old participant from focus group discussion in Myitkyina Township

#### e) Access to health care services

It was found out that 7 out of 9 HIV positive women were from rural areas. Rural people had challenges in accessing health care services such as limited transportation and financial problem leading to increased contractibility of HIV infection. People who lived in mining sites had little or no knowledge about HIV, and their accessibility was limited as they were unable to attain health education sessions as well as HIV services.

# "We had to work, and it was difficult to come here as we didn't have a motor cycle." A 32-year-old participant from Namatee

#### f) Language

Language barrier was also found out as a risk factor in this population. One participant mentioned that she was "Shan" and had incompetent Burmese language skills and hence, she found it difficult to understand health education by a nurse.

# "I got HIV education by a nurse. But I didn't know Burmese well and she spoke fast, so I didn't understand."

# A 38-year-old participant from Moe Mauk

#### CONCLUSION

Many women were not aware of their husbands' HIV status and had little knowledge of the disease. Therefore, more HIV and health education sessions are recommended to conduct especially in rural areas. Men should also be educated and those who obtained counseling should be advised to tell their wives about the infection. Condom promotion activities should be considered to enhance the condom-protected sexual practice. As knowledge on HIV counseling and testing among spouses was low, home-based HIV testing and counseling (HTC) services should be provided in the community.

ABCD prevention strategy (i.e., abstention, being faithful, condom use and delivering technologies for women to protect themselves including female condoms) should be adopted to prevent HIV transmission. Collaboration with faith-based organizations to conduct health education sessions would also be better for the whole community including the women and PWID to enhance HIV knowledge. As PWID husbands who are working in mines or driving trucks are more vulnerable to acquire the infection, workplace HIV/AIDS interventions might be the solution for those populations.

To tackle gender-based violence, education for empowerment of women along with the engagement of men is crucial to promote respectful relationships and gender equality. Sexual and reproductive health and rights programs should be strengthened along with SRHR/HIV linkages

through a multisectoral approach to improve coverage and access to HIV services. Safe sex negotiation skills for the women should also be provided with the aim of consistent condom use. Development of community-based interventions could increase uptake of testing and treatment among rural communities and ethnic minorities who could then overcome language barriers. Health information should also be created in the local languages of minorities.

To conclude, HIV prevention interventions for women such as peer prevention programs, SRHR and education sessions should be integrated with current harm reduction programs. It is also important to cover rural areas and include ethnic minorities in participatory processes to ensure no otherness exists during service delivery.

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# Task Shifting at Mae Tao Clinic, Thai-Myanmar Border: A Case Study of Frontline Community Health Workers in Implementation of Child Health Programs

Aye Thandar Aung <sup>1</sup>, Nitaya Vajanapoom <sup>2</sup> and Bill Brady <sup>2</sup>

<sup>1</sup> DKT Myanmar\_University Reproductive Health Corner Program, 4A, Pyay Taw Aye Yeik Thar Street, Yankin, 11081, Yangon E-mail: ayethandar@fph.tu.ac.th <sup>2</sup> Faculty of Public Health, Thammasat University, 10th floor, Piyachart Building, 99 Moo18, Khlong Nueng, Khlong Luang, Pathumthani, 12121, Thailand E-mail: nvajanapoom@fph.tu.ac.th E-mail: billbrady@fph.tu.ac.th

#### ABSTRACT

A Shortage of health workforce has resulted in task shifting from professionals to cadres with lesser qualifications. As a result of the humanitarian crisis in Myanmar, children of cross border migrants have suffered from common child diseases including pneumonia, malaria and diarrhea. With few doctors and nurses, the expanded role of health workers from a community-based clinic, Mae Tao clinic (MTC), is giving community based healthcare services on the Thai-Myanmar border. The objectives of this study was to contribute to a wider understanding of the task-shifting roles of frontline community health workers (FCHWs) on the Thai-Myanmar border with the aim to inform decision making of health workers' management particularly in a cross border area. A documentary review from 2006 to 2017 was conducted. With the various training at MTC for FCHWs, outreach activities of immunization, health promotion and education, surveillance and referral from FCHWs are assumed to have saved more lives of children. Expanding and optimizing the roles and responsibilities of less specialized health workers, along with coordination and collaboration between the Thailand and Myanmar governments may be an effective way to scale up health workers capacity to control and manage common child diseases along the Thai-Myanmar border region.

*Key words:* task shifting, community health workers or frontline community health workers, Thai-Myanmar border, Mae Tao Clinic

#### **INTRODUCTION**

Present and future health status of an inadequate health workforce poses challenges to global health issues. Currently, the mobile population of migrants, including irregular and regular, refugees, asylum seekers and internally displaced people (IDP) are increasing in the global population worldwide due to many reasons such as conflicts, natural disasters, political unrest and economic difficulties (Grove & Zwi, 2006). The health workforce would not be enough if it was solely dependent on professional health workers and a disease model focused on curative instead of preventive care based on determinants of health as promoted in recent years (WHO, 2007b). Furthermore, the disease and poor health outcomes among the migrants affects the communities and citizens of the destination countries (Smith & Daynes, 2016). According to WHO, sufficient skilled FCHWs played an important role in management and control of disease at the community level on the Thai-Myanmar border and conflict-affected regions (Chamchan & Apipornchaisakul, 2012). This was attributed to a task-shifting human health workforce for health that fulfilled the demand for healthcare services in marginalized population (Low et al., 2014). There was evidence that sharing the tasks with FCHWs was effective in improving health outcomes. For example, Ivers et al. (2011) found that task-shifting by nurses and CHWs, on most HIV related tasks that were traditionally done by doctors, scaled up the clinical program in the area of reducing loss to follow up of HIV patients in Rural Haiti. In addition, McPake et al. (2008) found that task shifting strategies involving community based health workers reduced maternal deaths in caesarean sections by developing surgical skills that were only done by professional doctors in Malawi. Therefore, the primary healthcare services through task shifting and capacity development of health workforce fulfilled the health demands of migrants (Walley et al., 2008) and increased accessibility to all areas in host countries.

According to Trincia et al. (2016), large barriers to accessing health care in Myanmar and the Thailand border region were reduced for an annual estimate of 150,000 refugees, migrant and IDP who fled conflict and economic hardship and reached the MTC where they accessed free quality health care services. MTC served as a training hub of the comprehensive community health center, which, in partnership with ECBHOs, offered health training to grassroots cadres of FCHWs including village health workers (VHWs), traditional birth attendant (TBAs), community health workers (CHWs), Maternal and child health (MCH) workers and medics.

	Eastern Burma	Thailand	
Financial Ability to pay – informal fees,		Lack of health insurance,	
	transportation	entitlement to public services	
	Out of pocket payments 82%	Ability to pay – fees, transport	
	Lack of health insurance*		
Human rights	No birth certificate, health record	Fear of arrest/abuse for absence	
	Militarization and restrictions on	from work	
	movement	Work card retained by employer	
Geography	Remoteness	Remoteness – seafarers, remote,	
	Lack of health and other	highly mobile	
	infrastructure		
Communication,	Language barriers	Language barriers	
cultural factors	traditional beliefs	traditional beliefs	

Table 1: Healthcare access barriers for cross-border communities

	Eastern Burma	Thailand
Time	Time to travel to care	Unable to take time from work

#### Table 1: Healthcare access barriers for cross-border communities (cont.)

Source: (Russell & Maung, 2014)

The diseasea of children such as pneumonia, diarrhea, and malaria are the leading causes of child mortality and morbidity along the Thai-Myanmar border (MTC, 2010). Public health interventions through FCHWs can reduce child morbidity in these communities (Nishtar et al., 2013). Community-level healthcare cadres, FCHWs from MTC and other ethnic community based health organizations (ECBHOs) are the main providers of primary healthcare services in Thai-Myanmar Border region. Literature has shown how community based health workers have contributed to improve health outcomes of child diseases (Perry et al., 2014; H. Perry et al., 2014). However, there is little evidence to support the expanded role of FCHWs on Thai-Myanmar border in improving child diseases. Therefore, the purpose of this study is to contribute a wider understanding of the task-shifting roles of FCHWs in the Thai-Myanmar border with the aim to inform policy making for health workers' management particularly in a cross border area.

# PURPOSE

The proposed study contributes to a wider understanding of the task-shifting roles of FCHWs in the Thai-Myanmar border in providing needed health services to a vulnerable border population. The aim is to inform health care system's policy and allow for expansion of healthcare workers' capacities in a cross border area.

### METHODOLOGY

This is documentary research that examined, through in-depth literature review, associations between expanded roles and responsibilities of FCHWs and improved health outcomes of children along the Thai-Myanmar border region. The review included 20 documents written in English between 2006 to 2017. A Boolean search strategy was used to identify documents using key words of "task shifting", "community health workers", "frontline community health workers", "Thai-Myanmar border", and "Mae Tao Clinic" from Google, Google Scholar, PubMed, and Web of Science databases. Editorials, abstracts only and document before 2006 were excluded. Available secondary sources were used that provided appropriate tools to explore and organize the collected data in order to draw conclusion on how FCHWs at MTC improved their management and control of child diseases to reduce morbidity and mortality.

#### RESULTS

Ninety-four documents were identified through database search, of which 20 articles were included; 74 documents were excluded because they were published before 2006 and not focused on child disease intervention or primary health care along Thai-Myanmar Border.

# **Contribution of FCHWs in Improving Child diseases**

The child health program at MTC included the provision of healthcare services, including management of acute and chronic conditions through clinic services, and preventive and public health services through both facility-based and community-based outreach activities. Patients aged 15 years and below, received treatment at the child health department, which included both inpatient and outpatient services (MTC, 2010). Estimated cases seen at the child health

department at MTC were between 15,000 and 18,000 annually as shown in Figure 1. From those total child cases in 2016, 10,705 children under-five were treated at MTC. An estimated 50 percent of total patients seeking care at MTC came from Myanmar across the border.



Figure 1: Annual number of children seen at MTC 2010-2016

Source: (MTC, 2017b)

Trained FCHWs provided primary health care services with outreach, family-community care and facilities-based clinical care in programs for management of child health. These FCHWs gave curative care, immunizations, diagnosis and testing, growth and nutritional status monitoring, and treatment of common illnesses in child patients in clinic (MTC, 2010).

Figure 2 shows the most common childhood diseases received at MTC; a high rate of Acute Respiratory Infection (ARI) was reported in the health information system.



Figure 2: Annual number of Common Child Morbidity Reported from MTC 2011-2013 Source: (MTC, 2011a, 2012, 2013, 2014)

Most children who got treatment at MTC suffered from diseases related to malnutrition: pneumonia, diarrhoea, and skin infections. MTC has reported that the children with malnutrition had increased from 64 in 2015 to 148 in 2016 (MTC, 2016). For the malnutrition child patients, MTC's treatment included nutritional assessments, supplementary feeding programmes, and vitamin A deficiency treatment. In addition, the children recovered from malnutrition received vitamin A supplements and a deworming pill before being discharged.

Concerning the management and control of disease outbreaks, MTC began their collaboration with the local Thai Government Tambon Health and Public Health Department when the clinic started. FCHWs from the school health team participated in emergency response and helped Thai public health officials with disease surveillance, prevention and control programs. Actively participating in the provincial and local protocols for controlling infectious surveillance, FCHWs started reporting soon after the Thailand MOPH and WHO introduced monitoring in the reporting system in late 2011. Every year since 2012, the MTC reported suspicious signs and symptoms of 20 reportable infectious diseases within 24 hours to Thailand MOPH as shown in Figure 3 (MTC, 2017b). FCHWs helped track the prevalence of specific diseases including malaria, diarrhea, dengue, avian influenza, cholera, measles and meningitis (MTC, 2011a). Most reported cases were diarrhea, dengue and malaria in MTC.



No. of cases by yearly Disease / Year



MTC served as a referral network for ECBHOs. The network of trained FCHWs such as VHWs, VHVs and TBAs served at the eastern border of Myanmar and referred patients to the nearest hospital or clinic such as MTC, Mae Sot Hospital (MSH) or Ministry of Health (MOH). For example, the children who required complex surgery such as cardiac surgery for congenital heart diseases were sent to Chaing Mai Hospital, Thailand (MTC, 2008).

Delivering child disease prevention interventions in cross-border communities as health promotion, FCHWs played a key role as part of the outreach team in reproductive health outreach,

school health and first aid workshops at targeted communities (MTC, 2010). Furthermore, the school health team visited displaced children in migrant learning centres in and near Mae Sot, on the Thailand border, and in Myawaddy, on the Myanmar border. Furthermore, immunizing children in clinics and communities of cross border migrants was one of the activities of FCHWs to manage and control common child diseases. By wide collaboration with Thai EPI and Thailand MOH, the immunization coverage was increased for cross-border Burmese migrants and Eastern Myanmar (MTC, 2016).

To improve the performance and skill of FCHWs, the MTC training program offered long term and short term training. The duration of MTC training was six months to 2 years (MTC, 2011). The curriculum of this training was first started in 1981 based on WHO guidelines (Low et al., 2014) and was delivered by Burmese doctors, international professionals and senior medics in order to qualify as providing health skills and knowledge in effective health care services for this population (MTC, 2011b). The training included core skills in managing child health (MTC, 2017b). To assist childbirth and to improve the outcomes of maternal and newborn health in communities, chosen TBAs from communities were also trained (MTC, 2010). MCH and other specific training were given to midwives and TBAs (MTC, 2016). FCHWs also received various seminars, workshops, follow up and refresher training at MTC.

After completion of the training, a number of FCHWs were employed in the MTC clinic system. However, most trained FCHWs returned to deliver urgently needed healthcare to their ethnic communities in eastern Myanmar where ECBHOs were providing primary healthcare (MTC, 2008). Trained FCHWs performed various tasks: treatment of simple and common ailments, disease management and control including surveillance, reporting, referral, and health education along with health promotion, community development activities, record keeping, and collection of health data from both sides of the border. By 2010, approximately 3000 health workers had been trained to provide health services at factories, clinics, schools, villages, camps and communities along both sides of the Thai-Myanmar border (MTC, 2010).

For monitoring and supervision, MTC appointed nine staff who were trained to monitor and supervise for quality control and assurance (QC/QA) of both clinic and outreach services. This was aimed at improving the performance of FCHWs in the process of using correct treatment and reporting for disease control and management. (MTC, 2016). To achieve optimal health outcomes for children in the population served, the checklist of integrated management of child illness (IMCI) created by WHO and United Nations Children's Fund (UNICEF) was used in monitoring for controlling childhood diseases (MTC, 2010).

#### DISCUSSION

With few trained health care professionals, the trained FCHWs working in the MTC health system had significantly expanded their roles and responsibility in order to undertake a wide range of tasks and interventions for treatment and prevention of childhood diseases. Lee et al. (2009) mentioned that CHWs and VHWs from ECBHOs are able to reduce the malaria incidence even in a conflict-torn zone, despite the shortage of a professional health workforce. Using the same spoken language of communities and being trusted from community, FCHWs have become the main health care service providers for a wide-range of health services including health education, gathering information and delivering basic curative and preventive services at the community and household levels along Thai-Myanmar border. Working together in community-based care,

trained CHWs and VHVs and TBAs from MTC can be assumed to manage child disease effectively. Furthermore, collaboratively working with local authorities and CBOs in disease surveillance, reporting and referral plus delivering immunization, health promotion and education, the referral from TBAs and VHWs becomes a bridge for access to health care between child patients from communities and health facilities, thus increasing the services between community and facilities. By working together with Thailand and Myanmar governments, ECBHOs and local civil society, this task-shifting can achieve greater equity in health care delivery in areas with a shortage of staff and in hard to reach areas. It is also a way to achieve the sustainable health workforce to meet with SDGs goal of child mortality with 25 or fewer deaths per 1000 live birth by 2030. An expanded role of trained FCHWs at MTC helps to strengthen the MTC's health delivery system to improve the health outcomes of children along Thai-Myanmar border region.

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# Documentation of Factors Contributing to Road Traffic Accidents in Nepal

Nilam Bhandari <sup>1</sup> and Nitaya Vajanapoom <sup>2</sup> <sup>1</sup> Nepal

E-mail: bhandarinilam7@gmail.com, nilam@fph.tu.ac.th <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Klong Luang, Pathum Thani, 12121, Thailand E-mail: nvajanapoom@fph.tu.ac.th

#### ABSTRACT

Background: In 2017, Road Traffic Accident (RTA) lost the lives of over 1.25 million people around the world. In 2016, RTA was the 8th leading cause of death in Nepal. This review aims to document the burden, contributing factors and challenges in the prevention and control of RTA in Nepal. Methods: This study used a documentary review of literature issued from 2010 onwards with specific search between December 2017 and September 2018. Documents were retrieved using Boolean search strategy; 20 were analyzed in review. Results: In Nepal, the number of RTA was highest in the highly urbanized Kathmandu valley but deaths and disabilities were highest in rural areas. RTA victims occupied nearly 60–70% of emergency beds at major tertiary hospitals. 15-29 years' age group are most affected, followed by 30-49 years. Similarly, male, pedestrians, drivers and passengers were more affected than females. Most accidents were caused by human factors followed by environmental factors. The peak times for accidents are afternoons and during festivals. Conclusion: The high burden of RTA in Nepal is caused by multiple factors. There is a need for raising public awareness, strengthening laws and enforcement on road safety.

Key words: RTI, RTA, Contributing factor, Nepal

#### INTRODUCTION

A Road Traffic Accident (RTA) is defined as an event on the road resulting in personal injury due to the he involvement of vehicles (Ruikar, 2013).

The World Health Organization (WHO) highlighted RTAs as the tenth leading cause of death globally (World Health Organization, 2017). Ninety percent of the world's fatalities occur in Low and Middle Income Countries (LMICs), which have only 48% of the world's registered vehicles. Of this, half of the fatalities are of vulnerable road users (World Health Organization, 2009). In WHO South East Asia Region (SEAR), RTAs killed approximately 316,000 people annually, which accounted for 25% of global RTA deaths (World Health Organization, 2016). Road safety requires effective and sustainable program. Recognizing the need, Sustainable Development Goal (SDG) has prioritized road safety and addressed in Goals numbered 3 and 11 (United Nation, 2014).

# **RTA in Nepal**

Ecologically, Nepal is divided into three regions: plains, hills, and mountains. Because of high currents and inadequate water depths in rivers, and expensive air transportation, the road is the main mode of transportation in Nepal (Government of Nepal, 2013b).

Development and maintenance of roads is the responsibility of the Department of Roads (DoR) and Ministry of Physical Infrastructure and Transport (MoPIT). However, stakeholders including donor agencies, private and non-government sector provide assistance. Furthermore, Nepal Roads Board, a semi-autonomous body, also allocates an annual budget for traffic safety (Government of Nepal, 2013b).

The study aims to describe the burden of RTA, document the human behavior, environmental and management factors that contribute to RTA. Likewise, it aims to identify challenges in prevention and control of RTAs in Nepal.

# METHODOLOGY

**Study Design:** Documentary literature review was conducted. Information was extracted from relevant and credible sources, publications and reports.

**Study Sample:** Published/unpublished reports and documents of governmental and non-governmental agencies.

**Search Strategy:** Boolean search strategy was used. Documents between 2009-2018 written in English and Nepali language were retrieved. Notes, newspapers, magazine, and research articles with abstract only were excluded.

**Data management and references:** Document was searched using key words and filtered using the exclusion criteria. APA 6th version was used for references.

**Data analysis:** Qualitative data were analyzed through content analysis and quantitative data were gathered and sorted according to the variables that the review questions needed to answer.

#### RESULTS

1. <u>Document identification</u>: 20 documents were used in the analysis, including one Nepal traffic police website data. The final search was conducted on 10<sup>th</sup> July, 2018.



Figure 1: PRISMA flow chart of literature search (RTI, RTA, Nepal)



# Figure 2: Trend of RTA and fatalities

Source: Government of Nepal (Government of Nepal, 2011, 2017)

2. Burden of RTA across Nepal:

Figure 2 shows an increasing trend of RTA (Government of Nepal, 2017). Although, only 43% of the Nepalese has access to all-weather roads, Road Traffic Injuries (RTI) are the second most common injuries (19.8%) (Gupta et al., 2015). Safer road practices such as speed law, seat belt law, helmet law introduced through Vehicle and Transport Management (VTMA) act 1992 (Government of Nepal, 2013a), were not successful due to weak implementation. RTI occupied nearly 60–70% of emergency beds at major tertiary hospitals (Government of Nepal, 2015/16).



Figure 3: Total Number of registered RTA cases in orthopedic OPD

Source: Government of Nepal (Government of Nepal, 2011/12, 2012/13, 2013/14, 2015/16, 2016/17)

Morbidity data could have been underreported as only major injuries with damage of life and property are reported (Government of Nepal, 2013b). Consequently, it is difficult to measure the exact burden. This could be the consequences of lack of a dedicated lead agency for national data records. Poor recording and reporting was also identified through personal contact.

Kathmandu valley has a higher number of crash but severity per crash is comparatively higher in hills (Government of Nepal, 2013b; Karkee & Lee, 2016; Mishra, Neupane, Bhandari, Khanal, & Kallestrup, 2015). The reason of accidents and severity includes, hilly, narrow and steep roads with frequent turn and twist.

# 3. <u>Factor contributing to RTA in Nepal</u>:

Multiple factors can cause RTA including human factors, environmental factors, and preventive and control measures can be applied.

# 3.1 Human factors:

Human factors include demographic characteristics, driving skill/experience, continuous driving and driver and pedestrian carelessness.

Half of the RTA victim were aged 15-29 (Huang et al., 2016). Death and disability is higher in men. This could be because in Nepal, outdoor activities involve mostly. Therefore, it is very common to have higher number of male drivers, male pedestrians and male passengers.

Inexperienced drivers, driver and pedestrian carelessness, over speeding, driver fatigue, impatience with motorbike riders, passing in restricted areas, drunk driving (Adhikari, 2016),

lack of driving skill and continuous long hour driving were other causes of accidents (Shrestha, Bhatta, Shrestha, Gc, & Paudel, 2017). There is no practice of taking breaks while driving public transport.

The majority of accidents were caused by driver negligence (43.7%) and over speed (18.7%) respectively (Government of Nepal, 2013b). Similar results were also observed in other studies (Government of Nepal, 2013a; Karkee & Lee, 2016; Mehta, Rai, & Mehta, 2015; Mishra et al., 2015; Shrestha et al., 2017); and the same evidence for over speed (Choulagai et al., 2015; Mehta et al., 2015; Shrestha et al., 2017). Likewise, pedestrian carelessness (e.g., haphazardly crossing of road (Government of Nepal, 2013a, 2013b; Karkee & Lee, 2016)) and driver carelessness (e.g., drinking and driving) can cause RTA (Government of Nepal, 2013a, 2013b; Karkee & Lee, 2016; Shrestha et al., 2017). Similarly, overloaded vehicle is another cause of accident. (Government of Nepal, 2013b; Shrestha et al., 2017).

Malpractice of using mobile phones while driving has increased since the past few years. However, studies are lacking, making it impossible to explore the effects of using mobile phone during driving.

In summary, most of the accidents are caused by human negligence, which means they are predictable and preventable.

#### 3.2 Environmental factor

Environmental factors include topography, road conditions, vehicle conditions and time of accidents. Steep hills, with frequent turns and twists in the roads are found in hilly and mountainous regions. However, throughout the country, unpaved and muddy roads are common. These deteriorated road condition along with improper lighting are the cause of many accidents (Bhatta, Pant, & Mytton, 2016; Choulagai et al., 2015; Government of Nepal, 2013a, 2013b; Mehta et al., 2015; Mishra et al., 2015). It was also found that major road sites where accidents occur are intersections in urban ares, bridge approaches, and roadside built-up areas in highways (Government of Nepal, 2013a).

Road conditions including poor visibility at blind corners, inadequate safety barriers along steep roads, inoperative drains, inadequate footpaths, and poor roadside warning signs at bridges or culverts are additional safety issues (Government of Nepal, 2013b). Similarly, passing, cattle's on the road (Government of Nepal, 2013b), parking haphazardly (Government of Nepal, 2013a, 2013b) and mixed speeds (Mishra et al., 2015) are additional causes.

Nepal's roads possess a large number of hoardings and billboards that distract the driver's attention and alter the accident rate. However, this possibility cannot be concluded in this review because of lack of literature.

Adhikari (2016), reported that among the identified victims, pedestrians occupied the highest proportion (50.6%), followed by riders of motorized 2-3 wheelers. Likewise, both morbidity and mortality of motorcycles/scooters and bus/ambulance/pickup took the first and the second position respectively (Huang et al., 2016). Fifty-nine percent of the accidents involved motorcycle riders, followed by pedestrians struck by cars and buses (Zafar, Canner, Nagarajan, Kushner, & Group, 2018). These findings were similar to other studies (Gupta et al., 2015; Karkee & Lee,

2016). However, a study conducted in Palpa district showed almost a similar number of accidents caused by two wheelers (38.4%) and four wheelers (36.6%) in which passengers (55.4%) and bike riders (29.5%) were the main sufferers (Shrestha et al., 2017).

In conclusion, the majority of the accidents involve young riders of two wheelers followed by pedestrians. They are likely to drive at a high speed and passing is common, which could be the contributing factor for the accidents.

	First	Peak time of accident			Less accidental time		
S.N.	Author/Report						
	and Published	Day	Time	Month	Day	Time	Month
	year						
1	Ling Huang,	Saturday	12:00-15:59	July,	Wednesday	00:00-08:00	May
	2016			November,			
				October			
2	Guru Prasad	Wednesday,	12:00-16:00	February,	Tuesday	00:00-08:00	August
	Adhikari,	Thursday		December,			
	2016			November,			
				October			
3	Bishnu Prasad		12:00-16:00	October		00:00-08:00	April
	Choulagai, 2015						
4	Nepal Road		30-40%				
	Safety Action		after sunset				
	Plan (2013-20),						
	2013						
5	Raj Kumar	Friday	6:00-11:59		Saturday	00:00-06:00	
	Mehta, 2015						

# Time occurrence of RTA Table 1: Frequency of accidents occurrence

Saturday was the most accident-prone day, followed by; the lowest was on Wednesday in Kathmandu (Huang et al., 2016). In contrast, in a study conducted at the Koshi Zonal Hospital, the highest number of accidents occurred on Friday (28%), followed by Sunday (18%); the lowest was on Saturday (Mehta et al., 2015). However, another study shows Wednesday and Thursday with higher accident rates and Tuesday as lower (Adhikari, 2016). Kathmandu valley and Koshi Zonal Hospital cover urban and rural areas respectively, which could be the reason for contrast result.

Most frequently, accidents occur between 12:00-15:59; following by 16:00-19:59 (Huang et al., 2016). However, about 30%-40% of the accidents happen after sunset in low traffic (Government of Nepal, 2013b). Similarly, evening time between 18:00-23:59 has the highest accident rate, and 00:00-06:00 the lowest (Mehta et al., 2015). The reason for more accidents in the afternoon could be because of relatively traffic-free roads resulting in careless high speed driving.

Studies by Huang et al., (2016), Adhikari (2016), and Choulagai et al., (2015) indicate that September, October and November are the leading months of accidents. This could be because

the biggest festivals in Nepal, "Dashain" and "Tihar", occur during this period, and people movement is very high along with increased drinking and driving.

# 3.3 Prevention and control Measure

Preventative and control measures are mainly focused on the system of traffic laws and their enforcement. One fourth (25.5%) of the drivers stated that strict traffic rules and proper vehicle maintenance could reduce RTAs (Shrestha et al., 2017). Similarly, lack of strong traffic rules is identified as a cause of RTA (Bhatta et al., 2016; Government of Nepal, 2013b).

Drinking and driving laws and helmet requirements are well implemented while enforcement of speed and seat belt law is poor. Similarly, the laws that promote walking and cycling, investments in public transport, and separation of vulnerable road users from traffic risks are not. Likewise, audit is done only for new roads (World Health Organization, 2015).

Effective implementation and multi-sectoral coordination between traffic police, transport department, community people and road users is essential to maintain road safety.

		Causes of Accidents				
S.N.	First Author /Report	Human factor	Environmental factor	Prevention and control measure		
1.	Rajendra Karkee, 2016	Pedestrian behavior, drinking and driving, inappropriate bus driving.				
2.	Guru Prasad Adhikari, 2016	Driver and pedestrian carelessness, over speeding, passing, drinking and driving, driver fatigue and impatience motorbikes.	Vehicular defect			
3.	Santosh Bhatta, 2016	Lack of road safety awareness	Narrow with single lanes road, lack of regular vehicle maintenance	Lack of strict traffic rules and regulations		
4.	Vijaya Laxmi Shrestha, 2017	Collision between two motorized vehicles, driver negligence, speeding and overload, drinking and driving.	Old and poor vehicle condition.	Lack of strong traffic rules		
5.	Status Paper on Road Safety in Nepal, 2013	Overload and speeding, driver and pedestrian negligence, passing, drinking and driving, cattles on the road, haphazard parking, lack of awareness.	Vehicle technical fault and poor road condition	High traffic and poor law enforcement		

Table 2: Causes of accidents

		Causes of Accidents					
S.N.	First Author /Report	Human factor	Environmental factor	Prevention and control measure			
6.	Status Paper on Road Safety in Nepal, 2013	Overload and speeding, driver and pedestrian negligence, passing, drinking and driving, cattles on the road, haphazard parking, lack of awareness.	Vehicle technical fault and poor road condition	High traffic and poor law enforcement			
7.	Bishnu P Choulagai, 2015	Speeding	Narrow, twists, turn and deteriorates road condition, lack of adequate street lighting.	High traffic			
8.	Nepal Road Safety Action Plan, 2013	Driver negligence, drinking driving, haphazard parking and pedestrian crossing	Poor road conditions				
9.	Shiva Raj Mishra, 2015	Risky driving	Improper roads and lighting.	High traffic and mixed speed			
10.	Raj Kumar Mehta, 2015	Speeding and driver carelessness	Poor road condition.				

Table 2: Causes of accidents (cont.)

#### 4. Challenges in prevention and control of RTA in Nepal.

Most of the accidents are caused by human negligence like inappropriate behaviors of general people (Adhikari, 2016), their awareness level (Bhatta et al., 2016; Government of Nepal, 2013b). Additional challenges are difficult geographical terrain, improper planning, weak multi-sectoral collaboration, and insufficient skilled human resources (Government of Nepal, 2013a). Thus, effective law enforcement can reduce accidents, save thousands of lives and disabilities. Strengthening recording system is a must in order to plan evidence based safety measures.

#### DISCUSSION

Burden of RTA is most common in age group 15-49 year in Nepal, with similar results found in in other countries (e.g., a study conducted in Turkey (Bener, Yildirim, Özkan, & Lajunen, 2017)). This could be due to the mobile nature of this age cohort, with less patience, more risk taking, etc., of young population. This Review found mostly men victimized by the accidents, also supported by another study conducted in Iran (Moafian et al., 2013) and India (Pathak, Jindal, Verma, & Mahen, 2014).

With respect to human behaviors and management factors, inexperienced drivers, continuous long hours driving, over-speed, overload, drinking and driving, carelessness of drivers and pedestrians were the major recognized causes of the accidents. Studies conducted in Iran (Moafian et al., 2013) and India (Pathak et al., 2014) support the findings. Similarly, additional studies found medical conditions (Rolison, Regev, Moutari, & Feeney, 2018), mobile phone use

(Bener et al., 2017; Rolison et al., 2018) and hoarding boards (Hudák & Madleňák, 2017) as the causes of the accidents; these were not found in our review.

Environmental factors found in this review are: poor road condition, improper lightening systems, and poor visibility at blind corners. These were similar to the study conducted in India (Pathak et al., 2014). Motorized two-wheelers were the most common vehicles involved in accidents followed by four wheelers, similar to the study conducted by Pathak et al., (2014). Maximum accidents occurred in the afternoon; similar to a study conducted in Iran (Moafian et al., 2013). In contrast, a study conducted in India identified evening as the most accident occurring time (Pathak et al., 2014).

Similar to our results, inadequate traffic law enforcement was a major contributing factor of RTAs (Rolison et al., 2018). Road safety interventions in Colombia increased helmet and seat belt use and decreased drinking and driving (Charry et al., 2017). Thus such intervention is needed to change unsafe behavior.

Similar to our study, a weak recording and reporting system created problems in identifying and analyzing the actual situation in Turkey (Bener et al., 2017), and UK (Rolison et al., 2018) which created problems for further planning.

#### CONCLUSION

In conclusion, this study documents the burden, contributing factors and the challenges in prevention and control of RTA in Nepal. The burden of RTA is relatively higher in hilly regions, with a higher effect in young and male populations. The number of registered cases is only of major accidents thus, it is hard to measure the exact burden of the accidents.

Major causes and contributing factors of accidents are human errors by both drivers and pedestrians, followed by environmental conditions and weak implementation of traffic rules and laws. Strict execution of traffic rules, and road safety intervention program could help to reduce RTA. There is a demonstrated need for adequate research, proper recording and reporting or RTAs and the conditions surrounding them, allocation of an adequate budget to implement recommendations and to promote road safety measures.

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# What Nepalese can Learn about Antimicrobial Resistance in Poultry

# Sandeep Ghimire<sup>1</sup>, Orasa Suthienkul<sup>2</sup> and Kanjana Changkaew<sup>2</sup>

<sup>1</sup> Care Nepal, Kathmandu, Nepal E-mail: sndpgmire@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, 12121 Thailand E-mail: orasa.sut@mahidol.ac.th E-mail: kanjana.c@fph.tu.ac.th

# ABSTRACT

**Background:** Antimicrobial resistance (AMR) is growing public health problem within the food security industry in a number of countries due, largely, to the practice of pre-feeding poultry with sub-therapeutic levels of antibiotics before market processing. Objective of this study is to analyze the AMR situation, scope of antimicrobial use in poultry in Nepal and Sweden, which contribute on understanding to develop actions and reduce health effects among general population in Nepal.

**Methodology**: The study is descriptive systematic review using content analysis. Boolean search method was used. Scientific Journal publication such as PubMed, Science Direct, Medline Plus and Government report, Policy of Nepal, Sweden and WHO were analyzed.

**Results:** In Nepal, hundred percent E. coli, Salmonella and Mycoplasma isolates were resistant to critically important antimicrobial. Whereas in Sweden, isolates were resistant to two critically important antimicrobial erythromycin (49-79%) and ampicillin (8%).Sweden has prepared action plan to combat AMR but Nepal has not yet prepared an action plan as per WHO global Guidelines on AMR. Out of six criteria prepared by WHO to combat AMR, Nepal has implemented on only three of them.

**Conclusions:** High prevalence of antimicrobial resistance in poultry, especially critically important drugs for humans, may reduce option on antimicrobial use and bring back us to post antimicrobial era.

**Recommendation:** Ministry of Agriculture Development should lead in coordination with Ministry of Health and other non-state actors to develop and implement one heath approach policy and action plan in Nepal to reduce AMR in accordance to WHO global action plan on AMR and should prepare proper AMR monitoring and surveillance system including human and animal in Nepal

Key words: antimicrobial resistance, antimicrobial, poultry, Nepal

# Health System and Multi-Drug Resistant Tuberculosis Control in India

Sai Woon Chai<sup>1</sup> and Nitaya Vajanapoom<sup>2</sup> <sup>1</sup> Yangon, Myanmar Email: sai@fph.tu.ac.th <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Klong Luang, Pathum Thani, 12121, Thailand E-mail: nvajanapoom@fph.tu.ac.th

#### ABSTRACT

India had the largest number (2.8 million) of TB patients globally including MDR/RR-TB 130,000 cases, and nearly 330,000 death per annum. The National Strategic Plan 2012-17 had a vision of "TB free India" aiming to achieve universal access to TB control services. In India, the National Health System plays an important role for treatment and control of MDR-TB. In spite of offering free health services, nationwide, the cure rate of MDR-TB is still low. This study explored the extent to which WHO-HSF was adopted in India, and its challenges. This systematic documentary analysis is the review of documents from search engines, Government agencies and UN agencies published between 2008-2018, which met inclusion criteria and objectives of the study. It was observed that India has adopted the framework to some extent, particularly in areas of leadership/governance, health care financing, health information system, and service delivery. However, there were challenges in the framework adaptation process in both public and private sectors, inadequate adherence to the national strategy framework, poor regulation practices, insufficient resources allocation, lack of overarching national policy for human resources, incompetent health workforces, and weak DOTS TB control program. This study provides inputs to strengthen the India health system regarding MDR-TB burden of the country.

Key words: Health system, MDR-TB, policy, prevention and control, India

#### **INTRODUCTION**

Worldwide, India had the largest number of tuberculosis (TB) patients (2.8 million); multi-drug resistant/rifampicin resistant tuberculosis (MDR/RR-TB) (130,000 cases) (Law et al., 2017), and nearly 330,000 deaths from TB are seen every year in India (Babu & Laxminarayan, 2012). As per the National Strategic Plan (NSP) 2012-17 set by the government with World Health Organization (WHO) collaboration, the program had a vision of achieving a "TB free India", aiming to achieve Universal Access to TB control services. However, the treatment success rates in India were still low; the number of new and relapse cases registered in 2015 was 72% (2015 cohort), and the number of MDR/RR-TB cases started on second-line treatment in 2014 was 46% (2014 cohort) (WHO, 2017).

The Revised National Tuberculosis Control Program (RNTCP) has made significant progress in TB control over the last decade through countrywide Direct Observed Treatment Short Course (DOTS) implementation. RNTCP provides various free services including TB diagnosis and treatment across the country through the government health system (HS), aiming to enhance the coverage and upgrade the management practices in healthcare sectors (Tuberculosis in India, 2017). However, the treatment success rate is still low. Consequently, only around 50% of patients were taking treatment under RNTCP in rural areas of India because of inadequate transportation, and lack of infrastructure or human health resources (D'Souza et al., 2009).

#### **OBJECTIVES**

- To describe the extent to which HS in India has adopted the WHO Health System Framework (WHO-HSF) in delivery of health services.
- To describe the existing HS promotion aimed at the reduction of MDR-TB in India.
- To identify obstacles in HS against the success of MDR-TB in India.

#### METHODOLOGY

This study is a systematic literature review of published documents that include scientific journal articles, peer reviewed documents, and public access documents from government agencies and UN agencies. A Boolean search using search engines including PubMed, Science Direct, and Google Scholar was conducted to facilitate identification of the required documents from the years 2008-2018. Documents with abstract only were excluded. A list of documents retrieved by the search was screened for relevance and credibility to the study objectives.

The qualitative data were analyzed by content analysis based on the objectives. Then, quantitative data were gathered and sorted according to the variables that answered the review questions. . Data analysis was also facilitated by the codebook on health system framework applied to MDR-TB control.

# FINDINGS AND DISCUSSION

The findings are described and discussed based on the six building blocks of WHO-HSF: Leadership/Governance, Health Care Financing, Health Workforce Performance, Medical Products and Technologies, Health Information System, and Service Delivery.

# Leadership/Governance

The NSP for TB elimination 2017-25 provides the key issues concerning the MDR-TB strategy framework of the India HS (RNTCP, March 2017). Moreover, NSP proposes bold strategies with

proportionate resources to rapidly decrease the TB and MDR-TB burdens in the country by 2030 to achieve the vision of a "TB-free India". Furthermore, several approaches are highlighted in the implementation of NSP: private sector engagement, plugging the leak from the TB care cascade, active TB case-finding among socially vulnerable and high-risk populations, and specific protection in prevention of development of active TB. However, despite the plans in place, the cure rate and case detection have not been achieved as expected in the strategic plans.

India has adopted the strategy that is described in WHO-HSF, i.e., the Ministry of Health and Family Welfare (MoHFW) has a hierarchical system to oversee the implementation of the TB control program within the country. However, RNTCP is unable to supervise the whole fragmented private sector within the country (Udwadia et al., 2010).

In March 2017, RNTCP announced a new estimated budget (Rs.16, 649 Crores in NSP (2017-2025)) for the TB elimination program in India that represented a dramatic increase from the previous budget. In the new NSP, MoHFW evolved a scheme that consisted of incentives for private providers and patients as well as a provision to supply free-of-cost medicines to address patients' problem seeking care from the private sector.

The high prevalence of MDR-TB in India was due to poor TB regulation practices and improper use of anti-TB drug regimens in all sectors (Migliori et al., 2009). Other challenges were the development of an "unofficial system" in the public sector, and a lack of adherence to the NSF particularly among private sector providers resulting in poor case mismanagement (Sharma et al., 2014). Furthermore, there is no clear pathway of accountability in determining if India HS has adopted WHO-HSF.

Although the Leadership/governance building block seems to have been addressed relatively well compared to the other five building blocks, especially since the strategic plans related to MDR-TB treatment and control are well addressed in the HS, several obstacles are identified: poor collaboration between MoHFW and other health related ministries, the lack of private sector engagement, insufficient adoption or awareness to standard operating procedures, unequal allocation of funding, inability to maintain the new scheme established by MoHFW, and improper system-design for MDR-TB reduction.

#### **Health Care Financing**

The budget of existing program activities for 2017-18 to 2019-20 are 1800, 1980, and 2178 crores respectively (Table 1). However, the estimated budget (including new activities, nutritional and financial supports) of 4870, 5527, and 6252 crores will be required for 2017-18 to 2019-20 respectively (RNTCP, March 2017).

The financial support (Rs.500/month) is transferred through direct benefits transfer mode to incentivize treatment for all TB patients to address catastrophic costs. Mallya (2012) reported that out-of-pocket expenditure accounted for nearly 75% of private health expenditure in India.

Health care financing block has adopted some fraction of WHO-HSF, but several obstacles remained, e.g. inadequate funding resources, no health economics experts in resource allocation, lack of clear policy on health financing. Despite growing financing for TB control, weak HS would impede Indian government to achieve TB elimination targets. Therefore, the Indian government

requires not only magnifying funding resources but also improving the overall HS especially financial and social supports for patients.

Financial year	Budget- existing program activities	Budget- existing program activities + new activities	Budget- existing program activities + new activities + patient social & nutritional support	Expenditure	TB Case notification (in million)
2012-13	467.00			466.15	1.47
2013-14	710.00			516.55	1.45
2014-15	1100.04			639.94	1.55
2015-16	1076.82			639.86	1.61
2016-17*	1146.29			490.00	1.70
2017-18	1800	3810	4870		2.65
2018-19	1980	4327	5527		3.00
2019-20	2178	4912	6252		3.35

Table 1: Funding Summary for India's TB Control

2016-17\* upto Jan 2017

2017-18 onwards-projections

# **Health Workforce Performance**

The public sector in Madhya Pradesh has various challenges in providing TB services, e.g., weak health infrastructure, lack of patient-centered care and poorly motivated staff (Fochsen et al., 2009). Singh et al. (2017) stated that poor knowledge and unsatisfactory practice of DOTS provision among Accredited Social Health Activist were among the problems in central India.

According to the National Health Mission (NHM) guidelines, the staff ratio for sub-center is 1/5,000 population; primary health center is 1/30,000 population; and community health center (CHC) is 1/120,000 population. The staff requirement in each center is 3, 15 and 25 respectively (NHM, 2017). Insufficient staff numbers and human resources allocation between regions are the main issues in India (Bajpai, 2014). Only 11.3% of all allopathic doctors worked in the public sector; and just 3.3% of all physician worked at public hospital in rural areas (Patel et al., 2015)

Regarding health workforce performance, the results show that capacity building training concerning standard MDR-TB guidelines needs to be conducted periodically for the providers in both sectors. However, there were very few studies focused on this block.

# **Medical Products and Technologies**

RNTCP has established a three-tier laboratory network system to provide rapid molecular diagnostics that was launched in 2009. Currently, Line Probe Assay (LPA) and Cartridge Based

Nucleic Acid Amplification Test have expanded to the entire country from 2012 onward, and Drug Susceptibility Tests (DST) has covered all of India in 2017. On the one hand, RNTCP only performs DST for high risk patients in public centers (Salomon et al., 2014). On the other hand, 2% out of 24,000 clients in Mumbai were considered high risk performed DST, and only 55% had culture results that led to substantial losses of MDR-TB patients.

Significant efforts and improvements have been made in many Indian public laboratories to diagnose TB and MDR-TB for effective treatment (Haldar et al., 2011). Nevertheless, many barriers remain in the healthcare landscape of India: economic barriers; socio-cultural barriers; and lack of HS accountability (Sharma et al., 2014). The scarcity of laboratory infrastructure in each state of India means the infrastructure is insufficient to implement DST and Xpert testing throughout the whole country (Babu & Laxminarayan, 2012).

Medical products and technologies block has adopted only a fraction of the interventions from WHO-HSF, therefore the system still needs to be enhanced and strengthened. The coverage of rapid molecular diagnostic testing for TB patients has been deployed to the entire country, however, accessibility to laboratory services is inequitably distributed, and DST is performed only for high risk patient instead of all presumptive TB patients. Several challenges were found such as inadequate laboratory infrastructure, and no standard diagnostic guidelines and equipment for detection of MDR-TB in the public centers.

#### **Health Information System**

In June 2012, RNTCP rolled out an innovative and visionary electronic recording and reporting system (NIKSHAY) across the country that can be applied for monitoring and research purposes at all levels (Dash & Kumar, 2013). It also serves as a surveillance system (Kundu et al., 2016). However, only 5% of registered private doctors notified TB cases through NIKSHAY by the end of March 2015; more than 90% have yet to be notified. In 2017, RNTCP announced that a powerful, modern management information system (MIS) will be developed to monitor MDR-TB cases by enhancing and integrating the services.

In May 2012, the Indian Government declared TB a notifiable disease, but TB notification from the non-public sector remains a challenge and needs more concerted efforts. The notification reports that were sent to RNTCP were completed, however, without optimal quality (Padda et al., 2018). Despite active state level initiative by Delhi TB control program in 2014, case notifications from non-public sector are far low because of lack of awareness among private doctors (Kundu et al., 2016).

The Health Information System block has been developed quite well, but many obstacles must still be overcome to strengthen it, including the NIKSHAY notification and surveillance system, MIS system, case notification, and especially law enforcement.

#### **Service Delivery**

RNTCP has implemented a contact tracing and case detection program regularly for household contacts of TB patients (Chatla et al., 2018). However, the household contacts screening system in Andhra Pradesh and Telangana states of India are imperfectly established with only 50% of clients undergoing TB diagnostic tests.

In 2014, the Standards for TB Care were published cooperatively by RNTCP and WHO, which lay down uniform standards for TB care in the whole country. Additionally, availability of rapid molecular diagnostic facilities in the public sector has made them accessible and feasible for patients referred from non-public sector (RNTCP, March 2017). On the contrary, despite diagnosed patients with RR-TB by LPA, patients have to undertake pretreatment evaluation as per RNTCP guidelines in a referral center, which results in a delay of second-line treatment initiation (Sachdeva et al., 2015). Therefore, patients have to spend around 57.5 days to get treatment after the onset of symptoms (Law et al., 2017). An additional concern is the unequal care provided at public health facilities (Patel et al., 2015).

In 2013, 18% of MDR-TB patients in India were reported lost to follow-up (Subbian et al., 2015). Law et al. (2017) suggested that 87% of acquired MDR-TB was contributed by the public sector in India (the rest coming from the private sector), and that this was due to irregular adherence and non-completion of treatment.

Nowadays, the DOTS program is implemented countrywide, however, the coverage is still inadequate due to poor HS and health infrastructure (Mallya, 2012). To enhance the treatment compliance of patient, MoHFW is starting to initiate customized e-messaging (SMS) services to individual patients on a regular basis to remind them to take their anti-TB drugs on time.

The Services Delivery Block has put many programs into practices such as contact tracing, case detection, new standard guidelines, initiation of shorter course new drugs and treatment services (Bedaquiline and Delamanid), and DOTS strategy (except case holding because of lack of evidence to support it. However, improvement and strengthening are still needed. This block has many challenges like diagnosis and treatment delay, poor practices and mismanagement.

#### CONCLUSION

This study describes HS in India and its potential impact on MDR-TB burden and the obstacles that work against the success of the MDR-TB control and reduction in the country. The findings illustrate that MDR-TB problems have been relatively well addressed, but many obstacles are identified in the system that prevent its complete implementations. Thus, addressing these issues require policies and law enforcement. They also require increased collaboration between government departments and health institutions including those in the private sector. Hopefully, this review provides useful information to the Indian government for further improvement of HS and control measures for MDR-TB. The application of the WHO-HSF is worth assessing along with evaluation of the overall healthcare system.

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# Factors Associated with Knowledge of Female Community Health Volunteers in Nepal on 5 Key Areas-Health, Nutrition, Family Planning, Wash and Agriculture in Nepal

Anushree KC<sup>1</sup> and Nitaya Vajanapoom<sup>1</sup>

<sup>1</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Klong Luang, Pathum Thani, 12121, Thailand Email: kcaushree@gmail.com

# ABSTRACT

Female community health volunteers (FCHVs) are the frontline community health workers tasked with providing preventive, promotive and curative health services at the grass root level. There is very little known on what affects FCHVs' knowledge. This study aims to assess the FCHV's knowledge on health, nutrition, family planning, WASH and agriculture and identify the factors associated with it. This study uses secondary data from a larger cross-sectional study entitled "Frontline Worker (FLW)" survey conducted in 2015 in 13 districts of Nepal.

The results show that having frequent exposure to trainings (14 or more training sessions since start of the volunteer work) is significantly associated with higher odds of having good knowledge in nutrition, family planning, and WASH. Receiving agricultural information from one or more sources significantly increases the level of agricultural knowledge. Similarly, age was associated with having good agricultural knowledge. However, the study did not find significant associations between any other socio-demographic factors and the knowledge of FCHVs on 5 key areas.

This study has demonstrated that a focus on training and access to information sources could improve FCHV's knowledge. Further in-depth study exploring other relevant factors is recommended to get a more comprehensive picture of factors affecting FCHVs' knowledge.

Key words: FCHV, knowledge, sociodemographic, trainings, Nepal
#### **INTRODUCTION**

According to the World Health Organization (WHO, 1989), "Community Health Workers (CHWs) are members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers" (Lehmann & Sanders, 2007, p. 3). They are the trusted community members primarily tasked with providing preventive, promotive and curative health services at the grass root level (Lehmann & Sanders, 2007).

A recent report by the WHO highlighted that in order to attain the targets of Sustainable Development Goals (SDGs) and Universal Health Coverage by 2030, a health workforce (including physicians, nurse/midwives and other cadres of health workers) of adequate size and skills is required. A population density analysis in the world's poorest regions indicates that Africa and South-East Asia have the lowest density of health workers, i.e., 2.2 and 3.3 per 1000 population, respectively, which is below the ILO recommendation of 4.1 per 1000 population (World Health Organization, 2016). Therefore, the use of community health workers is a part of a "task-shift" strategy particularly in low-income countries; and, it has been identified as one of the strategies to address this growing demand for health workers (Mumbo et al., 2013).

CHWs play an important role in increasing access to health care and services which in turn improves health outcomes. Furthermore, they act as a bridge between a community and a formal health system (Bhutta et al., 2010). A review of case studies from seven countries (i.e., Bangladesh, Brazil, Ethiopia, India, Iran, Nepal, and Pakistan) shows the effectiveness of CHWs in improving childhood nutrition, treating serious childhood illness, reducing maternal and child mortality and reducing transmission of HIV, tuberculosis and malaria; thus, contributing towards achieving MDGs for health, particularly MDG 1, 4, 5 and 6 (Perry et al., 2013). A similar approach has been adopted in Nepal in the name of the Female Community Health Volunteer (FCHV) program which has been successfully providing community level health services at the ground level.

#### **Problem Statement**

In Nepal, the FCHV program has been undertaken by the Government of Nepal (GoN), Ministry of Health (MoH) with about 52,000 volunteers who deliver preventive and promotive health services throughout the country. Previous studies have shown that community based services provided by CHWs are associated with their knowledge (Abbatt, 2005; Agrawal et al., 2012; Curtale et al., 1995; Wanduru et al., 2016). A large number of studies indicate that their knowledge level is associated with various factors such as age (Eskandari et al., 2016), education (Acharya et al., 2016) , training (Charlton, Kawana, & Hendricks, 2009; Davies-Adetugbo & Adebawa, 1997; Kumar, Aggarwal, & Kumar, 2009; Rabbani et al., 2016; Sunguya et al., 2013; Zaman, Ashraf, & Martines, 2008), work experience (Gizaw, Alemu, & Kibret, 2015), access to information (Gizaw et al., 2015; Zaman et al., 2008) and motivation (NEW ERA, 2008).

To date there have been a few studies in Nepal addressing the impact of FCHVs' knowledge on their health service performance (Acharya et al., 2016; Amano et al., 2014). Acharaya et al., found that knowledge of FCHVs was positively correlated with their education level and consequently positively associated with maternal and child health service accessibility and use. Amano et al.,

found that FCHVs who were knowledgeable about low birth weight measurement protocol were more likely to correctly identify infants' weight.

However, only a limited number of studies in Nepal have addressed the factors associated with FCHVs' knowledge. As discussed above, there are several studies that looked into the factors associated with knowledge of CHWs in various countries. In Nepal, there is limited information on these issues and the socio-cultural and health service system in Nepal may differ from other countries. In order to fill the gap in information, this study aims to examine the association between socio-demographic factors, training experiences, work experience and access to information, and FCHVs' knowledge of health related topics in various geographical areas including plain, hilly and mountain areas of Nepal. FCHVS' knowledge and the factors affecting it is a concern of the public health policy makers in Nepal because the MoHP has committed to the enhancement of healthcare quality at the community level (MoHP, 2010). Developing an appropriate program or intervention to build capacity of FCHVs requires an understanding of what factors affect their knowledge.

## **OBJECTIVES**

This study aims to assess the FCHV's knowledge on health, nutrition, family planning, WASH and agriculture and identify the factors associated with it.

#### **METHODOLOGY**

This study used secondary data from a larger cross-sectional study titled "Frontline Worker (FLW) Survey" conducted in 2015 in 13 districts of Nepal. The purpose of the FLW study was to gain an understanding of the role of FLWs in dissemination of services supported by the Suaahara program and its facilitators, to identify and overcome constraints, and develop steps to improve FLW engagement in the program. A total of 282 FLWs were interviewed face-to-face using a structured survey tool. Of the total, 59 were FCHVs from whom the data were analyzed for this study. Factors such as age, education, work experience, training frequency and duration, and access to information were examined. Logistic regression was used to estimate odds ratios at 95% confidence interval (P-value <0.05).



Figure 1: Map of Nepal with study districts

## RESULTS

Out of 59 FCHVs, 24 (40.7%) were more than 45 years of age and 26 (44.1%) had secondary schooling or above. Forty-five FCHVs (76.3%) had more than 10 years of work experience while 34 FCHVs (57.6%) had between 12-15 trainings. Similarly, 45 FCHVs (76.3%) had last received any sort of training within 6 months of the interview. The number of sources of information on nutrition, health, family planning, WASH, and agriculture varied, but generally most FCHVs had received information on these topics from more than one source.

Variable	No. of FCHV (%)
Age group in years	
<35	14 (23.7)
35-45	21 (35.6)
>45	24 (40.7)
Education of the respondent	
No formal education	17 (28.8)
Some formal education	42 (71.2)
Years of Work Experience	
< 10 years	14 (23.7)
>= 10 years	45 (76.3)
Training Received	
<14 trainings	30 (50.8)
≥ 14 trainings	29 (49.2)
Last Training Received	
0-6 months ago	45 (76.3)
More than 6 months ago	14 (23.7)

Variable	No. of FCHV (%)
Number of Sources of Nutrition Information	
No exposure to any source	7 (11.9)
Atleast one or more source	52 (88.1)
Number of Sources of Health Information	
No exposure to any source	5 (8.5)
Atleast one or more source	54 (91.5)
Number of Sources of Family Planning Information	
No exposure to any source	8 (13.6)
Atleast one or more source	51 (86.4)
Number of Sources of WASH Information	
No exposure to any source	13 (22.0)
Atleast one or more source	46 (78.0)
Number of Sources of Agriculture Information	
No exposure to any source	24 (40.7)
Atleast one or more source	35 (59.3)

#### Table 1: Characteristics of FCHVs (cont.)

## Knowledge of FCHVs as an outcome variable

The results show that the mean knowledge score for nutrition was 37.02 and 32 FCHVs (54.2% of FCHVs) had good knowledge score for nutrition. Similarly, mean knowledge score for health was 7.32 and 27 FCHVs (45.8% of FCHVs) had good knowledge score for health. Likewise, mean knowledge scores for family planning, WASH and Agriculture were 7.59, 8.64 and 18.0 respectively. Finally, 34 FCHVs (54.2%), 31 FCHVs (52.5%), and 33 FCHVs (55.9%) had good knowledge scores for family planning, WASH, and Agriculture respectively.

	Mean (SD)	Knowledg	ge of FCHV
		Good knowledge	Poor knowledge
		n (%)	n (%)
Nutrition	37.0 (8.8)	32 (54.2)	27 (45.8)
Health	7.3 (1.8)	27 (45.8)	32 (54.2)
Family Planning	7.6 (1.7)	34 (57.6)	25 (42.4)
Water, Sanitation and Hygiene	8.6 (2.8)	31 (52.5)	28 (47.5)
(WASH)			
Agriculture	18.0 (6.3)	33 (55.9)	26 (44.1)

#### Table 2: Knowledge of FCHVs as a categorical variable

## Factors associated with FCHVs' knowledge on various service areas

Number of trainings was found to be significant in three out of five models. The results show that FCHVs who had participated in more than or equal to 14 trainings were 9.8 times (OR: 9.83; 95% CI 2.52, 38.39) more likely to have good knowledge in nutrition as compared to FCHVs who had less than 14 trainings. Similarly, FCHVs who have more than or equal to 14 trainings are 6.7 times (OR: 6.71; 95% CI 1.78, 25.27) more likely to have good knowledge in family planning as compared to FCHVs who have less than 14 trainings. Finally, FCHVs who have more than or equal to 14 trainings are 9.1 times (OR: 9.10; 95% CI 2.06, 40.17) more likely to have good knowledge in WASH as compared to FCHVs who have less than 14 trainings.

The variable for Age group was found to be significant when analyzing FCHV's knowledge in agriculture. FCHVs between ages of 35 to 45 were 13.9 times (OR: 13.92; 95% CI 11.1, 173.8) more likely to have good knowledge in agriculture when compared to FCHVs less than 35 years of age. Similarly, FCHVs greater than 45 years of age were 23 times (OR: 23.02; 95% CI 1.8, 294.1) more likely to have good knowledge in agriculture when compared to FCHVs less than 35 years of age.

The number of sources of information on agriculture was found to be significant when analyzing FCHVs' knowledge in agriculture. FCHVs who had received information on agriculture from at least one source were 14 times (OR: 14.06; 95% CI 2.34, 84.6) more likely to have good knowledge of agriculture when compared to FCHVs who have no exposure to any source of information.

	Nutrition	Health	Family Planning	WASH	Agriculture
Characteristics	Adjusted OR	Adjusted OR	Adjusted OR	Adjusted OR	Adjusted OR
	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)
Age group in					
years					
<35 (Ref)	1.06 (0.17,	1.38 (0.24,	0.62 (0.08,	0.87 (0.13,	123.02*(1.8,
35-45	6.83)	7.96)	4.74)	5.69)	294.1)
>45	2.87 (0.37,	1.06 (0.18,	0.61 (0.09,	7.38 (0.86,	3.92*(1.1,
	22.11)	6.13)	4.32)	63.70)	173.8)
Education					
No formal					
education (Ref)					
Some formal	2.68 (0.59,	0.79 (0.18,	3.25 (0.77,	4.39 (0.80,	5.32 (0.80,
education	12.16)	3.57)	13.62)	24.13)	35.55)
Years of Work					
Experience					
<10 years (Ref)					
≥ 10 years	0.58 (0.10,	0.37 (0.07,	1.64 (0.30,	0.63 (0.11,	0.14 (0.02,
	3.53)	2.12)	9.06)	3.74)	1.04)
No. of Trainings					
Received					
<14 trainings					
(Ref)	9.83*(2.52,	0.57 (0.15,	6.71*(1.78,	9.10*(2.06,	3.20 (0.80,
≥14 trainings	38.39)	2.13)	25.27)	40.17)	12.76)

Table 3: Factors associated with FCHVs' knowledge (Good/Poor) on different service areas

	Nutrition	Health	Family Planning	WASH	Agriculture
Last Training					
Received					
More than 6					
months ago (Ref)					
0-6 months ago	1.024 (0.22,	NA**	0.66 (0.14,	0.37 (0.07,	1.05 (0.23,
	4.88)		3.07)	2.11)	4.90)
Number of					
Sources of					
Information on					
the specific area					
No exposure to					
any source (Ref)	0.92 (0.10,	4.49	4.57 (0.61,	1.82 (0.28,	14.06* (2.34,
Atleast one	8.25)	(0.33,61.61)	34.15)	11.93)	84.6)
source					
* Values that are s	statistically sign	ificant at p<0.0	5		
** This variable h	as 0 frequency i	n one of the cat	egory. Hence, OF	R cannot be dete	rmined.

Table 3: Factors associated with FCHVs' knowledge (Good/Poor) on different service areas (cont.)

#### CONCLUSION

This study has identified that out of the five multisectoral areas, FCHV's knowledge on Nutrition, Family planning and WASH were significantly associated with one common factor, which was number of training received. This indicates that more focus is needed on training and engaging different partners to improve FCHVs knowledge. Likewise for improved knowledge on agriculture, factors such as age and number of sources of information were found to be significantly associated.

However, for knowledge on health we could not find any association with any of the study variables. Since FCHVs so far have been entrusted with various responsibilities relate to maternal and child health, family planning and nutrition at the community level, this study recommends the need for a larger in-depth study to access the understanding and level of awareness of FCHVs in their different working areas. Furthermore, based on the findings, this study recommends that agencies/programs using FCHVs should prioritize knowledge enhancement of these FCHVs through frequent trainings and provision of multiple information sources. Future studies could also explore other relevant factors such as motivation, training content and duration, and supervisory support to get a more comprehensive picture of factors affecting FCHVs' knowledge.

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## The Efficacy of Older Person Leaders on Health Promotion among Ageing of Elderly Club of Ongkharak District, Nakhonnayok Province

Pattakorn Buppan <sup>1</sup>, Pimonporn Chaovipoch <sup>1</sup>, Pakarang Seemee <sup>1</sup>, Rattiporn Kosuwin <sup>1</sup>, Ormjai Taejarernwiriyakul <sup>1</sup>, Sirikul Thumajitsaku <sup>1</sup>, Apisara Sommatas <sup>1</sup>, Surasak Yooyongsatit <sup>1</sup> and Rattiya Chindewa <sup>2</sup> <sup>1</sup> Program in Health Promotion, Faculty of Physical Therapy, Srinakharinwirot University, Thailand <sup>2</sup> Program in Physical Therapy, Faculty of Physical Therapy, Srinakharinwirot University, Thailand

#### ABSTRACT

**Background:** In the past two decades, many new industrialized countries including Thailand have had social and economic changes. With the aging of the world population, more than one-quarter of the world's population will be over the age of 60 by the year 2100. The increasingly aging population raises a major challenge for health care in Thailand and worldwide. As in most other countries, the proportion of elderly people is increasing every year in Thailand due to decreasing birth rates and increasing longevity. This research was aims 1) to study the efficacy of the elderly leader on health promotion among ageing population and 2) to find out the health promotion's problems and obstacles in Khlong Yai elderly is society.

**Methodology:** A total of 94 older people were randomly selected. The samples were males and females at the age over 60 years old, healthy person, none of serious illness, non-hospital admitted within one year and had lived in Khlong Yai Sub-district, selected by a random sampling technique. Data collection was facilitated by a questionnaire and simple statistical analysis used frequency, mean and percentage. Another 30 older adult males and female participated in a focus group and in-depth interviews. Content analysis facilitated analysis of qualitative data.

**Results:** The efficacy of older adult leaders was satisfactory. The efficacy in following health literacy aspects was: 1) nutrition 82/94 (87.23%) promoting steamed food instead of stirred or fried foods for older adults; 2) exercise 74/94 (78.72%) recommending that the older adults should not exercise immediately after meal; 3) health responsibility 71/94 (75.53%) older adult leaders offering suggestions on self-care and 4) the interpersonal support 87/94 (92.55%) of older adult leaders advising older people to participate seek assistance from family care takers to maintain and/or improve healthy living.

**Conclusions:** The findings suggested that elderly health promotion program development process should include problem identification and problem solving, setting the elderly health promotion group, planning for the elderly health promotion program and group process. Problems in the ageing health promotion were loss of memory, and misunderstanding about the knowledge. The researcher suggested that, all organization in the community and public health providers should set the training course for the elderly 4 times a year. Development of working process by inventing database system, developing old people's health screening system, developing for warding system and developing home visiting system and create health care supporting environment.

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## Monitoring of Organophosphate and Carbamate Insecticides in Soils from Canals by Anti- Acetylcholinesterase Activity

Noramon Thongkerd <sup>1</sup>, Banthitar Pholmeesap <sup>1</sup>, Piyaporn Phankham <sup>1</sup>,

Kun Silprasit<sup>2</sup> and Sirikul Thummajitsakul<sup>1</sup>

<sup>1</sup> Division of Health Promotion, Faculty of Physical Therapy, Srinakharinwirot University, Ongkharak, Nakhon-Nayok, 26120 Thailand E-mail: princess.\_.mon@hotmail.com E-mail: banthitar.phol@hotmail.com E-mail: boombim\_sapao@hotmail.co.th E-mail: sirikulthumma@gmail.com <sup>2</sup> Faculty of Environmental Culture and Ecotourism, Srinakharinwirot University, Bangkok, 10110 Thailand E-mail: kun.silprasit@gmail.com

## ABSTRACT

**Background:** Nowadays, excessive application of organophosphate and carbamate insecticides in agriculture has become an increasing trend in Thailand. This problem could have negative impacts on human health and their environment. Several studies of environmental contamination of pesticides have been reported. However, the knowledge about anti-acetylcholinesterase contamination in soil samples is limited Nakhon Nayok province where agriculture is common in the area. This survey examined organophosphate and carbamate contamination in soils from different canals in Nahorn Nayok, using anti-acetylcholinesterase activity.

**Methodology:** Soil samples (n= 18) were collected by accidental sampling at 15 cm depth from surface level of each location from the 6 canals in Sisa Krabue (SK), TaPao (TP), Srinakharinwirot University (SW), Bang kajik (BK), Satharana Prayoch (SP), and Yeesib Ha (YH) of Ongkharak subdistrict in Nakhon Nayok province between August 2018 and November 2018, and were shown with GPS (Global Positioning System) by Google Earth (version 7.1.2.2041). After that, each sample was dried at 50 oC and ground into powder. Then, anti-acetylcholinesterase activity of each powder sample was determined using Ellman's method. Proportion of the samples showing anti-acetylcholinesterase activity were calculated.

**Results:** Anti-acetylcholinesterase activities were found in all of the 18 samples taken from the 6 cannals: the highest proportion of the samples showing anti-acetylcholinesterase activity is from YH (82.61-97.17%), SK (80.93-96.23%), followed by SW (56.60-89.13%), BK (45.61-95.65%), TP (50.00-82.61%), and SP (31.26-91.51%).

**Conclusions:** The result showed evidence of acetylcholinesterase inhibitory activities in Nakhon Nayok canals, indicating insecticide application of farmers in surrounding agricultural areas of the study sites. The findings provide useful information to agricultural and public health authorities for a dialogue in policy development to minimize health risk of vulnerable population including farmers and nearby communities in the province, and thus strengthening equity in health.

# Review of Services for, and Barriers to Early Infant Diagnosis of HIV in Nigeria, Malawi, Kenya and Uganda

Aryu Kyaw <sup>1</sup> and Rodger Doran <sup>2</sup> <sup>1</sup> Yangon, Myanmar Email: aryukyaw11@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Klong Luang, Pathum Thani, 12121, Thailand E-mail: rodger.d@fph.tu.ac.th

## ABSTRACT

**Background:** Early Infant Diagnosis (EID) of HIV is an essential component of the global strategy to reduce HIV related mortality in children and for monitoring the effectiveness of national Prevention of Mother to Child Transmission (PMTCT) programs. The purpose of this paper is to describe and compare barriers for accessing EID services for HIV exposed infants at the six weeks of age in four countries in Africa.

*Methods:* Systematic literature review was used to review 28 articles published between 2007-2017 to document and compare the barriers to accessing EID services.

**Results:** Access to EID services at six weeks of age in four study countries is constrained by barriers specific to each study country and by barriers common to all study countries. The shared barriers were: flaws in the design of PMTCT programs, social stigma, Intimate Partner Violence (IPV), poverty affecting seeking EID care, and lack of knowledge of EID services.

**Discussions:** Policy makers in the study countries need to demonstrate commitment to improving EID by applying more resources to increase coverage of, and access to, EID services and to promoting public awareness of PMTCT services.

**Key words:** EID, PMTCT, sub-Saharan Africa, Nigeria, Malawi, Uganda, Kenya, access, barriers, challenges, determinants

#### **INTRODUCTION**

Although significant progress has been made in preventing mother to child transmission of HIV and reducing new HIV infections in new born infants, challenges remain. Among the challenges, access to EID services at six weeks of age for HIV exposed infants continues to be a huge problem. Globally, only 41% of children who were born in 2013 to HIV positive mother in low and middle-income countries were EID tested at six weeks of age (UNAIDS, 2014, 2015).

EID services are important for the HIV exposed as well as for the HIV infected children because HIV infection can be detected in the new born infant at six weeks of age. If positive, the child can be immediately transferred to a pediatric HIV treatment program for reducing disease progression and mortality. Additionally, if these children are tested negative, counseling on feeding practices to reduce transmission can be conducted (Ciaranello et al., 2011).

The Africa region is home to 90% of children under 15 years of age living with HIV globally (i.e., 1.9 million children are from Africa out of global prevalence rate of 2.1 million children). Among 22 countries included in the Global Plan to eliminate new HIV infections children by 2015 and to reduce mortality of their mothers, 21 countries are from the Africa Region(Adebimpe, 2013; UNAIDS, 2017).

In 2012. Within the Sub-Sahara Africa (SSA) region, coverage of EID testing among HIV exposed infants was only one third of the total population; at the same time, six out of 31 countries in this region reported less than 10% coverage. (Ghadrshenas et al., 2013).The paper describes EID programs as implemented in four study countries, identifying and analyzing the similarities and differences between barriers in each study country in order to draw conclusions about how this knowledge can be used by policy makers to improve HIV services for mothers and their children in Africa.

## **Rationale for choosing countries**

As mentioned above, the four study countries are from the 21 priority countries. These countries had failed to conduct EID testing of at least 80% of HIV exposed infants as recommended by World Health Organization (Kenya - 51%, Uganda-48%, Malawi-52% and Nigeria-12%)(UNAIDS, 2017; World Health Organization, 2007).

#### METHODOLOGY

The study used a systematic literature review to examine journals articles, documents, and reports from the period 2007-2017 that included EID service programs and barriers to use of these services from the four study countries and the Sub-Saharan countries.

A folder was generated of relevant articles obtained through Internet search engines that matched the research questions and objectives. Twenty-Eight articles were found eligible and reviewed. (Figure 1)



## Figure 1: PRISMA flow chart diagram of searching literature on barriers for accessing EID services

#### **KEY FINDINGS AND DISCUSSIONS**

1. Shared Barriers among the study countries for accessing EID services at Six Weeks of Age

Flaws in the design of PMTCT services (i.e., inadequate integration of mother and infant HIV services and MCH services, and lack of facilities providing full function of PMTCT services) emerged as a health system barrier. As a result, HIV positive mothers and HIV exposed infants were frequently required to come back to health facilities for different services on alternate days. This barrier, combined with costs related to seeking health facilities, barred HIV positive women from seeking EID services for their HIV exposed infants (Aliyu, Varkey, Salihu, Iliyasu, &

Abubakar, 2010; Braun et al., 2011; Ezeanolue et al., 2016; Hassan et al., 2012; Mugasha et al., 2014).

Moreover, studies had shown that disclosure of HIV status to a partner could result in either support from the partner or violence (i.e. Intimate Partner Violence (IPV) (Dlamini et al., 2007; Obermeyer, Baijal, & Pegurri, 2011). In the study countries, life time physical and sexual IPV among women of reproductive age was quite high (United Nations Entity for Gender Equality and the Empowerment of Women, 2017). Therefore, the eagerness of HIV positive mothers to disclose their HIV status to their partners was diminished due to fear of IPV. Consequently, lack of disclosure could arise to internal or external forms of stigma. This in turn resulted in shame and guilt which in turn led to avoidance behavior, a negative self-image, and avoidance of taking of health services for themselves as well for their HIV exposed infants.

In addition, poverty had a negative effect on access to EID services notably due to transportation and opportunity costs (i.e., loss of productivity and income due to time spent coming to clinic for EID care). This emerged as a socio-economic barrier for accessing EID services in study countries (Anigilaje, Ageda, & Nweke, 2016; Bobrow et al., 2016; Hassan et al., 2012; Izudi, Auma, & Alege, 2017).

Finally, lack of knowledge of EID services by HIV positive mothers acted as a barrier in the study countries. Mothers with knowledge of PMTCT services but who lacked a proper understanding of specific services for EID had difficulties accessing EID services for their HIV exposed infants (Bobrow et al., 2016; Hassan et al., 2012; Izudi et al., 2017; Wachira, Middlestadt, Vreeman, & Braitstein, 2012).

2. Specific Barriers among the study countries for accessing EID services at Six Weeks of Age

In the case of Nigeria, as many as 60% of all child deliveries in Nigeria are performed by Traditional Birth Attendants (TBA) (Balogun & Odeyemi, 2010). Hence, this had implications for HIV-exposed infants as the TBAs who were performing more than half of all delivery in Nigeria were not integrated into the EID system. This, combined with a lack of knowledge on PMTCT/ EID services by these TBAs, had a negative effect on the accessibility of HIV exposed infants to EID services (Balogun & Odeyemi, 2010; Ezeanolue et al., 2016).

In the case of Malawi, HIV positive mothers who were not currently on PMTCT provision of lifelong anti-retroviral therapy (i.e., Option B+), were challenged to access EID services. Uniquely, it can be assumed that women who are on PMTCT services (especially option B+ for prevention of HIV infection to their infants) are more likely to bring their infants for EID services. (Cromwell et al., 2015).This was proven in a study in Malawi (Chimbwandira et al., 2013) that showed that pregnant woman who were on Option B+ had a retention rate of 77% comparable to 80% in the adult population. However, further research and studies need to prove whether option B+ (lifelong ART) in HIV positive mothers can enhance the uptake of EID services in Malawi.

Additionally, health care workers' knowledge gap on timing of EID services posed a health system barrier in Uganda (Izudi, Akot, Kisitu, Amuge, & Kekitiinwa, 2016). This finding is important since a study done in Uganda showed that health care workers' knowledge can impact on the delivery of health services (Wynne, Richter, Banura, & Kipp, 2014).

Moreover, a shortage of EID test collection kits created barriers for accessing EID services in Kenya (Hassan et al., 2012). Various studies done in Kenya showed that the lack of proper equipment/testing functions at health facilities acted as a barrier for accessing various types of health services like Maternal, Newborn, Child Health System (MNCH) and PMTCT services (Cheptum et al., 2014; Onono et al., 2015).

	Nigeria	Malawi	Uganda	Kenya
Flaws in the design of PMTCT programs	✓	✓	~	~
Social stigma	~	~	~	~
Intimate Partner Violence (IPV)	~	~	~	~
Poverty which effects on seeking EID care	~	~	~	~
Lack of knowledge of EID services	✓	~	~	~
Non-involvement and lack of integration of Traditional Birth Attendants (TBA) into EID system	~			
Lack of accessibility to EID services for HIV positive mothers who are not on option B+ (life-long ART)		~		
Health care workers' knowledge gap on timing of EID services			~	

Table 1: Shared Barriers and Specific Barriers among the study countries for accessing EID services at Six Weeks of Age

#### CONCLUSIONS AND RECOMMENDATIONS TO IMPLEMENT

Stock out of EID test collection kits

The study found that barriers to accessing EID services at six weeks of age among the HIV exposed infants differed among study countries with shared and specific barriers. Without addressing these barriers, there are several implications. If the infants born to HIV positive mothers had become infected due to not having accessed EID services and not having initiated ART, half would die before their second year of age. Also, global coverage of ART among children (52%) is still low when compared to adults (58%). Morevoer, although global mortality among HIV positive children was reduced from 200,000 in 2010 to 110,000 in 2017, but there is still a lot needed to reduce the mortality rate further (UNAIDS, 2017; Violari et al., 2008).

Definitely, National HIV/AIDS programs of Nigeria, Malawi, Kenya and Uganda should review their PMTCT services and address the need to provide facilities with a range of PMTCT services and MCH services for HIV positive mothers and HIV exposed infants. This would reduce the need for the patients to go back and forth for different appointments from different programs.

Equally important, there must be a review of the current mechanisms of the logistic and supply chain system of the EID services so that proper mechanisms are in place to avoid any shortages of EID test collection kits and related materials.

Again, EID services must be incorporated in all health centers, particularly rural health centers that are primary health centers for the population in these countries. There must also be reimbursement of transportation charges and provision of nutrition services since poverty is the most important socio-economic barrier for accessing EID services in the four study countries.

Hence, stigma and discrimination which affect the utilization of EID services need to be reduced by the stigma reduction campaigns in the PMTCT cascade as well as health education and health promotion in the community. Couple-based Counseling approaches are recommended in the PMTCT cascade for promoting support from partners in accessing EID services.

In addition, it is highly recommended to introduce counseling measures that address HIV positive mothers' status back at home in order to identify the mothers who are at risk of IPV. Furthermore, there must be cooperation and referral mechanisms between IPV programs and PMTCT programs for HIV positive pregnant women who are in need of support.

Without a doubt, there is an urgent requirement for women of reproductive age to get access to information on PMTCT and EID services, and for religious leaders and community leaders to be encouraged to participate in health education and health promotion sessions for successful and sustainable results in the communities.

Studies that focus on the association between the IPV and access to EID services for HIV positive mothers were found to be limited in number, as were studies that focused solely on the association between other barriers for accessing EID services at six weeks of age. Further research is recommended in these areas.

#### LIMITATIONS OF THE STUDY

The study focused on research papers on mothers of HIV exposed infants who were interviewed and questioned. However, since there is low usage of ANC and MNCH services and low usage of the formal health sector for delivery in these study countries, many children who were HIV exposed but whose mothers did not use those services will not appear for EID services making it difficult to estimate the impact of EID services among these children.

Finally, it is difficulty to generalize the findings from this paper to all the population and ethnic groups in the study countries. Since the diverse nature of the socio-cultural and socio-economic differences of Africa are well known, the barriers documented may not be applicable to all the population group in the study countries. And also, barriers documented in this study may not be applicable to other parts of the Sub-Saharan Africa Region.

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## Post-Earthquake Humanitarian Assistance and Its Effects on the Health System in Nepal

Rajesh Prasad Chaudhary <sup>1</sup>, Li Liang <sup>2</sup> and Shekh Mohammad Altafur Rahman <sup>3</sup> <sup>1</sup> Kathmandu, Nepal Email: rajesh@fph.tu.ac.th, crajesh1927@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Klong Luang, Pathum Thani, 12121, Thailand <sup>3</sup> School of Global Studies, Thammasat University, Rangsit Campus, Klong Luang, Pathum Thani, 12121, Thailand

## ABSTRACT

Man-made and natural hazards have significant impacts on health systems and affect millions of people each year. At 11:56 Nepal Standard Time on Saturday, April 25, 2015, an earthquake of magnitude 7.8 affected Gorkha district of Northern-Central Nepal.

It destroyed at least 498,852 private houses and 2,656 government buildings were damaged or fully collapsed beyond repair; 256,697 private houses and 3,622 government buildings were partially damaged. It also killed approximately 9,000 people and caused more than 22,000 injuries. Thousands of people were buried or trapped in the debris of houses, buildings, and public infrastructures. Damages and losses to health infrastructure estimated at 1,211 caused disruption in delivery of essential health care services in the affected districts.

The purpose of the study was to examine the humanitarian assistance and its effect on the health system in Nepal, mostly in the affected districts of the nation. The review found that this earthquake had an extreme impact on the health system. The overwhelmed health system failed to offer effective, competent, safe and quality health services to the affected population. The humanitarian assistance helped to fix the situation to calm the people by providing emergency and basic health services in temporary shelters in the affected areas.

#### INTRODUCTION

### Background

Man-made and natural disasters have had an impact on health systems in significant ways affect millions of people each year worldwide. Disasters such as earthquakes establish a major public health problem as service delivery and medical drugs and supplies are highly impacted with the numbers of those affected increase. National health care development efforts may be set back for years as health facilities can be damaged. The importance of disasters is now broadly known as a public health problem (Noji, 1996). After the devastating earthquake struck Nepal on April 25, 2015 (NPC, 2015b), the health of the people was severely affected by damages and losses to health infrastructure resulting in the disruption of essential health care services delivery.

### **Problem Statement**

The health care system of Nepal is complicated by problems related to accessibility, affordability and availability; issues that became more evident after the recent devastating earthquake in 2015 that affected millions of people with approximately 9,000 casualties and more than 22,000 injuries (NPC, 2015a). The current earthquake severely affected the health system of the nation. Many health facilities and administrative structures were damaged completely or partially, causing disruption in the delivery of regular health care services. As a consequence, there was an immediate need for humanitarian assistance to restore health facilities in order to provide the affected population with basic health care services (GoN, 2016). Nepal has faced a massive earthquake.

This paper analyzes the impact of the earthquake on the health system and its consequences on the health, shelter and well-being of the affected population.

#### **Research Purpose, Questions and Objectives**

Each disaster seeks billions of dollars of investment from the humanitarian aid organizations from all over the world. This paper examines the humanitarian assistance and its effect on the health system in Nepal, mostly in its earthquake-affected districts of Nepal. This paper aims to address the impact of the earthquake on the health system of Nepal and how well humanitarian assistance from government and nongovernmental organizations (NGOs) and others performed during emergency relief operations in Nepal after the earthquake in 2015.

The objectives of the study were:

- To explain the health system impacts of earthquake in Nepal;
- To explore the different kinds of humanitarian assistance and how it helped to improve the health system; and
- To propose a mechanism to respond to disasters and minimize their impacts on the health system in Nepal.

#### **RESEARCH METHODOLOGY**

A narrative review design was applied in this study to a qualitative documentary research on post-earthquake humanitarian assistance and its effects on the health system in Nepal. Numeric data from the literature was studied to justify the findings. Information sources related to the earthquake were reviewed including investigative journal publications, books, assessment

reports, government and non-government reports and records, situation analysis reports on post-earthquake humanitarian assistance and the effects on the health system in Nepal.

### **RESULTS AND DISCUSSION**

#### **Overview of Impacts of Earthquake**

The very first of the disastrous 2015 Nepal earthquake was followed by more than 300 aftershocks greater than magnitude 4.0 (as of June 7, 2015). Another catastrophic earthquake of magnitude 6.8 struck 17 days after the first one, with the epicenter near Mount Everest. It was followed by four aftershocks greater than magnitude 6.0 (NPC, 2015a).

The destruction was extensive covering residential and government buildings, health posts and schools, heritage sites, bridges, rural roads, agricultural land, water supply systems, hydropower plants, trekking routes, and sports facilities. The government assessment showed that at least 498,852 private houses and 2,656 government buildings were devastated or fully collapsed beyond repair, and 256,697 private houses and 3,622 government buildings were partially damaged. In addition, education was also hampered as 19,000 classrooms were destroyed and 11,000 were damaged (NPC, 2015b).

The only international airport in the country was also closed due to increased air traffic of many large planes. The runway sustained damage from the arrival of flights carrying humanitarian assistance. This added further problems to the response work. The history of all these major earthquakes proved that most of the casualties were resulted mainly from the collapse of physical infrastructure (MoHA, 2015).

## **Categorization of Affected Districts**

Almost one third of the country's population, estimated to be eight million people, were impacted by the earthquake. Out of the 75 districts of the nation, 31 districts were affected in which 14 were affirmed as 'crisis-hit' and another 17 neighboring districts were found to be partially affected leading to difficult living conditions for the people (IFRC, 2016).

The epicenter of the earthquake was Barpak, Village Development Committee (VDC), of Gorkha district, which is situated about 76 km northwest of Kathmandu, followed by another epicenter at Sindhupalchok district near Mount Everest after 17 days of the first earthquake (NPC, 2015b). The mapping of the severity of districts for the purpose of prioritizing rescue and relief operations (Fig. 3.1) was done by the Ministry of Home Affairs (MoHA) on the basis of damages caused by the earthquake.





## Impact of Earthquake on Health Infrastructure

This earthquake had extreme impact on the health system of the country. Government of Nepal conducted an assessment that also displayed the status of health facilities whether damaged completely or partially. This assessment report demonstrated that a total of 446 public health facilities including five hospitals, 12 PHCCs, 417 HPs and 12 other health facilities were completely destroyed (NPC, 2015b).

District Health Offices (DHOs) and District Public Health Offices reported the damages and losses in public health facilities. Table 3.1 shows the damage in health facilities as recorded by the assessment team during field visits (NPC, 2015b).

	Hos	pital	P	НС	Healt	h Post	Otl	ners	Pri se	vate ctor
District	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dama ged
Bhaktpur	0	1	1	1	6	9	0	0	0	6
Dhading	0	1	1	1	33	12	1	1	3	5
Gorkha	0	1	1	2	35	24	6	6	3	3

Table 3.1: Damage status of health facilities segregated by districts

	Hos	Hospital		РНС		Health Post		Others		Private sector	
District	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dam aged	Des troy ed	Parti ally dama ged	
Kathmandu	0	0	1	7	7	33	0	0	0	24	
Kavre	0	1	1	2	32	50	0	1	0	2	
Ramechhap	1	0	1	1	20	28	0	1	0	0	
Okhandhunga	0	0	0	0	17	17	0	0	0	0	
Makwanpur	0	0	1	2	14	13	0	0	3	6	
Sindhuli	0	1	1	3	23	7	0	0	1	2	
Doalkha	1	1	0	1	33	16	1	0	3	2	
Rasuwa	1	0	0	1	14	3	1	0	1	2	
Nuwakot	1	0	1	1	43	19	1	1	0	0	
Sindhupalchowk	1	0	1	2	62	17	1	0	2	0	
Total (14 crisis hit districts)	5	6	10	26	348	268	12	10	16	64	
Other districts	0	13	2	28	69	330	0	0	0	0	
Central and		20	0	0	0	0	0	0	0	0	
regional											
hospital/adminis											
trative residence											
Total	5	39	12	54	417	598	12	10	16	64	

Table 3.1: Damage status of health facilities segregated by districts (cont.)

Source: Post Disaster Need Assessment (GoN/MoHA, 2015)

The partial damage in health care facilities included 701 public facilities and 64 private facilities (NPC, 2015b). Despite the severe damages and interruption, services were provided in the extended spaces managed by tents in majority of the hospitals.

## Damage and Loss in Health Sector

The economic cost to the health sector due to the earthquake amounted to be NPR 6.33 billion, with 84 percent the public sector and the rest in the private sector including NGO and community owned service providers. Out of total economic cost, the cost of damage stood at NPR 5.2 billion and that of loss at NPR 1.1 billion.

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(Amount in million)

Estimatos dom	Public	Private	Total	Total	
Estimates uam	(NPR)	(NPR)	(NPR)	(US\$)	
	Facilities destroyed	3,577	608	4,185	41.8
Estimated damages	Facilities damaged	479	243	722	7.2
	Equipment and logistics	291	0	291	2.9

Estimates damages and losses		Public (NPR)	Private (NPR)	Total (NPR)	Total (US\$)
	Sub-total (1)	4,346	851	5,197	52
Estimated losses	Destruction and removal of debris	63	16	79	0.8
	Treatment services for injured	393	147	540	5.4
	Provision service delivery for affected population	472	0	472	4.7
	Governance and risk management	48	0	48	0.5
	Sub-total (2)	977	163	1,139	11.4
Total	5,323	1,014	6,337	63.4	

Table 3.2: Estimates of damages and losses (cont.)

Source: Nepal Disaster Report (GoN/MoHA, 2015)

The damage in the 14 severely affected districts accounted for around 89 percent (including 29 percent of health infrastructures and central hospitals) of the total economic cost in the health sector and the rest 11 percent in other districts. The three hardest hit districts (i.e., Gorkha, Sindhupalchok, and Dolakha) shared 22.4 percent of the total damages and losses (NPC, 2015a).

### National and International Assistance and Coordination Structure

The national government is responsible for dealing with disasters in Nepal. In case of a mega disaster, which may be ranked beyond its capabilities, the government appeals for national and international humanitarian assistance. The following structure (Fig. 3.2) shows the national and international assistance and coordination mechanism during an emergency in Nepal.



Fig. 3.2. National and international assistance and coordination structure Source: National Disaster Response Framework (GoN, 2013)

The Government of Nepal makes the call for international assistance in case of a mega disaster through cabinet meetings. The state government may appeal to the United Nations Humanitarian Coordinator, National and International Red Cross movement, foreign citizens, donor communities and political parties for humanitarian assistance in terms of cash or services to overcome such a devastating situation.

#### **Overview of Humanitarian Assistance**

Natural hazards in the form of tsunamis, earthquakes, floods, and famine have been threatening human beings from the origin of mankind. During disasters, hazards lead to: loss of life; disruption of essential services including health care services; destruction of homes and infrastructure; and widespread hunger, injury and disease. The humanitarian assistance aims to reduce the severity of the disaster and facilitate reconstruction for the wellbeing of the people and nation (Zhang, Zhou, & Nunamaker Jr, 2002).

The Government of Nepal launched a large scale relief operation in the immediate aftermath of the disaster with support from humanitarian organizations. Over 100 international search and rescue and medical teams arrived in Nepal within 24 hours. Local communities, youth groups, volunteers, the private sector and neighboring countries joined the initiation. Rescue and humanitarian operations took place in extremely challenging terrain as the earthquakes affected remote mountain villages predominantly. More than 450 aid organizations responded to the emergency (UNOCHA, 2015).

After the declaration of emergency by government, the cabinet appealed to the international agencies for humanitarian assistance. All ministries were coordinated as per the decision of the Central Disaster Relief Committee (CDRC) and given sector-wise responsibilities. According to the CDRC, 78 medical teams with more than 1,400 health personal served the victims of the earthquake (MoHA, 2015).

As soon as the emergency was declared and humanitarian assistance urged by the GoN, several national and international response mechanisms were activated. The response from the international community was also very rapid and generous. The humanitarian response over five months recognized the issues of concern and vulnerability related to protection, emergency education, the restoration of primary health care and livelihood support in longer-term recovery. All governmental sectors worked closely to alleviate the effect of the earthquakes (UNOCHA, 2015).

### CONCLUSION

The recent earthquake destroyed lives of thousands of people and affected properties worth billions of dollars. In many earthquake-affected areas, the health facilities were found to be less prepared to cope with the disastrous situation. There were weak emergency plans or virtually no back-up plan in the health facilities. A strong public health system is necessary to lessen mortality and morbidity during and after earthquakes. It should be equipped to tackle any disaster in the future. Health institutions should be extremely earthquake resistance. Every health facilities should have disaster preparedness plan and activated accordingly during disaster and emergency phase.

Despite the proliferation of humanitarian assistance in Nepal in the aftermath of the earthquakes, the response operations were not performed accordingly. There was a lack of proper planning, coordination and harmonious meetings which created disarray in the situation when local and foreign health teams arrived in the affected areas. Though the national and international humanitarian assistance and relief efforts had faced some definite problems, they did save the lives of many people and had a positive impact on the health system of Nepal.

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## The Influence of Sunbathing on Improving the Quality of Sleep for the Elderly in Mojopahit Nursing Home in Mojokerto, East Java

Arif Wijanarko<sup>1</sup>, Devin Prihar Ninuk<sup>2</sup> and Nasrudin<sup>2</sup>

<sup>1</sup> Bachelor student of Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, 61481 Email: arifwijai@gmail.com <sup>2</sup> Lecturer of Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, 61481 Email: devinpriharninuk@fik.unipdu.ac.id Email: nasrudin@fik.co.id

### ABSTRACT

Sleep is an important physical need for all people, but in particular for older adults. This study found that 90% of older people who lived in Mojopahit Nursing Home mentioned that they experienced sleep disorders. This study used a quasi- experimental design with a one-group pretest-posttest design, using quota sampling. The sample consisted of 38 respondents. The intervention for the respondents is to take a sunbath for 30 minutes per day times six days, followed by a break from intervention for a week to normalize conditions. Data analysis used the statistical Mann Whitney U test with a significance level of 5% ( $\alpha = 0.05$ ). In measurement, the mean score of quality sleep improved in the posttest comparison after the given intervention. The Mann Whitney U test found an influence of sunbathing in improving the quality of sleep for the older persons in Mojopahit Nursing Home in Mojokerto East Java (P = 0.000). Sunbathing can improve sleep quality in older persons, which will have a positive effect on the health of older persons.

Key words: Sunbathing, Older Persons, Sleep quality

#### **INTRODUCTION**

Rest and sleep are basic needs that must be fulfilled by everyone. Sleep changes associated with the aging process that affect the quality of sleep in older people include increased sleep latency, reduced sleep efficiency, early awakening, reduced stages of deep sleep with increased circadian rhythm disorders, and increased napping. The amount of time spent in deep sleep decreases. Older people report frequent naps and have difficulty falling asleep and staying asleep (Oliviera, A., 2012). Based on the results of interviews with 16 older people at the Nursing Home in Mojokerto, it was found that 90% of 16 elderly people said they had sleep disorders in the form of having difficulty falling asleep, often waking up at night, and feeling increasingly drowsy during the day. Mead (2008) argues that when people are exposed to sunlight or artificial light that is very bright in the morning, the production of melatonin at night will occur faster, and will make sleep easier.

## METHODOLOGY

This study used a quasi-experimental design with one-group pretest-posttest design. Using quota sampling with the following inclusion criteria: an older person who complains of sleep problems, aged 60 years and over, and willing to be a respondent. The exclusion criteria included an older person with chronic diseases. The sample consisted of 38 respondents, from Mojopahit Nursing Home in Mojokerto East Java. The intervention was for each respondent to take a sunbath for 30 minutes (11 am to 11.30 am) per day with temperature 200C for 6 days and then a rest from intervention for a week to normalize their physical condition (i.e., to avoid the effect of the previous intervention). Measurement used a modified Pittsburgh Sleep Quality Index (PSQI) questionnaire, while implementation was guided by standard operational procedure (SOP), data analysis used the statistical Mann Whitney U test with a significance level of 5% ( $\alpha = 0.05$ )

#### RESULTS

Age	F	%
a. 60-74 tahun	14	46
b. 75-89 tahun	10	33
c. >90 tahun	6	20

## Table 1: Characteristics of respondents by age

Respondent characteristics based on age of treatment group showed those aged 60-74 years were 14 people (46.7%), those aged 75-89 years were 10 people (33.3%) and those aged  $\square$  90 years were 6 people (20.0%).

Table	2.	Characte	ristics	ofr	esnond	lents	hv	oender
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Gender	F	%
Male	4	13
Female	26	86

The respondent characteristics of the treatment group based on male were 4 people (13.3%), female was 26 people (86.7%).

Diseases	F	%		
Hypertension	10	33		
Asthma	1	3		
Stroke	3	10		
Rheumatism	9	30		
Other	7	23		

Table 3: Characteristics of respondents by diseases

Respondent characteristics of existing diseases of the intervention group: 10 people (33.3%) with a history of hypertension, 1 person (3.3%) with a history of asthma, 3 people (10%) with a history of stroke, 9 people (30.0%) with rheumatism, and 7 people (23.3%) who had a history of other diseases.

Table 4: Characteristics of Respondents Based on Pretest Sleep Quality and Posttest in the Intervention Group at Mojokerto Nursing Home.

Sleep Quality	Mean	Median	STD
Pre test	7,06	7,00	1.480
Post test	4,04	4,00	0.793

Data frequency of the pretest before intervention showed a mean of 7.06, in the post-test after being given treatment for 2 weeks the mean obtained at 4.04; the lower score indicates improvement in the PSQI and proves that there was an increase in sleep quality between before and after intervention, while the median before treatment was 7.00, and after treatment for 2 weeks the median value was 4.00. And the results of the data frequency pre-test before intervention obtained a standard deviation value of 1.480, and after the respondents were given intervention for 2 weeks of therapy, the standard deviation value was 0.793, which proved that there was an improvement between before and after intervention.

The analysis of the results of the Effect of Sunbathing on Increasing Sleep Quality of older people in Mojokerto Nursing Home using the Mann Whitney U test showed the following results: at post  $\rho = 0.000$  (<0.05) this indicates that the value of p <0.05 means that H0 is rejected and H1 is accepted which indicates that there is a significant influence post treatment of the Effect of Sunbathing on improvement of Older People Sleep Quality at Mojokerto Nursing Home.

## DISCUSSION

To find out the effect of sunbathing on improving the quality of sleep for the older people in the mojokerto nursing home, the researchers used the Mann-Whitney test that showed that the treatment group obtained statistical test results  $\rho = 0.000$ .

Mead (2008) argues that when people are exposed to sunlight or artificial light that is very bright in the morning, the production of melatonin at night will occur faster, and will make night-time sleep easier. Melatonin production also shows relative seasonal variations to light availability.

Light has a dual effect on increasing melatonin through the retinohypothalamic tract and the suprachiasmatic nucleus (SCN) that controls circadian rhythms. Light regulates the increased phase of nocturnal melatonin by rearranging the circadian pacemaker (Takasu, et al, 2006).

Based on research conducted sunbathing can affect the quality of sleep of the older people at night, considering the environment around the elderly when the elderly are only in the bedroom in rooms that have ventilation but are still covered with mosquito net, therefore predicting that exposure of the older people to light will be less. Therefore, the older people are treated with sunbathing to increase the effective exposure to repeated sunlight during the day to control the circadian phase and increase the level of melatonin at night. The results of this study are reinforced by the results of Takasu, et al. (2006) where repeated exposure to sunlight for bright light during the day enhanced the increase in melatonin at night and maintained the circadian phase under a fixed sleep schedule.

Subjective quality components before being given sunbathing therapy for 2 weeks found 25 people had good subjective sleep quality (83.3%), and found 5 people had poor subjective sleep quality (16.7%). The component of sleep latency before being given sunbathing therapy for 2 weeks was measured: 5 people (16.7%) could start sleeping less than 15 minutes after going to bed; 10 people (33.3%) could start sleeping 16-30 minutes after retiring; 11 people (36.7%) could start sleeping after 31-60 minutes; and 4 people (13.3%) could start sleeping more than 60 minutes. The component of the length of night's sleep before being given sunbathing therapy for 2 weeks was also measured: 4 people (13.3%) could sleep for more than 7 hours at night; 11 people (36.7%) could sleep for 6 -7 hours at night; 9 people (30.0%) could sleep for 5-6 hours at night; and 2 people (6.7%) could sleep less than 5 hours per night. The component of sleep efficiency before being given sunbathing therapy for 2 weeks found 15 people (50.0%), with appropriate sleep efficiency. Components of disruption when sleeping at night before being given sunbathing therapy for 2 weeks found 15 people (30.0%) found that respondents experienced sleep disorders once a week at night, and 9 people (30.0%) found that respondents experienced sleep disorders twice a week at night.

Based on sleep quality studies in the older people at Mojokerto Nursing Home who were respondents in this study, the entire older people experienced poor sleep quality.

Subjective quality components after being given sunbathing therapy for 2 weeks found 30 people had good subjective quality of sleep (100%), indicating an increase of 5 people from the results obtained before being given sun therapy. The component of appropriate sleep latency after being given sunbathing therapy for 2 weeks was obtained by 18 people (60.7%), which meant that respondents could start sleeping less than 15 minutes after retiring, and 12 people (40%) could start sleeping after 16-30 minutes. The component of the adequate length of night's sleep after being given sunbathing therapy for 2 weeks was obtained by 8 people (26.7%) which means these respondents could sleep for more than 7 hours at night, 20 people (66.7%) could sleep for 6 -7 hours at night, and 2 people (6.7%) could sleep for 5-6 hours at night. The component of sleep efficiency after being given sunbathing therapy for 2 weeks increased to 30 people (100%).

Components of disruption when sleeping at night after being given sunbathing therapy for 2 weeks were obtained by 30 people (100%), which meant that respondents experienced sleep disorders once a week at night.

After being given the treatment of sunbathing, more than half of the respondents experienced a significant improvement in sleep quality compared to before being given treatment. This is reinforced by previous research Takasuet al (2006). Bright light can also affect thermoregulation. Bright light during the day is reported to affect the rise in nocturnal melatonin in humans. Significant forward-phase shifts from onset and nocturnal melatonin rise peaks in subjects exposed to bright daylight (5,000 lx) for 3 days under temporal isolation.

## CONCLUSION

Based on the results of research that has been done, it can be concluded the following matters:

- 1. Sleep quality before sunbathing in the intervention group and control group experienced poor sleep quality.
- 2. Sleep quality after sunbathing intervention group of respondents experienced improved sleep quality or good sleep quality.
- 3. There is an influence of sunbathing on improving the quality of elderly sleep at the Mojokerto Nursing Home.

This study can be an additional source of literature in the health care, especially regarding therapeutic non-pharmacological sunbathing therapy to improve sleep quality or decrease sleep disturbance.

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## What Explains the High Maternal Mortality in Zimbabwe? A Systematic Review

## Gwinyai Tinarwo<sup>1</sup> and Wanapa Naravage<sup>2</sup>

<sup>1</sup> Ministry of Health and Child Care, Zimbabwe E-mail: gtinarwo@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand

### ABSTRACT

**Background:** Maternal mortality is a global public health issue of concern particularly in low and medium-income countries. Globally, almost 300 thousand women die each year from preventable pregnancy related complications. About 99% of these deaths are attributed to preventable causes such as infection, hemorrhage, preeclampsia, obstructed labor and unsafe abortion among others. Apparently, the burden of high maternal mortality is felt more in sub-Saharan Africa which contributes more than half of all global maternal deaths yearly. Comparatively, 1 in 16 women in sub-Saharan Africa face a maternal lifetime risk of death, while the risk is lower in South Asia (1 in 43) and Europe (1 in 30 000). Zimbabwe is one of the countries in sub-Saharan Africa whose MMR has remained significantly high. The country has an estimated population of about 15.4 million people. Importantly, women aged between 15 and 49 (childbearing age) constitute around 25% of the population. One in every 37 of these women, in the prime of their lives, face a maternal lifetime risk of death due to avoidable causes. This study aimed at exploring the reasons contributing to high maternal mortality in Zimbabwe despite increased programmatic efforts and to identify possible solutions.

**Methodology:** A systematic review was carried out and articles were searched from the following databases: Web of Science, PubMed, and Scopus and Google scholar. The key words of search were; maternal mortality, childbirth, maternal health determinants and maternal health in Zimbabwe. Forty-seven articles from 2007 to 2017 were identified and 18 full text articles were finally included for review.

**Results:** The review established that the determinants of high maternal mortality include inequitable urban-rural distribution of maternal services, inadequate health financing, gender based violence, low socio-economic status of women, and critical shortage of skilled staff. Rural areas are the worst affected across all determinants when compared to urban areas. Since the determinants of poor maternal health outcomes extend beyond the health sector, programmatic efforts should be steered towards collaborating with other sectors in mapping priorities to support maternal health.

**Conclusions:** Importantly, to achieve Universal Health Coverage there is need to develop redistributive policies which aim to ensure that maternal services of the same quality are accessed by both urban and rural populations. This entails cross-subsidization of resources from urban/high income a populations to rural/low income populations through increasing the tax base were high income groups pay a larger proportion of tax towards maternal health than low income groups.

Key words: Maternal mortality, child birth, maternal health determinants, Zimbabwe

## Socio-Demographic Factors Associated with Causes of Maternal Mortality in Seven Selected Districts of Nepal

Sandhya Gurung <sup>1</sup>, Uma Langkulsen <sup>2</sup> and Wanapa Naravage <sup>2</sup> <sup>1</sup> Kantipur Academy of Health Science, Tinkune, Kathmandu, Nepal E-mail: sandhyagurung72@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand

#### ABSTRACT

**Background:** As stated by WHO, 830 deaths among women on daily basis globally due to pregnancy is attributed to pregnancy related complication, labor, postpartum period as well as other related causes and complications with 99% of those mortality occurring in developing countries.

**Methodology:** Study at 7 districts of Nepal being Khotang, Panchthar, Taplejung, Dhading, Sindhupalchok, Bhojpur and Terhathum was carried out to explore the causes and sociodemographic factors associated with maternal mortality. Selection criteria were based upon poor access to health facilities, low utilization rates of maternal and neonatal health services, high proportion of home delivery practices, poor socio-economic status and poor human development index. Analysis was carried out among 109 respondent, women aged 15-49 years in above mentioned 7 districts of Nepal while descriptive cross-sectional study was chosen as the study design, while data collected from the baseline survey that occurred between year 2012 to 2015, from the report on Determination of Maternal, Neonatal and Infant Mortality conducted by the Public Health and Infectious Disease Research Center was used. Descriptive statistics and chi square test were used for the association of the socio-demographic factors.

**Results:** The study found that the maternal mortality ratio was 342 per 100 000 live births in seven selected district of Nepal. Bhojpur being the highest and Dhading being the lowest district in terms of MMR with 589and 233 per 100000live births respectively. Moreover, findings pointed postpartum hemorrhage (48.6%), hypertension (24.8%), with undiagnosed fever as other causes (17%) leading to maternal deaths among the targeted population. Furthermore using individual analysis among disadvantaged Janjatis, one of the ethnic group showed association with causes of MMR as found through findings significant with p-value 0.03. Also, there was no association between the age and causes of the women who died during pregnancy, child labor and postpartum period. Meanwhile, women of age group 20-24 were found to have highest percentage of mortality with 34.9% while other related studies too indicated women of age group 20 to 34 were found likely to give birth with increased mortality risk associated with the delivery of child.

**Conclusions:** These findings would help developing countries like Nepal to advocate to address and strengthen the maternal health programs focusing on the significant socio-demographic factors as a priority.

*Key words: Maternal mortality, socio-demographic factors, ethnic group, postpartum hemorrhage, Nepal* 

## Intervention Strategies that Work to Eliminate Intimate Partner Violence in South Africa: A Women's Empowerment Approach Masibulele Sishuba-Zulu

Faculty of Public Health, Thammasat University, Thailand Email: masibulele@fph.tu.ac.th

#### ABSTRACT

Intimate partner violence (IPV) is defined as physical, sexual, or psychological harm that can be perpetrated by a former/current spouse. Global statistics indicate that women are more likely to experience IPV. IPV has been linked to adverse health outcomes and risky behaviours, and victims of IPV tend to need more healthcare overall than non-victims of IPV (Brown, 2013). This Paper highlights the importance of increasing strategies that seems to be more effective in reducing IPV. A systematic review of qualitative literature relevant to intimate partner violence and IPV prevention and intervention strategies, with focus on women's empowerment, was undertaken. Only articles that were not older than 10 years were reviewed, and only those specific to the African context were selected. Using the key words: intimate partner violence, domestic violence, relationship violence, gender based violence web-based searches were conducted on PubMed, Science Direct, JSTOR databases and on Google Scholar. Although there has been a much greater emphasis on violence prevention in low-income and middle-income countries, IPV is a global issue and not limited to low and middle income countries. Many interventions focus on prevention of violence however there has been very little attention given to addressing some of the root causes of gender inequalities and violence within South African communities.
#### **INTRODUCTION**

Intimate partner violence (IPV) is defined as physical, sexual, or psychological harm that can be perpetrated by a former/current spouse. Global baseline population surveys indicate that IPV affects women disproportionately. Between 10 percent and 69 percent of women around the world have experienced physical assault by a male partner at some point in their life some of the highest global rates are in Africa including South Africa where it is estimated at 49% and where, every 6 hours a woman is murdered by her intimate partner. STATSA, 2018) Despite various initiatives undertaken to reduce IPV across the country, data indicates it continuous increasing yearly (Brown, 2013). IPV has been linked to adverse health outcomes and risky behaviours, and victims of IPV tend to need more healthcare overall than non-victims of IPV (Brown, 2013).

IPV is associated with PTSD and depression, unwanted pregnancy, miscarriage, non-medical abortions STI. According to the UNAIDS (2014) it is indicated that women who experience IPV are 50% more likely to acquire HIV compared to those who do not experience IPV, Zembe (2015). While HIV is found across the world, most new cases are in sub Saharan Africa and particularly high in South Africa (UNAIDS 2013). The multiple adverse consequences of IPV and the toll these take on women including the co-occurrence of IPV and HIV/AIDS are compelling reasons for this review of the literature to identify measures that have proved effective for reducing IPV and empowering women against the determinants of IPV in the context of South Africa.

#### METHODOLOGY

A systematic review of qualitative literature relevant to intimate partner violence and IPV prevention and intervention strategies, with focus on women's empowerment, was undertaken. Only articles that were not older than 10 years were reviewed, and only those specific to the African context were selected. Using the key words: intimate partner violence, domestic violence, relationship violence, gender based violence web-based searches were conducted on PubMed, Science Direct, JSTOR databases and on Google Scholar. Approximately 98 articles were selected for analysis based on adequate description of the intervention, adequate participant size and prepost-test of outcome measure, at minimum. A matrix was used for each category of information relevant to prevention and intervention and intervention programs using keywords such as reduction of IPV, women empowerment, psychosocial support, economic and skills development. HIV/AIDS, community awareness.

#### RESULTS

The lack of empowerment of women contributes to their vulnerability for staying in abusive relationship; this compromises their health in a variety of ways including exposing themselves to sexually transmitted diseases such as HIV/AIDS (Duflo, 2012). In this review a link between increasing women's economic empowerment opportunities, skills development and social entrepreneurship was identified as key strategies for reducing IPV. Furthermore, increasing psychosocial support and creating safe spaces such as support groups showed great outcomes. Below are objectives of expected project outcomes from such programs.

a) Women will have better coping skills and to be able to make informed decisions and choices therefore improved health outcomes.

- b) Improve social security in women through entrepreneurship, thereby reducing poverty amongst women.
- c) Advance gender equality, equity and the empowerment of women, ensuring elimination of all kinds of violence against women and children through ensuring that women are more connected and have more options in situations where they are at risk of violence.

It is expected that attainment of these objectives will contribute to reducing economic stress in families and increasing the women's social networks and resources for social security. This may allow some relationships to continue with substantially reduced risk of IPV and further reduce the risk associated with acquiring mental illnesses, STI's and HIV/AIDS.





#### DISCUSSION

Using a framework that focuses on primary prevention, this intervention aims to address underlying causal factors or drivers of IPV, such as gender inequality, economic disparities and cultural barriers. The results revealed that changes in the economic status of women may help to reduce IPV as women who are economically dependent on male partners found it hard to leave an abusive relationship, and economic dependency facilitates power and control by men (Kiss et al. 2012). Therefor increasing programs that focus on reducing IPV through women

empowerment showed more positive outcomes in the general wellbeing of women as well as reducing their changes of exposure to other social and health issues.

The majority of violence against women is intimate partner violence (IPV), which includes physical or sexual violence occurring within an intimate relationship, such as marriage or dating. Many interventions focus on prevention of violence however there has been very little attention given to addressing some of the root causes of gender inequalities and violence within South African communities.

Although there has been a much greater emphasis on violence prevention in low-income and middle-income countries, IPV is a global issue and not limited to low and middle income countries. According to Wong & Mellor women who experience IPV are at increased risk of developing physical and mental health problems including traumatic brain injury, chronic pain, gastrointestinal disorders, depression, post-traumatic stress disorder, and substance-related disorders. Nurses, in whatever situation they work, are therefore highly likely to encounter women who are victims of IPV. A recent study by (Lutwak, 2018) revealed that there has been an increase in mental health problems among women who experienced IPV hence the need to increase intervention that focus on prevention of IPV globally and offer psychosocial support services.

There is no simple solution to ensuring that women are economically empowered. It requires a multi-faceted approach that deals with the barriers to entering the labour market, barriers to remaining in secure employment, and addressing structural inequalities at a grassroots and political level. It is expected that the three components of the program (psychological support, skills training and entrepreneurship support will contribute to the components of empowerment in the following ways. According to Thorpe (2016) one of the objectives of the South African government is to enable women to have viable incomes, decent work and be decisive actors who shape the terms and conditions of their participation in economic life.

Component of empowerment	How this program will contribute			
Intrapersonal component				
Self-esteem	Develop new skills in affirming environment			
	<ul> <li>Support to develop entrepreneurship skills in small,</li> </ul>			
	confidence building steps with ongoing support			
Leadership efficacy	• To empower women with leadership skills to serve as			
	mentors for other women in other communities			
Civic efficacy	Educating the community and women about IPV, survival			
	skills, and social empowerment			
	Encourage women to be part of civic engagement groups in			
	their communities			
Behavioral component				
Leadership behavior	Train leaders on identifying key issues to be resolved in			
	communities and tackle poverty and gender inequalities			

 Table 1: Components of empowerment

Component of empowerment	How this program will contribute				
Community engagement	Empower communities through workshops, campaigns and				
	stakeholder engagement meetings.				
Workplace engagement	Work closely with employers to train employees on gender				
(rather than school	equality, IPV and women empowerment				
engagement)	<ul> <li>Schools could be also used as platforms to share knowledge</li> </ul>				
	with young men as gender based and intimate partner				
	violence is also witnessed in girls and boys of high school age.				
Interactional component					
Adult mentors	Involve young leaders in knowledge sharing bridging the gap				
	gap between young and old				
Adult resources	Include men as partners initiatives to encourage collaboration				
	and shared responsibility in reducing Intimate partner				
	violence				
Resource mobilization	Work closely with government Departments such as Social				
	service Department, Law and Justice system and the				
	Department of Trade Industry which focuses on supporting				
	skills development initiatives.				

Table 1: Components of empowerment (cont.)

#### CONCLUSION

This review of IPV prevention and intervention programs shows that interventions that focus on empowering women are the most impactful as they are ones that address contributing factors at multiple levels. Some critical elements of such programs are those for example those that include interventions to reduce violence, reduce poverty and increase social security and accountability and reduce isolation. Evidence indicates that such programs can improve health outcomes of women, provide social support and connectivity and increase economic opportunities for better lives. Increasing more holistic interventions shows and adressessing the various the root causes of IPV shows to have positive outcomes to prevent and reduce IPV. The South African government has identified IPV as one of the major public health problems that must be tackled in South Africa and to achieve this goal the focus must clearly be on interventions that empower women with various skills.

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## Molecular Characterization of Multidrug-Resistant Mycobacterium Tuberculosis Isolates from Thai-Myanmar Border

Fjolla Berani<sup>1</sup>, Adisak Bhumiratana<sup>1</sup>, Andrew Corwin<sup>1</sup>, Benjawan Phetsuksiri<sup>2</sup>, Chie Nakajima<sup>3</sup>, Yasuhiko Suzuki<sup>3</sup> and Orasa Suthienkul<sup>1</sup>

<sup>1</sup> Thammasat University, Klong Nueng, Klong Luang, Pathum Thani, Thailand, 12120 Email: fjolla@fph.tu.ac.th E-mail: adisak.b@fph.tu.ac.th E-mail: corwinal2e@yahoo.com E-mail: orasa.s@fph.tu.ac.th <sup>2</sup> National Institute of Health, Ministry of Public Health, Nonthaburi, Thailand, 11000 Email: benjapsk@hotmail.com <sup>3</sup> Research Centre for Zoonosis Control, Hokkaido University, Hokkaido, Japan, 001-0020 Email: cnakajim@czc.hokudai.ac.jp E-mail: suzuki@czc.hokudai.ac.jp

#### ABSTRACT

Multidrug Resistant Tuberculosis (MDR-TB) is caused by Mycobacterium tuberculosis resistant to at least two of the first-line anti-TB drugs, isoniazid (INH) and rifampicin (RIF). Such profiling of INH and RIF resistance in MDR-TB isolates originally derived from border people in Kanchanaburi province has not been fully documented. This study aimed at molecularly characterizing point mutations of INH-resistant inhA and katG genes, and RIF-resistant rpoB gene of 60 MDR-TB isolates from which purified genomic DNAs were amplified and sequenced. Overall percent of isolates with point mutations was 96.7% (58/60). A high degree of point mutations occurring on rpoB gene was found, 93.4% (56/60) based on amino acid changes at positions Ser450Leu/Trp (75%), Leu452Pro (10%) and His445Arg/Asp/Tyr (6.7%). Of 60 isolates analyzed, a high degree of point mutation Ser315Thr occurred on the katG gene in 83.4% (50/60). In contrast to INH-resistant katG gene, a low degree of point mutations in inhA gene was found in 11.6% (7/60). This study implied that there was high degree of INH and RIF resistance in MDR-TB isolates among vulnerable border people. The genetic exploration of their clinically-derived mutations is required.

#### **INTRODUCTION**

Multidrug-Resistant Tuberculosis (MDR-TB) is a condition caused by *Mycobacterium tuberculosis* strains that have the ability to resist at least both isoniazid (INH) and rifampicin (RIF) – the two most commonly used first-line anti-TB drug (Sandhu, 2011; Sharma & Mohan, 2004). This phenomenon is a result of multiple mutations in several genes within the strains of TB. Such mutations are most commonly located on RIF-resistant *rpoB*, and INH-resistant *katG* and *inhA* genes (Ormerod, 2005). WHO has reported that in 2017, 558,000 people were diagnosed with rifampicin resistant TB (RR-TB), of whom 82% had MDR-TB. Almost half of these cases were situated in Asia (WHO, 2018).

Countries that are mostly affected by MDR-TB are 2<sup>nd</sup> and 3<sup>rd</sup> world countries. Thailand, a 2<sup>nd</sup> world country located in Southeastern Asia, is ranked as the country with the 17th highest burden of MDR-TB globally (Jittimanee et al., 2008). It has been estimated that during 2017 there were 2,700 new cases with MDR/RR-TB in Thailand (WHO, 2017). Most people living in or along the Thai-Myanmar border area are vulnerable (Moolphate et al., 2011; Hemhongsa et al., 2008). Kanchanaburi, the Thai-Myanmar bordering province positioned in western Thailand, is home to 950,000 people, 11% of whom are migrants from Myanmar (WHO, 2013). The frequent movement of these cross-border people has become a major concern for TB control programs (Hemhongsa et al., 2008). Surveillance and monitoring of MDR-TB present in the most vulnerable border people is required. Meanwhile, profiling of RIF and NIH resistance from border people in Kanchanaburi province has not been fully documented. Therefore, this study was carried out to molecularly characterize the mutations of MDR-TB isolates by analyzing the sequences of amplified DNA responsible for INH and RIF resistance.

## METHODOLOGY

**Isolates:** A total of 60 MDR-TB isolates whose purified gDNA templates were maintained at the laboratory of National Institute of Health (NIH), Ministry of Public Health, Thailand were selected for this study. These isolates were originally obtained during 2015-2016 from different groups of patients, including local Thai and Myanmar migrants who lived in the border area of Kanchanaburi province. The cultures of the selected isolates were initially examined for their drug susceptibility. The purified gDNA of *M. tuberculosis* H37Ra reference strain was also used as a positive control.

**DNA extraction:** The purified gDNA extraction was prepared according to the procedures described by Poudel et al. (2012). The quality of purified gDNAs of all 60 MDR-TB isolates as well as positive and negative controls were quantitatively and qualitatively examined and then dissolved in 100  $\mu$ l of TE buffer and kept at -20°C until further use.

**PCR:** A 20  $\mu$ l of PCR reaction mixture was prepared for each reaction. This mixture was composed of 0.5  $\mu$ l of deoxynucleoside triphosphate (dNTP), 4.0  $\mu$ l of 5x Go Taq Green buffer, 2.0  $\mu$ l of 5M betaine, 0.8  $\mu$ l of 25 mM MgCl2, 0.1  $\mu$ l of DNA polymerase (Go Taq) (Promega, WI, USA), 0.5  $\mu$ l of 10  $\mu$ M of the primers set (Table 1), and 1.0  $\mu$ l of DNA template. The final volume of this mixture for each reaction was adjusted to 20  $\mu$ l with sterile deionized water. The amplification process was performed using a PCR thermal cycler (Applied Biosystems, California, USA), under the following conditions: initial denaturation at 96°C for 60 s, 35 cycles of denaturation at 96°C for 10 s, annealing at 55°C for 10 s, and elongation or DNA extension at 72°C for 30 s. This process

ended with an additional extension step of 72°C for 5 min. *M. tuberculosis* H37Ra and sterile deionized water were used as positive and negative controls, respectively

Table 1:	Primer	sets	used	for	PCR	amplification	of	resistance-associated	genes	in	М.
tubercule	osis										

Gene	Primer	Sequence (5'-3')	Product size (bp)	Reference
rpoB	ТВ <i>гроВ</i> S	CAGGACGTGGAGGCGATCAC		Poudel et al.,
	TB <i>rpoB</i> AS	GAGCCGATCAGACCGATGTTGG	278	2012
katG	TB katG S	ATGGCCATGAACGACGTCGAAAC		Poudel at al.,
	TB katG AS	CGCAGCGAGAGGTCAGTGGCCAG	392	2012
inhA	TB inhA S	TCACACCGACAAACGTCACGAGC		Poudel et al.,
	TB inhA AS	AGCCAGCCGCTGTGCGATCGCCA	231	2012

**Agarose Gel Electrophoresis:** The presence of PCR products was analyzed in 2% (w/v) agarose gel in 0.5x Tris-borate-EDTA (TBE) buffer. Each gel was run at 100V for 35 min, followed with 55 min staining in 185 ml staining solution composed of 150 ml of 0.5x TBE and 35 ml of 3x Gel Green Nucleic Acid Stain (Biotium, US).

**Sequencing and Data Analysis:** The amplified fragments were prepared for sequencing according to the manufacturer's protocol and BigDye Terminator v3.1 cycle sequencing kit (Life Technologies Corp., CA). The sequencing reaction was run by ABI Prism 3130xl Genetic Analyzer (Life Technologies Corp., CA). The sequencing results were then analyzed and compared with wild-type *M. tuberculosis* H37Ra using Bio-Edit software.

## RESULTS

**Amplification of Resistance-Associated Genes and Gel Electrophoresis.** The PCR amplification specific for *inhA*, *rpoB* and *katG* genes of *M. tuberculosis* authentically amplified DNA fragments with expected sizes of 231 bp (Figure 1), 278 bp (Figure 2), and 392 bp (Figure 3), respectively, by using the 60 MDR-TB isolates. All amplified DNA fragments derived from corresponding genes of 60 MDR-TB isolates were then sequenced.



Figure 1: Agarose gel electrophoresis of amplified *inhA* gene (231 bp) from 60 *M. tuberculosis* patient isolates. Lanes Mo and M: DNA ladder (50-bp and 100-bp, respectively); Lanes 1-60: *M. tuberculosis* patients isolates; Lane PC, NC, B: positive control (H37Ra Reference strain), negative control (nuclease free water), and blank solution, respectively.



 Figure 2: Agarose gel electrophoresis of amplified *rpoB* gene (278 bp) from 60 *M. tuberculosis* patient isolates. Lanes Mo and M: DNA ladder (50-bp and 100-bp, respectively); Lanes 1-60: *M. tuberculosis* patients isolates; Lane PC, NC, B: positive control (H37Ra Reference strain), negative control (nuclease free water), and blank solution, respectively.



Figure 3: Agarose gel electrophoresis of amplified *katG* gene (392 bp) from 60 *M. tuberculosis* patient isolates. Lanes Mo and M: DNA ladder (50-bp and 100-bp, respectively); Lanes 1-60: *M. tuberculosis* patients isolates; Lane PC, NC, B: positive control (H37Ra Reference strain), negative control (nuclease free water), and blank solution, respectively.

**Mutations in the sequenced region of** *rpoB* gene. Mutations were identified in 56 (93.4%) of 60 isolates (Table 2). The most predominant mutation was located in codon 450, where a single nucleotide change resulted in the substitution of amino acid Ser to Leu, and was observed in 44 isolates (73.3%). A substitution of amino acid Ser to Trp at codon 450 was observed in one (1.7%) isolate. Codons 445 ad 452 were the second most frequently affected codons, with frequencies of 6.7% and 10%, respectively, and were characterized with 3 and 1 types of amino acid substitutions, respectively. One (1.7%) isolate harbored a mutation in codon 432. No mutations were found in the sequenced region of the remaining 4 (6.6%) isolates.

Mutated codon(s)	Amino acid change(s)	Nucleotide change(s)	No. (%) of isolates
432	Gln→Pro	CAA→CCA	1 (1.7)
445	His→Arg	CAC→CGC	1 (1.7)
	His→Asp	CAC→GAC	2 (3.3)
	His→Tyr	CAC→TAC	1 (1.7)
450	Ser→Leu	TCG→TTG	44 (73.3)
	Ser→Trp	TCG→TGG	1 (1.7)
452	Leu→Pro	CTG→CCG	6 (10)
Wild type <sup>a</sup>	None	None	4 (6.6)

Table 2: Distribution of the mutations along the sequenced region of *rpoB* gene of *M. tuberculosis* isolates from Kanchanaburi province

<sup>a</sup> No mutations were obtained on the sequenced region

**Mutations in the sequenced region of** *katG* **gene and** *inhA* **promoter region.** A total of 52 (86.7%) isolates harbored a mutation on the sequenced region of *katG* gene (Table 3). The most predominant haplotype was that of Ser315Thr, and was observed in 50 (83.4%) isolates. In contrast to INH-resistant *katG* gene, low degree of point mutation was observed along the promoter region of *inhA* gene, with only 7 (11.6%) isolates harboring a mutation at position -15. Among these isolates, two (3.3%) of them had also a silent mutation on codon 338 of *katG* gene. The remaining 3 (5%) isolates had no mutation in any of the sequenced region.

Table 3: Distribution of the mutations along the sequenced region of *katG* gene and *inhA* promoter region of *M. tuberculosis* isolates from Kanchanburi province

Mutated codon(s)	Amino acid change(s)	Nucleotide change(s)	No. (%) of isolates	
katG 315	Ser→Thr	AGC→ACC	49 (81.7)	
	Ser→Thr	AGC→ACA	1 (1.7)	
inhA -15	NA <sup>a</sup>	C→T	5 (8.3)	
katG 338 and inhA -15	Silent mutation and NA <sup>a</sup>	$C \rightarrow T$ and $C \rightarrow T$	2 (3.3)	
Wild type <sup>b</sup>	None	None	3 (5)	
<sup>a</sup> Not applicable	<sup>b</sup> No mutations were obtained on the sequenced regions			

A general picture of the mutations on the three resistant genes and the number of isolates that harbors those mutations is provided on Table 4.

Ami	Amino Acid Change			
katG	гроВ	inhA	isolates	
Ser315Thr	Ser450Leu	-	41 (70.7)	
-	Leu452Pro	C15T	3 (5.18)	
silent	Leu452Pro	C15T	2 (3.45)	
-	Ser450Leu	C15T	2 (3.45)	
Ser315Thr	-	-	2 (3.45)	
Ser315Thr	His445Asp	-	2 (3.45)	
Ser315Thr	His445Arg	-	1 (1.72)	
Ser315Thr	His445Tyr	-	1 (1.72)	
Ser315Thr	Leu452Pro	-	1 (1.72)	
Ser315Thr	Gln432Pro	-	1 (1.72)	
Ser315Thr	Ser450Trp	-	1 (1.72)	
-	Ser450Leu	-	1 (1.72)	
	Total		58	

Table 4: Distribution of the mutations located at *katG*, *rpoB* and *inhA* genes in 58 *M*. *tuberculosis* isolates from Kanchanaburi province

#### DISCUSSION AND CONCLUSION

The rise of resistance to anti-TB drugs, particularly INH and RIF, has created numerus challenges to public health practitioners, jeopardizing the successful implementation of prevention and control programs aimed at putting an end to TB. In this study we have tried to characterize the mutations in *rpoB* and *katG* genes, and promoter region of inhA gene of *M. tuberculosis* strains circulating in the border area of Kanchanaburi province. Overall, 58 (96.7%) isolates harbor a mutation in at least one of the three drug resistance-associated genes. The most common mutation observed in our RIF-resistant isolates was located at codon 450 (75%), which resulted in amino acid substitution Ser to Leu. Similarly, a high degree of the mutations has been observed in isolates from Myanmar (63.6%) (Aung et al., 2015), other provinces in Thailand (58%) (Prammananan, 2011), China (58.3%) (Zhao et al., 2014) and other near-by regions (Poudel et al., 2012). Other common mutations observed in our RIF-resistant strains were detected in codons 445 and 452 with frequencies of 6.7% and 6.6%, respectively. Slightly higher frequencies of mutations in codon 445 have been reported by others in the region (Prammananan, 2011; Zhao et al., 2014).

Resistance towards INH has been highly associated with mutations along *katG* gene, especially codon 315, and the promoter of *inhA* (Seifert et al., 2015; Lempens et al., 2018). Such results have been observed in our study as well. The most predominant mutation in *katG* gene was that of Ser315Thr and was observed in 50 (83.4%) isolates. Reports from other regions have also demonstrated similar frequency of Ser315Thr mutation, including isolates from Vietnam (76.83%) (Minh et al., 2011), India (74.19%) (Negi et al., 2006), and Russia (76.9%) (Afanas'ev et al., 2007). Seven isolates (11.6%) harbored a mutation in the promoter region of inhA gene. This

frequency was also quite similar to what others have reported (Poudel et al., 2011; Zhao et al., 2014; Aye at al., 2016).

In conclusion, this study provides a general overview of the INH and RIF resistance profiles of isolates from the border area of Kanchanaburi province. These findings can assist in surveillance, development of border health plans, monitoring of the magnitude of MDR-TB, and, particularly, a better understanding of the molecular basis of MDR-TB in that area. Further analysis of the genetic diversity and the tendency of the occurrence of these clinically derived mutations in those MDR-TB strains (i.e., a specific group of mutations occurring in a certain strain type) could provide insightful information and a better understanding of the patterns and distribution of these mutations.

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## Family Support and Medical Adherence among Older Adults with Hypertension in Indonesia

Safitri Febria Rahmadini<sup>1</sup>, Siti Urifah<sup>1</sup> and Wiwiek Widiatie<sup>1</sup>

<sup>1</sup> Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, 61481 Email: sitiurifah24@gmail.com

## ABSTRACT

**Background:** Hypertension is the most common noncommunicable diasease especially among older adults. Hypertension can impact on people's health condition and lead to heart failure, stroke, and death. Medication is an important means to improve the health condition of older adults. However, an important issue among older people suffering from hypertension is medical adherence. In 2015, the Indonesian Ministry of Health dat mentioned that 45.9% of Indonesian older people suffer from hypertension and, in 2017, Jombang was one of the cities with a high prevalence of hypertension: Out of 3.6% of older adults suffering from hypertension, only 0.15% take medication. Among the factors which influence successful medical adherence is family support. Consequently, the aim of this study is to analyze the correlation between family support and medical adherence among hypertension patients in Indonesia.

**Research methodology:** The research design used was cross-sectional. The sample size of this study was 50 older adults with hypertension and total samples technique was used, meaning that all individuals in the population are included in the sample. This study was conducted in Posbindu Gambiran Mojoagung, Indonesia from 11 to 13 April 2018. The data was collected using family support questionnaires and medical adherence questionnaires. The data was analyzed by using Pearson correlation statistic test with 5% significance level ( $\alpha = 0,05$ ).

**Results:** The majority of those in this study were females (82%) aged between 46 and 80 years. Moreover, about 34% of all participants mentioned that they did not routinely take hypertension medicine, and 76% of participants got family support at good and moderate levels. However, 24% of the participants stated that they received low support from their family. Thirty percent (30%) of the participants indicated good and moderate levels for their medical control. From the statistic test it was found that the P value was 0.03, that correlated family support and medical adherence among hypertensive patients.

**Conclusion:** Family support is very important for hypertensive patients especially for those undergoing medical treatment. Consequently, from this study, we recommend that health care services should seek active support of family members for an older adult patient undergoing hypertension treatment.

Key words: Family's support, hypertension, medication adherence

#### **INTRODUCTION**

Older adulthood is the final stage of development in the process of human life. Among other problems, older people commonly experience physical problems, marked by a decrease in endurance as many suffer from degenerative diseases, one of which is hypertension. The number of older adults in Indonesia in 2013 reached 24.9 million or 8.9%, and is expected to increase to 29.8 million or around 21.4% in 2050. Hypertension is the the most common disease suffered by older people aged 55- 64 years with 45.9% prevalence (Ministry of Health 2015; Urifah & Ninuk 2017).

Hypertension among older adults is classified as systolic blood pressure > 140 mmHg and diastoleblood pressure > 100 mmHg (Irwan 2016). That hypertension is the most common disease suffered by the older adults was also confirmed by the researcher Prasetyaningrum, who stated that 60% - 80% of hypertension prevalence occurred in older adults over 60 years of age (Prasetyaningrum, 2014). If hypertension is not treated immediately, it can cause several complications such as heart attack, stroke, and kidney failure. Hypertension will increase when drug Poscompliance is poor because it is a continuous problem. To stabilize a normal blood pressure there needs to be a lifestyle change accompanied by regular consumption of antihypertensive drugs. Hypertension that has long been suffered by the older adults can also be reduced by several factors such as social support, environmental factors, and family support (Efendi 2016).

According to POSBINDU data (2017) Gambiran Village was found to have a number of older people who had hypertension at the age of 45 - 59 years with a prevalence of 1.4% (~ 80 people) and of those aged 60 - 69 years with prevalence of 2.2% (~55 people). Based on preliminary data obtained by conducting a field survey on October 25, 2017, data were obtained in POSBINDU of Gambiran Mojoagung Village from as many as 100 older adults. Based on an interview and examined blood pressure method, the researcher found that 10 older people had hypertension; six of them routinely took anti-hypertension medicine and four of them did not. Of the 10, eight older adults had family support.

Prevention and treatment efforts for hypertensive patients can be carried out through pharmacological therapy; the patient should be taking anti-hypertensive drugs regularly (Rikomah 2016). The hypertension medical adherence is the main aspect in the healing process and can prevent the development of hypertension complications. Handayani (2014) justified that family support is the main factor for successful medical adherence for the hypertensive patient. So, the aim of this study was to analyze the correlation between family support and medical adherence among hypertension patients in Indonesia.

#### **RESEARCH METHODOLOGY**

The research design used was cross-sectional. The sample size of this study was 50 older adults with hypertension and total samples technique was used, meaning that all individuals in the population are included in the sample. This study was conducted in Posbindu Gambiran Mojoagung, Indonesia from 11 to 13 April 2018. The data was collected using family support questionnaires and medical adherence questionnaires. The data was analyzed by using Pearson correlation statistic test with 5% significance level ( $\alpha = 0.05$ ).

Variable	Frequency (n)	Percentage (%)
1. Age		
Min-Max (46-80)		
Mean/SD (58,66/8,2)		
2. Gender		
a. Female	41	82
b. Male	9	18
3. Education		
a. Elementary School	34	68
b. Primary High School	13	26
c. Senior High School	3	6
d. University	0	0
4. Occupation		
a. House wife	37	74
b. Civil servant	2	4
c. Private work	3	6
d. The seller	8	16
e. Farmer	0	0
5. Period of Hypertension		
history		
a.≤1 years ago	16	32
b. > 1 years ago	34	68

#### **RESULTS** Table 1: Demographic Characteristic

Source: Primary data on April, 2018

Based on table 1, this study found that the majority of the participants were females (82%) and they aged between 46 and 80 years with a mean age of 58 years old. More than half of those were educated at elementary school level. 74% of participants said that they were housewife as their occupation and 68% of those said that they had hypertension history more than one year ago.

**Table 2: Percentage of Family Support** 

No	Family support	Frequency (N)	Percentage (%)
1	Good	4	8
2	Moderate	34	68
3	Poor	12	25
	Total	50	100

Source: Primary data on April, 2018

Based on table 2 this study found that 76% of participants got family support at good and moderate levels and only 25% of those had poor level of family support.





Based on figure 1, 60% of the participant said that they had poor emotional support from their family and only 2% of those said that they had good appreciation from their family. Moreover, the majority of the participant (88%) had moderate level for facilities support from their family and 72% of them had moderate level of information support from their family.

No	Medical adherence	Frequency (N)	Percentage (%)
1	Good	1	2
2	Moderate	14	28
3	Poor	35	70
	Total	50	100

#### **Table 3: Percentage of Medical Adherence**

Source: Primary data on April, 2018

Based on table 3 this study found that 70% of participants had medical adherence status rated as poor, and 30% of them had medical adherence status at moderate and good levels.



## **Figure 2: Distribution of statement of medical adherence** Source: Primary data on April, 2018

Based on figure 2, this study found that 46% of the participant said that they difficulty remembering which of their medications was for hypertension, and almost all the participant (92%) said that medication therapy for hypertension was complicated. Moreover, all participant (100%) said that they will stop taking hypertension medicine when their blood pressure returns to normal and almost all (96%) said that they would take hypertension medicine but not according to the doctor's prescription for duration of care and number of doses per day.

Based on the statistical analysis it was found that the P value was 0.03, which means that there is a correlation between family support and medical adherence among hypertensive patients.

## DISCUSSION

The results of this study show that the majority of respondents are 55-64 years old and have elementary education. A lower level of education can affect family support, since better educated members of the family are more capable of understanding the advice given by their doctor and other family members.

Based on table 2, this study found that 76% of participants got family support at good and moderate levels and only 25% of those had poor level of family support. In detail, based on figure 1, 60% of the participant said that they had poor emotional support from their family and only 2% of those said that they had good appreciation from their family. Moreover, the majority of the participants (88%) had moderate level for facilities support from their family and 72% of them had moderate level of information support from their family.

According to Osamor (2015), family support will increase the awareness of people to use health services for their treatment, which is an important component for adherence to prescribed hypertension medication. The support from other family members will increase the confidence of older people, they will have faith that their disease can be treated. Family support can also provide a very meaningful motivation for patients to continue with treatment, even if they feel bored or disinterested in continuing with their disease care. (Friedman 2013).

Another study said that the information support from the family regarding the adherence to taking anti-hypertensive drugs in older adults was very important in their recovery process

because they felt there was a motivation to be able to recover and be healthy again ( I Gede 2017).

Based on table 3 this study found that 70% of participants had medical adherence status at poor level, and only 30% of them had medical adherence status at moderate and good levels. In detail, this study found that 46% of the participant said that they had difficult remembering which of their medicines was for hypertension treatment; almost all the participant (92%) said that medication therapy for hypertension was complicated. Moreover, all participant (100%) said that they will stop taking hypertension medicine when their blood pressure returned to normal and almost all (96%) said that they were taking hypertension medicine but not according to the doctor's prescription for frequency and duration of therapy.

The results of this study were in line with previous research by Arif Budiman (2013) who said that respondents' adherence to taking drugs is influenced by individual behavior in achieving healing and respondents' confidence in the benefits of drugs consumed. Respondents said that they often forget to take medication. As a result, treatment is irregular and hypertension is not controlled because when blood pressure rises the patient does not always recognize the symptoms, yet the impact can cause coronary artery complications.

Based on table 4, the statistic test it was found that the P value was 0.03, which means that there is a correlation between family support and medical adherence among hypertensive patients.

This result was in line with research by Olowookere, et al (2015) which showed that patients with high family support were more obedient than patients with low family support. The impact is that the increase in mortality is mainly due to complications such as coronary artery disease.

#### CONCLUSION

Family support is very important for hypertensive patients especially for those undergoing medical treatment. Consequently, from this study, we recommend that health care services should seek active support of family members for an older adult patient undergoing hypertension treatment.

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# Exploring Micronutrient and Vitamin Programs in Malawi: A Study of Implementation and Collaboration in Governmental and Non-Governmental Programs

Mackenzie Chigumula <sup>1</sup> and Tatchalerm Sudhipongpracha <sup>2</sup>

<sup>1</sup> National Police Headquarters, Capital City, Malawi E-mail: chigumulah@yahoo.com, mackenzie@fph.tu.ac.th <sup>2</sup> College of Interdisciplinary Studies, Thammasat University, Bangkok, Thailand

#### ABSTRACT

**Background:** Multisectoral micronutrient policies, strategies and programing have raised international interest among nutritionists in addressing micronutrients and vitamin deficiencies. In Malawi, micronutrient programs are implemented by different stakeholders and almost 90% of these programs are financially supported by donors. However, there is a growing concern by government and other stakeholders that implementation of these nutrition programs rarely use the prescribed tools put in place by government, especially at local level, thereby leaving out hard to reach populations. The aim of this study was to explore and understand how the available policies, strategies and structures guide micronutrient and vitamin programs in Malawi.

*Methodology:* A narrative documentary literature review study was used and the data was analyzed using a qualitative method.

**Key Findings:** There are many multisectoral nutrition policies and good collaboration and coordination structures exist like the Nutrition Technical Working Committees in Malawi. However, there is no specific policy guiding micronutrient and vitamin programs. Furthermore, operation of the structures is not consistent with the prescribed protocols as they depend on donor financing for the programs. As a result, not all districts are not adequately covered.

**Conclusion:** Although there are good policies and structures available in Malawi to allow smooth implementation and wide coverage of micronutrients and vitamins, there is selective implementation of these tools especially at district level due to donor influence of the programs. There is a need for donors to use the available local councils' structures established by government.

Key words: Micronutrients and Vitamins Programs, Nutrition Polices and strategies

#### **INTRODUCTION**

Micronutrient and vitamin deficiencies (MVD) constitute a major public health challenge in lower-income countries, and micronutrient and vitamin programs are increasingly recognized as a promising strategy to improve population micronutrient status in these countries. According to the international Board of Health, Food and Nutrition (2010), micronutrient deficiencies are common globally with an estimated more than two billion people affected worldwide. The most commonly experienced deficiencies include those associated with vitamin A, folate, iron, iodine, and zinc (Howson 2010). This challenge of under nutrition is more pronounced in young children under-five and women who are pregnant and breast feeding in low- and middle-income countries (LMIC). This could be attributed to both social and biological factors. Biologically, pregnant and breast feeding women and young children have substantially higher nutrient requirements per unit of body mass relative to other age groups.

In Malawi micronutrient programs are implemented by different stakeholders and almost 90% of these are financially supported by donors. However, there is a growing concern by government and other stakeholders that implementation of these nutrition programs rarely use the prescribed tools put in place by government, especially when being implemented at the local level, thereby leaving hard to reach populations underserved. A strong implementation plan is needed to build synergies between the nutrition tools and to create a coordinated and effective response to nutrition at the local and district level.

#### **OBJECTIVE**

The aim of this study was to explore and understand how available policies and strategies guide the implementation, collaboration and coordination of food, micronutrient and vitamin programs in Malawi.

## METHODOLOGY

A narrative documentary literature review was used and the data was analyzed using qualitative methods. Information was retrieved from governmental and non-governmental nutrition policies, strategic plans, research reports and micronutrient project and program reports using a Boolean search strategy.

	Policy and strategy name	Author	Financers	Implementers
1	National Nutrition Policy (NNP) 2008-	DNHA	Donors, OPC	Government departments,
	2013			NGOS, Private sector, Civil
				society, UN agencies
2	School Nutrition and Health Guidelines	MOE	Donors, MOE	MOE, MOH, UN agencies
	2010			NGOs
3	Infant and Young Child Nutrition Policy	МОН	Donors, MOH	MOH, UN agencies, NGOs,
	and Guidelines 2003			Private Sector
4	Malawi Health Sector Strategic Plan	МОН	Donors, MOH	MOH, Health institutions,
	(HSSP) 2011 – 2016			UNICEF
5	National Nutrition guidelines for Malawi	MOH	Donors, MOH	Government and NGOs,
	2007			

#### FINDINGS

**Table 1: Micronutrients and Vitamin Policies in Malawi** 

	Policy and strategy name	Author	Financers	Implementers
6	National Guidelines on Nutrition Care,	МОН	Donors, MOH	HOH and Health
	Support, and Treatment (NCST) for			institutions
	Adolescents and Adults 2014			
7	Malawi Growth and Development	Economic	Donors, MOH	Government departments,
	Strategy 2012	planning		NGOs, Donors, Civil society
8	National Food Security 2007	MOA	Donors, MOA	MOA, NGOs, Civil society,
				UN agencies.

Table 1: Micronutrients and Vitamin Policies in Malawi (cont.)

In Malawi, there is no specific micronutrient policy although micronutrient interventions are being implemented guided by nutrition policies developed in different government ministries. For example, the NNP provides strategies that promote different micronutrients like iron, iodine, zinc and vitamin A (Table 1) Donors play a big role in financing micronutrient programs in Malawi, which poses a challenge for the sustainability of the programs in the event of donor pull out. Also, the interventions are implemented in areas according to donor interest. In terms of implementation, NGOs and different government ministries are the major implementers of these policies.

	Micronutrient program	Financing agencies	Target	Means of implementation		
				Supplementation	Fortification	Bio fortification
1	Scale up Nutrition (SUN- 1000 days)	Government, DONUT	0-2 year children, Pregnant women, General population	Iron, Iron/Folate, Vitamin A, Iodine	Sugar Corn soya Wheat flour Maize meals Oil	Crop diversity
2	Vitamin A	Government, UNICEF, Developmen t partners Save The children, NGOs Private sector,	Under five children Postpartu m mothers General population	Under five clinics Child health days Biannual campaigns	Sugar Corn soya Wheat flour Maize meals Oil	Orange flesh Sweet potatoes Maize Molinga production

Table 2: An overview of Micronutrient and Vitamin programming in Malawi

	Micronutrient	Financing	Target	Means of implementation		
	program	agencies				
3	Iron folate	Government,	Pregnant	Antenatal	-	-
		Save the Children, Donors	women	clinics		
			Girls (10- 19 years)	School health		
				and nutrition		
4	Iron	Government, Save the children, Donors	Preschool children under 5 years	Antenatal	-	Beans
				clinics		
				School health		
			Pregnant women	distribution		
				program		
			General	Health facility		
			population	distribution		
5	Iodine	Government,	General		Salt	
		UNICEF,	population			
		Donors				
6	Zinc	Government, Donors	Children with diarrhea	Health facility		
				based		
				School health		
				and nutrition		
				aistributio		

Table 2: An overview of Micronutrient and Vitamin programming in Malawi (cont.)

The study found that there are different micronutrient and vitamin programs and interventions being implemented in Malawi. The main micronutrient programs include iron, folate, zinc and Vitamin A supplementation, iodine and vitamin A fortification, and vitamin A and iron bio fortification. The supplementation programs are being done by the health sector through under five and antenatal clinics and through the School Health and Nutrition program. While fortification programs are using different processed food items, commonly used food items include salt, sugar and cooking oil. The bio-fortification program by the Ministry of Agriculture is so far implementing bio-selection of iron and vitamin A-rich varieties of maize, oranges and sweet potatoes. The bio-fortification program is still in its infancy as it is being implemented in only a few areas in Malawi (Sztam Kevin, 2010). The programs are heavily dependent on donor agencies for financing, which exposes less of a commitment by the government to micronutrient programs.

#### **Micronutrient and Vitamin Programme Actors Mapping**

There are six government ministries implementing micronutrient and vitamin programs in Malawi with their own specific mandates. For example, the school nutrition programs are operated by the Ministry of Education, mostly at district level. The Ministry of Gender implements nutrition interventions using the community and district development officers; the Ministry of Agriculture uses the food and nutrition personnel who are located in all Agriculture Development Areas. The Nutrition Deputy Directors in each respective ministry are the focal persons at national level for all nutrition activities. A replica setup is also established at district and community levels, where the personnel responsible for nutrition programs come together to meet with the District Commissioner. In addition, the Scaling Up Nutrition (SUN) movement offers an opportunity for the nutrition programs to be implemented at household and community levels.

There are a number of nongovernmental and international organizations implementing micronutrient activities in Malawi (see Figure 1). These organizations form part of the National Working Committees and Technical Working Groups that coordinate and offer collaborating structures for micronutrient and vitamin programs. The National Fortification Alliance is a group of players that include representation from the Government, NGOs and private sector who conduct fortification monitoring activities in Malawi.



Figure 1: List of key Stakeholders of Nutrition and Micronutrients programme in Malawi

The study found that there are many actors implementing nutrition and micronutrient programs in Malawi, who are placed at national, district and community level. The Office of the President and his Cabinet through the Department of Nutrition HIV and AIDS (DNHA) was responsible for the national policy formulation. Up to 2014, DNHA was in the Office of the President and Cabinet, until currently moved to the Ministry of Health. The five major sector ministries who implement key micronutrient programs in line with their mandate have developed sector specific policies, strategies, guideline and intervention. The ministries implement programs in silos at national, district and community level.

Multilateral and bilateral development partners and UN agencies are mostly involved at policy development level and are the major financers of the micronutrient programs in Malawi. UNICEF funds 90% of the biannual Child Health Days, which provides supplementation of vitamin A and deworming tablets (UNICEF, 2014). Private sector partners and NGOs are available country-wide at national, district and community level; each NGO has specific nutrition program as directed by their donor.

#### DISCUSSION

This study revealed that there is no specific micronutrient and vitamin policy in Malawi. The micronutrient programs are being implemented using the various nutrition policies that have incorporated minor micronutrient and vitamin interventions. Different nutrition policies have been developed by various ministries implementing nutrition activities as per their respective mandates. The NNP acts as the main regulating policy that guides all the nutrition policies and activities in different sectors. All the policies embrace a multisectoral approach to implementing nutrition activities, for example the NNP 2008-2013 by DNHA, the School Health and Nutrition guideline identified Ministries of Education, Health, Agriculture, Gender women and Children and Local Government as key players among others in the implementation of the guidelines. However, these policies and programs depend on funds from the donor community for their actualization causing selective implementation of the programs often based on donor interest.

The study also found several Micronutrient and Vitamins programs in Malawi, which include vitamin A and iron supplementation, Vitamin A and Iodine fortification and Vitamin A and iron bio fortification. According to the HSSP 2011-2016 and the SHN policy 2010 the vitamin A supplementation programs are implemented through under-five clinics and biannual Child Health Days targeting 6-59 months' children and postpartum mothers. The vitamin A supplementation program in schools has low coverage standing at 2.1% (MDHS, 2015-2016), there is a need for more research to establish factors that are contributing to this low coverage despite the availability of policies and strategies.

Malawi is ranked number three from the top on the Ending Malnutrition and Hunger Commitment Index. This index measures the commitment of politicians in 45 LMIC who are addressing the issues of nutrition and hunger (te Lintelo, 2015). However, there are several challenges that the micronutrient and vitamin program is facing in terms of actualization of the policies and programs. One challenge is the weak statutory support for enforcement, accountability and implementation of policy commitments. The challenges in some cases are fueled by the fact that the policies become unpredictable in the event of government change. Most of the time when a new government comes into power, policies and programs are put on hold or even discontinued, which may result in unfinished projects (Malawi Compact 2025, 2016). Consistency of policies in the event of regime change is paramount to the continuation of the Micronutrient and Vitamin programs in Malawi.

#### CONCLUSION

Although there are potentially good policies and structures available in Malawi to allow smooth implementation and wide coverage of micronutrients and vitamins, there is selective implementation of these tools as they are mostly implemented to suit donor requirements for funding of particular micronutrient programs. This has resulted in some districts not benefiting from the micronutrient activities. The coordination and collaboration structures that are put in place by government are not being fully utilized, especially at district level. There is a need for donors to implement their micronutrient and vitamins programs using the available local council structures established by government.

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# Issues of Sustainability of Rural Community WASH Programs in the Transition from Millennium Development Goal to Sustainable Development Goal in Southern Africa

Elizabeth Wariva<sup>1</sup>, Rodger Doran<sup>2</sup> and Liang Li<sup>2</sup>

 <sup>1</sup> Volunteer, #8753, Block 3B Old Highfields, Harare, Zimbabwe E-mail: warivae@gmail.com
 <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: rodger.d@fph.tu.ac.th E-mail: liang.li@fph.tu.ac.th

#### ABSTRACT

**Background:** Water, sanitation and hygiene (WASH) was placed in the global agenda in the Millennium Development Goals (MDGs) and recently in the Sustainable Development Goals (SDGs) because of its significant role in human development and wellbeing. Sustainability is a major challenge facing the WASH sector. The purpose of the study was to document the issues of sustainability of rural community WASH programs in Southern Africa in the transition from MDG 7C to SDG 6.

**Methodology:** A documentary research method was employed. Documents in English from 2000 to 2016 were screened by title (188), abstract (73), and full paper (48). A total of 35 references were included in the study. Thematic content analysis was used.

**Results:** The sustainability definition has evolved over the years and discrepancies on how it is measured persist. An interplay of Financial, Institutional, Environmental, Technological and Social (FIETS) factors affected sustainability of rural WASH programs. Operation and Maintenance (O&M) costs and ineffective WASH governance structures were cited as reasons for poor sustainability. Water sustainability is threatened by climate change. Public Private Partnerships (PPPs) proved to improve WASH sustainability. In the SDG, there is a strong focus on equity and sustainable development.

**Conclusion:** Access to safe water and basic sanitation in rural areas remains a global health problem. FIETS factors need to be prioritized under the SDG. Improving local revenue financing, strengthening WASH governance and making use of PPPs is recommended.

#### **INTRODUCTION**

Water, sanitation and hygiene (WASH) has been placed in the global agenda in the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) because of its significant role in human development and wellbeing. Sub-Saharan Africa (SSA), which includes Southern Africa, is disproportionately affected by WASH issues particularly in rural communities. Sustainability is a major challenge facing the WASH sector. For the SDG 6 (Ensure access to water and sanitation for all), the challenge is to sustain MDG progress while extending access to underserved populations. The purpose of the study was to document the issues of sustainability of rural community WASH programs in Southern Africa in the transition from MDG 7C to SDG 6. A better understanding of this process could facilitate more effective implementation of WASH programs, allow targeted prioritizing of sustainability issues and ensure the achievement of SDG 6.

#### **METHODOLOGY**

A documentary research method was employed. Public access databases were searched using a Boolean operators to identify scientific publications and documents in English published from 2000 to 2016. Documents were screened by title (188), abstract (73), and full paper (48). A total of 35 references were included in the study. Thematic content analysis was used for data analysis. A sustainability conceptual framework aided in fulfilling the research purpose.

#### RESULTS



Figure 1: Transition from MDG to SDG; Sustainability and WASH programs framework

#### WASH sustainability definitions

Awareness of the term sustainability accelerated when the Brundtland report was published in October 1987 (Lumley, 2004), and continued to increase after the 1992 UN Conference on Environment and Development, having become essentially an environmentalist term (UN, 1992). Since then there have been variations and extensions to the definition influenced by organizational, cultural and societal perspectives (Faber et al., 2005; Jeanis, 2014). Literature converges on the fact that sustainability points to continued benefits which span over the period of the program (Coulby, 2013; Ellert et al., 2013; Taylor, 2013; UNDP, 2015; Whaley & Webster, 2011) without threatening the ability of future generations to access those benefits. Variations included minimum and/or no external funding, user maintenance in the long run, perception of WASH from a service provision view and the period timeline over which benefits are expected to be enjoyed in the post program period (Coulby, 2013; Ellert et al., 2013; Ellert et al., 2013, Jeanis, 2014; Red Cross Society, 2015).

#### WASH sustainability assessment

The report by Boulenouar, et al., (2013) assessed five sustainability tools used for measuring programmatic sustainability for WASH interventions chosen based on four criteria. Among the tools assessed only one has been used in Southern Africa: Sustainability Checks tool, which was used in Mozambique by UNICEF (One Million Initiative) in 2008 and replicated five times. Successes with the tool resulted in it being used in Malawi and Zambia in UNICEF programs. Sustainability areas checked were institutional, social, service, financial and technical. Another study conducted (Schweitzer et al., 2014) on mapping of WASH sustainability tools conducted an online survey among WASH stakeholders. This study was built on the previous study by Boulenouar, et al., (2013) and it assessed 25 tools which met their criteria out of over 220 identified sources being undertaken to measure sustainability. The study noted that several of the tools had been designed using different definitions and methodologies. Out of the 25 tools, 10 had been used in four Southern Africa Development Community (SADC) countries (Mozambique, Tanzania, Malawi and Zambia). The tools reviewed tended to be biased towards water supply and rural areas and could not be used at all project cycle stages and post project period.

#### Factors influencing sustainability

Factors were categorized as FIETS (Financial, Institutional, Environmental, Technological and Social).

#### **Financial factors**

Financial sustainability is defined as assurance in the continuity of WASH services as the activities would be locally financed through taxes, local fees and local financing systems (Dutch WASH alliance, 2016). In developing countries, including Southern Africa, permanency and scaling up of WASH services was a major setback due to lack of government funds, and donor funds are neither enough nor sustained (Ellert et al., 2013; UN, 2012; UNDP, 2015). In another report by Taylor (2013), domestic funding for WASH services was insufficient, especially for sanitation, (35%) compared to water (65%) and urban areas (58%) compared to rural areas (42%) although the rural populace constituted the greater proportion of the population. Inadequate user fees, attributed to the beneficiaries` willingness and their ability to pay (Dube, 2012; Demberere et al., 2006; Jeanis, 2014; Peter & Nkambule, 2012; Rijsdijk & Mkwambisi, 2016; Red Cross Society, 2015) was stated as the main factor influencing financial sustainability of Community Based Management (CBM) systems for rural WASH services. In a study conducted by Wateraid (Coulby,

2013), it was found that communities were contributing the larger amount for Operation and Maintenance (O&M) costs. This situation contributed to financial constraints on the beneficiaries (Bowles et al., 2016) which increased the health risks of the communities forced to look for alternative unimproved sources that they do not have to pay for.

#### Institutional factors

Institutional sustainability is reached when local WASH systems, institutions, policies and procedures are efficient and able to satisfy the needs of WASH service users (Dutch WASH Alliance, 2016). The institutional framework did not represent the whole WASH package in their policies but focused on drinking water only (Coulby, 2013; UN, 2012; Whaley & Webster, 2011) and service provision was also biased towards urban more than rural areas creating inequalities in access. Marginalized groups, especially women, girls and people living with disability, were not usually catered to (UNDP, 2015; UNICEF, 2011). Absence of platforms for WASH stakeholders to facilitate collaboration and coordination of activities for WASH sustainability contributed to poor sustainability (Ellert et al., 2013; McConville & Mihelcic, 2007; UNICEF, 2011). In SADC, 63% of the countries had fully operational coordination between WASH actors in the WASH clusters formed, while 25% had partial and only 12% without WASH cluster in place (UN, 2014). Poor governance was identified by UNDP (2015) as the main cause of poor sustainability of WASH services as it inhibits public service delivery. This was confirmed by a governance snapshot survey conducted by CARE in Mozambique, Uganda and Ethiopia that identified good governance as linked to WASH sustainability (CARE, 2013). According to a World Bank study, a significant proportion (30%) of WASH budgets in SSA are drained due to unethical practices (UNDP, 2015). Continued training for Water Point Committees (WPCs) was identified as crucial for ensuring knowledge transfer among community members every year new members are selected (Dube, 2013).

## **Environmental factors**

WASH interventions are interconnected to the natural environment. Environmental sustainability is defined as considering WASH interventions in the broader setting of the natural environment such that they do not harm the natural environment and people's livelihoods (Dutch WASH Alliance, 2016) which ensure that the next generation can enjoy the benefits also. Quality and quantity of water is under threat globally due to mismanagement of water resources, waste water and solid waste management, worsened by pollution. Bliss & Bowe (2011), discussed implications of climate change to water scarcity and called for integrated and sustainable WASH interventions. Population growth and its impact on available resources also has an impact on environmental sustainability (McConville & Mihelcic, 2007). Challenges to providing WASH services on a global basis were reviewed and potential solutions were: (1) water preservation and reusing, (2) using low cost sustainable sanitation facilities, (3) addressing global inequities in access to services (4) fostering financially feasible WASH services (Moe & Rheingans, 2006). Water quality was found to affect sustainability as 9% of the boreholes recorded high electrical conductivity and were neglected due to unsatisfactory taste (Demberere et al., 2006). However, most of the literature reviewed only stated that the WASH programs implemented did not harm the environment (DeVillez, 2014; Maguvu & Matengu, 2014; Rijsdijk & Mkwambisi, 2016).

## **Technological factors**

Technological sustainability of WASH services is defined when the technology that provides services continues to function, being managed by the locals and doing no harm to the

environment (Dutch WASH Alliance, 2016). Continued functioning of WASH systems was a main concern in the literature and essentially depended on the selected technology being appropriate for that particular setting (Jeanis, 2015; Maguvu & Mutengu, 2014; Whaley & Webster, 2011). Insufficient resources for self-sustenance of the CBM model, intensive monitoring, re-training and follow ups were reported important for technical sustainability (Morris-Iveson & Siantumbu, 2011; UNICEF, 2011). Conducting training for pump minders and WPCs was found crucial for technological sustainability and O and M. A WASH program evaluation in Malawi (Rijsdijk & Mkwambisi, 2016) found that a significant proportion (34%) of the hand pumps were suffering from overdue maintenance due to the large number of users per water point ratio, which negatively influenced the lifespan of the Afridev hand pump and its replacement was problematic. The same was noted in Mozambique (Godfrey et al., 2014) and Swaziland (Peter & Nkambule, 2012) as the ratio increased, technical sustainability of the hand pumps was affected.

#### **Social factors**

Social sustainability refers to factoring in the needs of the communities, equity in accessing services, responding to the needs of women and respecting community culture for the permanency of WASH services for the present and future generation, to create healthy communities (Dutch WASH Alliance, 2016). Inequalities in access to WASH services exists between urban and rural communities. Women and girls usually bear the burden of ensuring appropriate WASH services in their communities, forgoing other activities beneficial to them (WHO, 2012, WHO, 2015). Involvement of women in WASH programs has brought positive results as they are usually the custodians of WASH services in their communities (CARE, 2013, UNICEF, 2011). WASH programs and investments are usually developed around what an organization can supply, neglecting local demand and not learning from best practices. Effective community demand was reported to ensure sustainability (Montgomery et al., 2015).

#### DISCUSSION

Sustainability definitions reviewed in the literature mainly emanated from influential INGOs and this question: is the INGO perspective of sustainability the same as that of beneficiaries and governments, as different perspective brings different results (Jeanis, 2014). Various tools are used to measure sustainability that vary from organization, country, donor agency, intervention measured and geographical location. The SDG global consultation process has been inclusive and participatory, which has helped in standardization of the definitions and tools. A large financial gap has been foreseen as the main barrier impeding achievements of the SDG (UN, 2017) as 90% of the countries reported that they have insufficient finances to meet national targets. Targeted utilization of existing funds is crucial as 30% of WASH budgets in SSA were drained due to unethical practices (UNDP, 2015). Public Private Partnerships (PPPs) in Madagascar and Zimbabwe have proved to improve financial sustainability (CARE, 2013; Ahmad et al., 2016). Water scarcity due to climate change and pollution was reported to affect over 40% of people globally, and predictions are that it will continue to rise (UN, 2015) as a continuing and growing threat to water sustainability. Agriculture and industry are consuming large amounts of ground water and erratic supply of rain water has been experienced. Population growth is a threat in the SDG if appropriate measures are not put in place to check it or to meet the growing needs of an increasing population as SADC has a 2.41% population growth rate. The role of women as cadres for WASH has been strengthened and their involvement has contributed to the empowerment of women, gender equity and increased girl child attendance at school.
Area	MDG	SDG	
Targets	Halve the population	Reduce to zero	
Goals	Developing countries focused	Universal goals	
Goal setting	Top down approach	Inclusive and participatory	
Comprehensiveness	Less comprehensive and ambitious	More comprehensive and	
		ambitious	
Funding	Aid flow focused	Local revenue financing	
Data	Less focus on M and E. Focused on	High quality M and E system.	
	quantity	Focusing on quality	
Sustainability	Less focused	More focused	

**Table 1: Differences between MDG and SDG** 

#### CONCLUSION

Access to safe water and basic sanitation in rural areas remains a global health problem. Transitioning from MDG to SDG, calls for a significant change from a "business as usual" approach. Political will on national and global development, strengthened with a focus on FIETS factors will yield positive results in the SDG. Improving local revenue financing, strengthening WASH governance, effective regulation of agriculture and industry activities and making use of PPPs could greatly assist in the sustainability of WASH programs and achievement of SDG 6.

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# Understanding Factors Contributing to Unsafe Abortion among the Adolescent Girls in Nepal

### Chetan KC<sup>1</sup> and Wanapa Naravage<sup>2</sup>

<sup>1</sup> System Strengthening for Better Health, USAID, Kathmandu, Nepal E-mail: ckchetan555@gmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathumthani, 12121, Thailand

# ABSTRACT

**Background:** Each day 192 women die worldwide due to the complication of unsafe abortion. It is estimated that more than half of unintended pregnancies (around 22 million women), seek unsafe abortion and this occurs mostly in Lower Middle Income Countries (LMIC). Safe abortion services were pursued after the legalization of abortion in Nepal in 2002. However, reliable numbers of cases may still not be reported due to social stigma and discrimination. Unsafe abortion remains a public health issue in Nepal, especially involving adolescents.

**Objectives:** The main aim of this study was to analyze factors contributing to unsafe abortion among adolescent girls in Nepal.

**Methodology:** Content analysis of qualitative data extracted from 120 scholarly articles was consulted from published and unpublished papers. A data-base matrix of 27 selected documents was created according to factors and content relevant to the topic. A simple descriptive analysis was used to analyze the collected data. A socio-ecological model was used to answer the research question.

**Results:** Using the socio-ecological analysis, the main factors contributing to unsafe abortion were categorized as follows: (1) Individual: early marriage and teenage pregnancy, age of adolescent, knowledge and awareness. (2) Interpersonal: decision making, Gender, birth spacing and sex selection (3) Institutional: availability of services and contraceptives, confidentiality, quality of care and cost. (4) Socio-cultural and policy: abortion law and policies, religion, socio-cultural belief and stigma.

**Conclusion:** Multiple factors were found to contribute to unsafe abortion among adolescents, which suggests that a multisectoral approach is essential for the development of prevention strategies.

#### BACKGROUND

Abortion, either safe or unsafe, is a universal phenomenon. The National Center for Health Statistics (NCHS), the Centers for Disease Control and Prevention (CDC), and the World Health Organization (WHO) define abortion as termination of pregnancy before 20 weeks of gestation or a fetus born less than 500 grams (Schorge & Whitridge, 2008). If a woman with unwanted pregnancy does not have access to safe abortion care, she is at high risk of undergoing unsafe abortion (WHO, 2011a).

Unsafe abortion in low and middle income countries (LMIC) is commonly a neglected reproductive health care problem, yet the health of millions of women and their reproductive lives are persistently in threat. Each year 208 billion pregnancies occur worldwide among which 85 million are unplanned (WHO, 2012). Hence, among the unplanned pregnancies, women will either keep the baby to term or go for abortion. It is estimated that in more than half of unintended pregnancies, (i.e., around 22 million) women will seek unsafe abortion. This occurs mostly in LMIC (Grimes, et al., 2006). Adolescents (aged between 10 to19 years (WHO, 2011)) are more vulnerable and at higher risk of getting pregnant in LMIC. Each year, approximately 16 million girls between the ages of 15-19 years) give birth. Among all the births worldwide, one million girls (11 percent) get pregnant under the age of 15, and 10 percent of girls become mother before the age of 16 in low and middle income countries (WHO, 2011a).

Maternal mortality is a public health challenge in Nepal where unsafe abortion and its complications are a leading cause of maternal death. Early marriage and pregnancy during teenage years is common in Nepal, which is the main reason of unintended pregnancy. Maternal Mortality Ratio (MMR), before the legalization of abortion law in Nepal, was 539 per 100,000 live births. Even though the law of abortion has been passed in 2002, the rates of unsafe abortion remain high. It has been estimated that 97,400 unsafe abortions occurred in 2008 (Bhandari & G, 2015). Unsafe abortion has been practiced in different rural and remote parts of the nation. On one hand, adolescent and poor women are more likely to choose unsafe abortion, yet premarital sexual activities are not accepted and abortion is stigmatized. There are a number of cases of abortion related complications that can be found in the hospital and care for these complications elevates the family burden.

Overall, the second highest cause of death among the girls 15 to19 years is related to complications of pregnancy and childbirth. It is estimated that more than 65 percent of the youths have their first sexual intercourse within by the age of 17 among this age group, only 4.5 percent use a modern form of contraception (MOHP, 2012). MMR of Nepal is recorded as 258 deaths per 100,000 live births; 30 percent of maternal deaths are of adolescent mothers (Suvedi, et al., 2009), (NHSPIP, 2010). Similarly, the incidence of spontaneous abortion is high in women below 20 years of age. Comprehensive abortion care is now available in all 75 districts and more than 1500 health care providers have been trained for 532 sites authorized to provide safe abortion services (Samandari, Wolf, Basnet, Hyman, & Andersen, 2012)

The main aim of this study is to explore and analyze the factors that contribute to unsafe abortion among adolescent girls in Nepal.

#### **METHODOLOGY**

One hundred and twenty scholarly articles between the year 2002 to 2017 that focused on adolescent health and abortion were consulted through various databases to answer the research question. To manage the data, a list of all relevant materials retrieved from the different search engines was made and marked the documents which include relevant information. Marked materials were then reviewed in-depth to determine and or confirm initial identified relevance. Finally, a data-base matrix was created of total 27 documents according to the factors and analyzed. Content analysis of qualitative data was applied for selected documents and to maintain validity and reliability, documents were extracted from genuine and reliable sources which were reviewed.

#### **RESULTS AND DISCUSSION**

Findings from 27 different documents and articles were basically reviewed according to the research questions. Key factors and major findings are organized in the following sections: (1) **Individual:** Early marriage and Teenage pregnancy, Age, Knowledge and awareness. (2) **Interpersonal:** Decision making, Gender, Birth spacing and Sex selection. (3) **Institutional:** Availability of services and contraceptives, Confidentiality, Quality of care and Cost. (4) **Socio Cultural and Policy:** Abortion law and policies, religion, socio cultural belief and stigma.



Figure 1: Conceptual framework on factors contributing to unsafe abortion in Nepal

Child marriage is more common among the indigenous ethnic groups and Dalit (untouchable people in the Hindu caste system) as well as in the illiterate families. Most of the children from Terai region (Southern part of Nepal) were forced to get married by their parents to reduce the amount of the girl's dowry, which is generally less for a child marriage. Thus, high pay of dowry induces parents to marry off their children as early as possible (Plan Nepal, Save the Children, & World Vision International, 2012).

Key predisposing factor of adolescent's pregnancy is **lack of education**. Adolescent student girls who are sexually active are found to use contraceptives more than non-students. Girls who have lower levels of education are more likely to get pregnant. Many are not familiar with the consequences of teen age pregnancy (UNFPA, 2007).

Most of the women's reproductive **decision-making** is mainly influenced by their partner and parents. A study in Nepal found that there is the gap of about six years between husband and wife. Men who married adolescent girls have more control in decision making over their wives. The husband is often the sole decision maker regarding conception and pregnancy (WHO, 2007a). However, it is very hard to take the decision regarding keeping the baby till term or abort among the unmarried adolescent.

The decision to go with abortion is usually inspired by the combination of various causes such as (i) desire to continue education, (ii) occupation, (iii) not feeling of ready to have a child, (iv) desire to stop having children at all, (iv) to practice **birth spacing** between two pregnancies, and (v) inability to afford another child financially (Levels, Need, Nieuwenhuis, Sluiter, & Ultee, 2010). Similarly, the **sex selection** and use of technology to determine fetal sex is strictly prohibited in Nepal. However, with increased access of ultrasound services and routine ultrasonography during the period of antenatal care, this law is rarely enforced effectively (Wu, Maru, Regmi, & Basnet, 2017).

Nepali women have to face challenges in accessing legal and safe abortion services as most of the services are **centralized in urban areas** and at district headquarters. It is a country with a diverse population and geographical distribution. In rural parts of the country, people have to walk miles for basic health services and the opening hour is limited as well. Abortion technique is likely to be more unsafe in rural areas because of **unavailability of trained workforce** and emergency service (Puri, Vohra, Gerdts, & Foster, 2015).

In Nepal, adolescent girls have to access the **same health facility** which is designed for the general populace when accessing reproductive health services. Sometimes they have to share their health related problems with a male health worker which is very uncomfortable for adolescent girls. It is also reported that adolescents – boys and girls – haveexperienced misbehavior and been maltreated by health workers with frequent questions being asked (Regmi, Teijlingen, Simkhada, & Acharya, 2010).

Although abortion has been legalized, in order to make it available effectively throughout the country there should be **adequate equipment**, **askilled service provider** and essential drugs. A woman living in a developing country has to face a 250 times greater risk of death because of abortion if she seeks it from an untrained and **unskilled provider** when compared to a skilled provider in hygienic conditions (CREHPA, 2007).

The situation of unsafe abortion is characterized by a lack of **equity in cost**, quality of care and safety. When the abortion is unsafe and secret, women have to buy pills for self-induced abortion or pay for the provider; they also have to pay a high cost for the treatment of complications that may present with signs of induced abortion (Berer, 2002).However, there are number of cases where rural women were forced to give birth because of not having the funds for abortion and care.

"...a rural woman was forced to give birth to her sixth child due to her inability to afford the required fees for abortion ...".

The price of the abortion is relatively high in private clinics.

**Nepali law** allows having an abortion by an authorized person, in an authorized center with the following criteria: within 12 weeks of gestation with the girl's consent followed up to 18 weeks for rape or incest; with a physician's approval at any stage of pregnancy to protect the physical or mental health of the mother, and in case of fetal anomaly. An abortion for sex selection is prohibited, and an adolescent under 16 years needs adult consent (Henderson, et al., 2013). Because many people are unaware of the law, and due to the perception of being criminalized, people are practicing unsafe abortion by unskilled providers.

Nepal is a country where law severely restricts the abortion. It is a developing country with diverse cultures and religions, with more than 100 caste and ethnics groups. In Nepal, religion does not permit premarital sex or sexual behavior. Most of the adolescent girls and women who wish to terminate their pregnancy, do so secretly because of fear of **social stigma**. More than 80 percent of the population of Nepal is Hindu where sex before marriage is immoral (Thapa & Padhye, 2017).

Though **culture and beliefs** vary widely between and within countries, there is persistent conflict between biomedical and traditional society while seeking the reproductive health of women, particularly in pregnancies. In Nepal, most of the people from the urban culture consider pain and illness to be the normal; they do not seek medical attention during the symptoms of complication (Puri, Ingham, & Matthews, 2007). In Muslim communities, there are also cultural restrictions: when a girl consults a male health care provider she must take permission from her husband, even if in need of emergency care.

**Social stigma** was one of the barriers for not going for an abortion among the adolescent couples because it was felt that abortion was against cultural expectations. If practiced, the child and the family would lose prestige in the society. A study conducted in Makwanpur also found that the community's attitude was negative to women who sought abortion, and unmarried women were found at high risk of unsafe abortion due to **socio-cultural norms, values and stigma.** When adolescent girls and unmarried women want to practice their right, a considerable gap exist between abortion and community attitudes which can cause them to feel shame, embarrassment and fear which may lead to psychological, social and physical health consequences (Hald & Sondergaard, 2013).

#### CONCLUSION

Despite various efforts, a significant number of unsafe abortion are still practiced in Nepal. Poor access to safe abortion care services in rural and remote areas, socio-cultural norms, values, stigma, knowledge and awareness are the major contributing factors for unsafe abortion. To address the unsafe abortion issue, the State should ensure through strengthened policies that all adolescent girls and women have physical and social access to safe abortion services. Last but not the least abortion should not be promoted instead of contraceptive methods and sex selective abortion should be strictly prohibited.

Early marriage is a cultural practice in Nepal where girls are less valued compared to boys which show the failure of government to overcome this gender bias. This should be overcome by designing a multi-sectorial approach that protects the rights of adolescent girls by raising awareness, providing free school services and also praising the parents who support the education of their daughters, and by adopting a system of awarding girls who marry late. This can not only be done by health sector but needs to be coordinated with other ministries: Ministry of Education, Ministry of law, etc.

This study found that only a few adolescent girls and women were aware of legalization of abortion in Nepal, exposing the need for greater education and awareness of national policies and their rights. Safe abortion facilities are centralized mostly at the district level and are out of reach of health facilities in villages. The availability of health service should also be provided within an adolescent-friendly environment, as most of the literature revealed that due to the lack of confidentiality, people either keep their baby till full term, even though it is unwanted or they choose to have an unsafe abortion.

Socio cultural norms, stigma and discriminations and the negative attitude towards abortion all serve to sustain unsafe practices. The programs related to changing behavior and overcoming negative attitudes should be implemented. Girls should be taught problem solving, decision making and negotiation skills in order to make them able to have a clear vision for their future and choose their reproductive rights in age of marriage, conception and abortion.

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# Prevalence and Incidence of Dyslipidemia and Related Factors among Non-Overweight Adults in a Thai University

Nakamol Sutatong<sup>1</sup> and Sirima Mongkolsomlit<sup>2</sup>

<sup>1</sup> Faculty of Public Health, Thammasat University, Lampang Center, 52190 Thailand E-mail: nakamol.rx@hotmail.com <sup>2</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: tu.sirima@gmail.com

# ABSTRACT

**Background:** Dyslipidemia is a known risk factor for cardiovascular disease that is a leading cause of mortality. A cohort study found a 5-year cumulative incidence of more than half of non-overweight adults (59.5% of BMI < 25 kg/m2) for development of dyslipidemia. Now there is an increasing number of persons with dyslipidemia in Thailand and data from the 2017 annual health check in University of Phayao shows 42.3% of personnel with body mass index less than 23 kg/m2 (based on the criteria set by WHO classification of weight by BMI in adult Asians) have total cholesterol more than 200 mg/dL. This study aimed to determine the prevalence and incidence of dyslipidemia, and to estimate health behaviors and factors associated with dyslipidemia in non-overweight adults.

**Methodology:** This study utilized the criteria set by the survey of Thai health through physical checkups from Thai Health System Research Institute [ $TC \ge 200 \text{ mg/dL}$ ,  $LDL-C \ge 160 \text{ mg/dL}$ ,  $TG \ge 150 \text{ mg/dL}$ , HDL-C < 40 mg/dL (male) and < 50 mg/dL (female)]. The study designs were retrospective cohort studies to determine incidence of dyslipidemia and cross-sectional studies to determine prevalence and factors associated with dyslipidemia. The secondary data from annual health check databases for the years 2016 to 2018 were used. The primary data collected by health behavior questionnaire was developed from the Health Behavioral Surveillance System of Thai Health Education Division.

**Results:** There were 409, 561 and 282 subjects with BMIs less than 23 kg/m2 from 2016, 2017 and 2018 annual health check-up databases, respectively, were enrolled. The prevalence of dyslipidemia for the years 2016 to 2018 were 65.3% (95% CI 60.9-69.9), 40.1% (95% CI 36.2-43.9) and 46.6% (95% CI 40.7-52.9), respectively. The 3-year cumulative incidence of dyslipidemia was 16%. Five risk factors associated with dyslipidemia were fasting plasma glucose > 100 mg/dL (OR = 3.49), high cholesterol intake (OR = 61.61), fried foods (OR = 3.19), high sodium sauces (OR = 101.18) and depression (OR = 6.01) and two protective factors associated with dyslipidemia were flavored sweeteners (OR = 0.003) and stress (OR = 0.05).

**Conclusions:** For persons with BMI less than 23 kg/m2 will need to avoid food for high cholesterol and high sodium. Moreover, there are available evidence supports the notion that physical activity can confer protection against the emergence of depression.

# Menstrual Hygiene Management Implementation among Santriwati who Live in an Islamic Boarding School of Darul Ulum, Jombang Indonesia

# Arifa Retnowuni<sup>1</sup> and Athi' Linda Yani<sup>2</sup>

<sup>1</sup> Lecturer of midwifery of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, 61481 E-mail: arifaretnowuni@fik.unipdu.ac.id
<sup>2</sup> Lecturer of Nursing Science of Unipdu, Komplek PP Darul Ulum Peterongan Jombang, 61481 E-mail: lindayani1987@gmail.com

#### ABSTRACT

A santriwati (santri) are female teenagers who are aged 11-15 years and who live in an Islamic boarding school. Poor knowledge about Menstrual Hygiene Management (MHM) may lead to health problems such as reproductive tract infections, influenced by sanitation and the cleanliness of the water. The aim of this study was to describe the practice of MHM in an Islamic boarding school.

The research used a descriptive study design including distribution of frequencies and proportions on basic demographics, MHM knowledge, and access to sanitation facilities. A total of 74 santri were selected by random sampling.

The results of this research found that the among respondents, 57% showed a moderate level of knowledge on menstruation management, while 22% showed a low level of knowledge. Further, we found that 75.6% had good access to clean water, while 24.3% had less access. On disposal of sanitary dressings we found that 44% left their sanitary pads in public places; 43% of the respondents changed their sanitary pads between 3 to 6 hours.

The level of santris' knowledge on menstrual hygiene was relative low, although they were aware about best practice in disposing sanitary pads; the lack of adequate disposal devices was the main source for less desirable practices. Santri also need to have information on the desirable frequency of changing pads.

Key words: MHM, islamic boarding school

#### BACKGROUND

A santriwati is a young woman aged 11-15 years living in a boarding school. Adolescents who experience puberty are in the early phase of reproductive maturity characterized by physical, hormonal and sexual changes as their bodies prepare for reproduction. The onset of menstruation, is an important concern for women who must learn to maintain their reproductive hygiene (Suryati, 2012). Along with the psychological challenges of puberty, young women need guidance in menstrual hygiene management related to the availability of water, sanitary waste disposal, and the use of sanitary napkins that are safe for health (Sommer, 2013).

According to a study by Kale, et al. (2014) of 178 adolescent girls, 51.7% of young women used new sanitary napkins and pieces of cloth during menstruation as absorbent material, while 48.3% used old pieces of cloth, cotton or dirty cloth reused as a menstrual absorber. Sanitary napkins are replaced once in a period by 48.9% of young women, once a day by 33.2% of young women, while 17.9% of young women changed "according to the situation" of availability or need. 37.1% of young women use only water and 11.8% of girls use water and soap. Meanwhile 51.1% of young women did not clean their reproductive organs during menstruation. Whereas according to Erza Guya Research (2014) of 149 female students (all 11-14 year old young women from 12 junior high schools in Tanzania) found that 25% of young women threw their sanitary napkins in the toilet, 17% in landfills, 41% burned them with other garbage, and in 17% of schools they were disposed in bins removed by private contractors.

In a survey conducted by researchers at Islamic boarding schools for menstruating students, were changed on average of 2-3 times / day. Of 10 students surveyed, 80% said that the problem that is often faced with menstruation is pain in the abdomen, itching in the genital area, and vaginal discharge. The lack of availability of special sanitary trash places resulted in santri throwing their pads in trash cans randomly. The presence of sanitary napkins scattered around the bathroom made the environment look unclean.

Some studies showed a lack of support for women who are experiencing menstruation, especially in countries where many who do not care about women's welfare. Lack of social support was seen with lack of access to clean water, closed toilets, poor lighting of rooms and poor environmental sanitation, causing young women who are menstruating to fail to attend to their hygiene (Penelope, 2016). The same study related to menstrual hygiene management education conducted in Africa and Asia showed a lack of support of stakeholders regarding the availability of WASH. Many of the girls when they came to school had trouble replacing sanitary napkins because of the unavailability of comfortable and bright dressing room, which, along with the lack of available clean water and soap made girls reluctant to change pads (Sommer, 2016).

The impact of the lack of social support regarding hygiene management has made girls reluctant to go to school because there is no supportive service for menstrual hygiene, besides that the girls feel less confident because they are afraid of being embarrassed or teased. This situation makes girls reluctant to change pads so that new problems are found such as vaginal discharge, irritation and the risk of bacterial spread in the reproductive organs and urinary tract infections.

So far, the implementation of MHM has been carried out in private schools. Islamic boarding schools are places where students gather to take formal and informal education, they live together with various santri who come from various parts of the region. Santriwati is required to

be independent and learn to live in harmony with others because all activities are carried out together starting from eating, bathing, having to queue up and sometimes looking for water if it runs out. This creates special challenges for new students, especially for those who have just menstruated. A related understanding is necessary to maintain their reproductive hygiene. This research was aimed at understanding the practice and problems of MHM among school-going adolescent girls in Darul Ulum Pesantren Jombang.

#### **RESEARCH METHODOLOGY**

This study uses descriptive approach to determine the frequency distribution of the menstrual hygiene management applications in a study sample of 74 young women aged 11-15 years. Sampling used a random sampling technique. A questionnaire was used in a face-to-face encounter with researchers assisting respondents in filling out questionnaires and conducting open interviews. After the data was collected, it was tabulated and analyzed to determine the frequency distribution of the applications of menstrual hygiene management among young women in boarding schools.

The study was conducted in January 2019. This study collected data from students who lived in the female dormitory in the Darul Ulum Jombang Islamic boarding school. Collected data was then analyzed using SPSS 17 Software to determine the frequency distribution of responses on the application of MHM

#### **RESULTS AND DISCUSSION**

The characteristics of respondents and data on the application of MHM in boarding schools is described below.

#### **Characteristics of respondents**

In this study the characteristics of respondents were seen by age and level of education.

a) Age of Respondents

Their average age is 11 to 14 years old, and they live in boarding schools.

Table 1: Frequency distribution of respondents based on age (N = 74)

1 2	L	0()
Age	Frequency	Percentage
11	38	51
12	18	24
13	10	13.5
14	8	10.8
Total	74	100

The table above shows that the majority (51%) were 11-year-old students, while 24% were aged 12 years, 13.3% were 11 years old, 13.5% were 13 years old and a small percentage were 10.8% of respondents aged 14 years.

Based on this data, all respondents got their first menstruation in the age range of 10-14 years. At that age the respondents are still in early adolescence category and still do not have knowledge or experience about personal hygiene of their genitalia during menstruation. Most of them got information about their first menstruation from parents, especially mothers since have had the same experience. Respondents felt embarrassed if

they had to get information from others, they felt comfortable and trusted their mothers (Ranal, 2015).

Table 2: Frequency distribution of respondents based on Class level (N = 74)			
Class	Frequency	Percentage	
1 SMP	37	50	
2 SMP	22	29,7	
3 SMP	15	20	
Total	74	100	

b) Based on Class Level

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The table above shows the respondents' data based on the class level. Most of the respondents were at the level of middle school class 1 (50%), while 29.7% were in class 2 and the rest (20%) in grade 3.

Education is a learning process and comes with growth, development, and a change towards a greater maturity. The definition of health education is to conduct the behavior of individuals, groups, or communities in accordance with health values. Education is one element that greatly determines one's experience in both science and social life (Notoatmodjo, 2010).

Table 3: Frequency distribution based on knowledge level ( $N = 74$ )			
Level of knowledge	Frequency	Percentage %	
Less	16	22	
Sufficient	42	57	
Good	15	20	
		100	

#### c) Based on the level of knowledge

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The table above shows the respondents' data based on the level of knowledge of the students about menstrual hygiene, the level of knowledge is sufficient in 57%, while the level of knowledge is less in as much as 22%. Fifteen percent (15%) have good knowledge.

Knowledge can result from experiential knowing, and this happens after people have sensed certain objects. Sensing occurs through the five human senses, namely, the sense of sight, hearing, smell, taste and touch. Most human knowledge is obtained through the eyes and ears. If the acceptance of new behavior or adoption of behavior through a process based on knowledge, awareness and positive attitudes, then the behavior will be long lasting rather than behavior that is not based on knowledge. Knowledge or cognitive development is a very important domain in shaping one's actions (Sadriana, 2014).

#### **Application of Menstruation Hygiene Management in boarding schools**

Table 4: frequency distribution based on water availability (N = 74)			
Water	Frequency	Percentage	
Clean	55	75	
Scarce	17	24	
Dirty	2	2.7	
Total	74	100	

a) Based on availability of clean water

Based on the table above, it was pointed out that the availability of water in dormitories with clean water category was as much as high as 75%. However, 24% reported that the water flowed scarcely in the dormitory, and 2.7% had only a dirty water supply.

The availability of these services and facilities essentially supports or enables the realization of a behavior, so that it is referred to as a supporting factor or enabling factor (Notoatmodjo, 2010). Changes in a person's behavior are strongly influenced by existing supporting facilities including the availability of clean water, bright room conditions, and other complete infrastructure. Utilization of facilities and infrastructure is included in health resources that exist in individuals, families, groups or communities that make it easier for individuals to behave in a healthy manner (Umairoh, 2013).

# b) Based on sanitary cloths / napkins waste disposal Table 5: Frequency distribution based on sanitary waste disposal in Islamic boarding schools

Disposal	Frequency	Percentage
Toilet	18	24
Washed clean and enter	23	31
garbage		
Without washing into	1	1.3
garbage		
Other methods	32	44
Total	74	100

The table above shows that 31% of female students dispose of sanitary napkins washed first and thrown into the trash with the reason that this reduces germs. Twenty four percent neglected to wash the sanitary napkins and discarded them in the toilet. Most of the santri discarded trash sanitary napkins in places like in the bathroom; there were also 32 respondents who used other methods, e.g., threw them into the river.

Corroborative research seeks to provide information resources regarding the cleanliness of menstrual waste processing by increasing the number of posters, videos, pamphlets and other educational media on each wall. So that the source of information provided is easy to remember and can lead to a change in behavior. Inappropriate disposal of sanitary waste can be a cause of disease transmission, because of the spread of bacteria and other germs through infected blood. In addition, improper processing is the cause of waste disposal that is unhealthy and causes odors (Guya, 2014).

Table 6: Illustrates data on the frequency distribution of sanitary napkins (N = 74)			
Pads changing	Frequency	Percentage	
3-6 hours	32	43	
6-12 hours	28	39	
More than 12 hours	13	17.5	
Total	74	100	

c) Based on the frequency of changing pads

Based on the table above, most students do change pads every 3-6 hours as many as 32 persons or 43% because of fear of staining clothes (i.e., there is a large flow of menstrual blood coming) and fear of irritation. While 39% of the santri replaced sanitary napkins 6-12 hours being reluctant to change pads because, though they were moist, the student did not dare to go to the bathroom alone, or was afraid to wait in a queue. Whereas 17.%% waited more than 12 hours to replace sanitary napkins because flow was scant, they were afraid to wait in line for the bathroom, or there was scarce water supply.

# DISCUSSION

Personal hygiene maintenance for young women who are menstruating is very important. During menstruation the use of sanitary napkins should ideally be replaced regularly four to five times a day or every four hours, but can be more frequent if the blood coming out is very much. When cleaning the vaginal area, it must be washed using clean water and dried with a towel or towel to keep the pubic area dry. In addition, the use of underwear should use materials that easily absorbs sweat (Oster, 2012; Penelope, 2016).

Problems with menstrual hygiene require attention from santri and Islamic boarding school mentors as representatives of parents, because this event in a young girl's life can affect her learning activities. Islamic boarding schools can help provide information about menstrual hygiene, so that adolescents are able to overcome reproductive health problems. This is because young women have a very important role in the formation of future generations and the formation of good family planning related to productive age (Pitteloud, 2012).

#### CONCLUSION

The level of knowledge of *santri* related to menstrual hygiene is mostly in the adequate category of 22%. Forty-four percent of students report disposal of sanitary waste in public places. Information related to the use of sanitary napkins is still missing, this can be seen in 17.5% who change their pads every 12 hours. It should be noted that 24% respondents thought clean water availability is still lacking.

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# Oncologic Outcomes between Open, Laparoscopic and Robotic Surgery among Patients with Early Stage Ovarian Cancer: A Network Meta-Aalysis

Swekshya Karmacharya <sup>1</sup>, Pawin Numthavaj <sup>1</sup>, Chuenkamon Charakorn <sup>1,2</sup> and Ammarin Thakkinstian <sup>1</sup>

<sup>1</sup> Section for Clinical Epidemiology and Biostatistics, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Thailand
<sup>2</sup> Gynecologic Oncology Unit, Department of Obstetrics and Gynecology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University

# ABSTRACT

Ovarian cancer is the leading cause of mortality among all gynecologic cancers globally. It can be managed by open surgery (OS), laparoscopic surgery (LS), or robotic surgery (RS). However, evidence regarding their superiority in terms of overall/patient survival (PS) and disease-free survival (DFS) is controversial. A network meta-analysis (NMA) was conducted to compare PS and DFS between OS, LS, and RS in early-stage ovarian cancer (ESOC).

MEDLINE and SCOPUS were searched up to June 15th, 2018. Studies with following criteria were selected: ESOC patients; compared at least a pair of interested interventions; and reported PS and/or DFS. Fifteen studies were eligible for inclusion. NMA yielded the pooled RRs (95% CI) of 1.12 (0.67, 1.88), 0.72 (0.12, 4.32), and 0.64 (0.11, 3.74) for LS vs OS, RS vs OS, and RS vs LS, respectively for PS; whereas, those for DFS were 0.94 (0.61, 1.48), 0.43 (0.12, 1.62), and 0.46 (0.13, 1.69) for the corresponding comparisons. Surface under the cumulative ranking curve (SUCRA) ranked RS as the best intervention.

Our results suggest that RS is the best treatment to prolong PS and DFS. However, its accessibility is limited, particularly in developing countries, due to high cost, unavailability of modern tools/techniques, and skilled human resources.

*Key words:* Ovarian cancer, open surgery, laparoscopic surgery, robotic surgery, death, disease recurrence, network meta-analysis

#### **INTRODUCTION**

Ovarian cancer is a global health problem and the primary cause of mortality among other gynecologic cancers (Bellia et al., 2016). Five-year survival rate of advanced ovarian cancer is very poor but it has good prognosis for early-stage ovarian cancer (ESOC) (Brockbank et al., 2013; Chan et al., 2010; Chiari, Rota, Zanetta, Vecchione, & Caspani, 2000; Liu et al., 2014; Y. Lu, Yao, & Xu, 2015; Razi et al., 2016). More than half of the cases get diagnosed at advanced stages (Lee et al., 2011; Zhang, Fan, Xiang, Duan, & Sun, 2015).

Surgical staging operation is the initial treatment of ESOC which includes total abdominal hysterectomy with bilateral salphingo-oophorectomy, omentectomy, peritoneal washing, bilateral pelvic and para-aortic lymphadenectomy, and peritoneal biopsies (Bellia et al., 2016; Q. Lu et al., 2016; J. Y. Park, Bae, et al., 2008).

Recently, minimally invasive surgery (MIS) has emerged as an alternative to open surgery (OS)(Bogani et al., 2017; Zanagnolo, Garbi, Achilarre, & Minig, 2017) in gynecologic cancers. Previous evidences demonstrated that oncologic outcomes in MIS were not different when compared to OS(Y. Lu et al., 2015; J. Y. Park, Kim, et al., 2008) but could minimize surgery related complications(Bellia et al., 2016; Bogani et al., 2017; Bogani et al., 2014; Cho & Nezhat, 2009; Koo et al., 2014; Lecuru et al., 2006; Lee et al., 2011; Liu et al., 2014; Q. Lu et al., 2016; Minig et al., 2016; Nezhat et al., 2014; H. J. Park et al., 2013; J. Y. Park, Kim, et al., 2008; Weinberg, Rao, & Escobar, 2011; Zanagnolo et al., 2017). Most of the systematic reviews and meta-analyses compared the oncologic outcomes between LS and OS; only one systematic review studied about RS without applying meta-analysis (Gallotta et al., 2017; Zanagnolo et al., 2017). Therefore, we conducted a network meta-analysis (NMA) to compare the oncologic outcomes between these three interventions.

#### METHODOLOGY

The systematic review with NMA was conducted following the Preferred Reporting Items for Systematic reviews and Meta-analyses (PRISMA) guidelines extension for network meta-analysis, and was registered at PROSPERO (No. CRD42018105288). Studies were identified from MEDLINE and SCOPUS up to June 15th, 2018 as described in Appendix 1 and 2. Studies were selected on the following criteria: patients with ESOC; included comparison of at least one pair of OS, LS, and RS; and reported at least one of the oncologic outcomes (death and disease recurrence). Two reviewers independently performed data extraction. Any disagreement was solved by consensus and consultation with a third reviewer. Data regarding characteristics of study and patients (e.g., study design, sample size, age, BMI, CA-125, menopause, cytology, etc.), intervention, and outcomes were extracted. The Newcastle-Ottawa Scale was used for assessing risk of bias in cohort and case-control studies. (Zeng et al., 2015).

#### STATISTICAL ANALYSIS

A NMA was applied using a two-staged approach. Firstly, relative treatment effects (ln (RR)) along with variance-covariance were estimated for each study. Secondly, multivariate random-effect meta-analysis with consistency model was applied to pool ln (RR) across the studies. Multiple relative treatment comparisons were then performed. Consistency was checked using a design-by-treatment interaction inconsistency model (Jackson, Barrett, Rice, White, & Higgins, 2014). The probability of being the best intervention was estimated and ranked using surface under the cumulative ranking curve (SUCRA). Publication bias was assessed using comparison-adjusted

funnel plot (Chaimani, Higgins, Mavridis, Spyridonos, & Salanti, 2013). All analyses were performed using STATA 15.1. A p value of < 0.05 was considered statistically significant for all tests, except for heterogeneity where p value of < 0.1 was considered.

# RESULTS

A total of 15 out of 1149 articles, published between 2006 to 2017 with a total of 3,588 patients, were eligible for inclusion (Bellia et al., 2016; Chen, Chiu, Chen, Chan, & Liu, 2016; Gallotta et al., 2017; Gallotta et al., 2016; Ghezzi et al., 2007; Koo et al., 2014; Lecuru et al., 2006; Lee et al., 2011; Liu et al., 2014; Q. Lu et al., 2016; Melamed et al., 2017; Minig et al., 2016; J. Y. Park, Bae, et al., 2008; J. Y. Park, Kim, et al., 2008; Wu et al., 2010), (Figure 1). Data from 14 studies (LS vs OS (N=11), RS vs LS (N=2), and RS vs LS vs OS (N=1)) involving 3,480 and 1,396 patients for death and disease recurrence were used for pooling surgical effects, (Figure 2 A-B). NMA showed that the pooled RRs (95% CI) for death were 1.12 (0.67, 1.88), 0.72 (0.12, 4.32), and 0.64 (0.11, 3.74) for LS vs OS, RS vs OS, and RS vs LS, respectively. The pooled RRs (95% CI) for disease recurrence for these corresponding comparisons were 0.94 (0.60, 1.48), 0.43 (0.12, 1.62), and 0.46 (0.13, 1.69). There was no evidence of inconsistency for both pooling. SUCRA indicated that RS was the best in reducing death and disease recurrence.



Figure 1: PRISMA flow diagram



Figure 2: Network maps for death and disease recurrence

# DISCUSSION

This NMA was performed to compare oncological outcomes between MIS and OS in ESOC. The MIS seemed to be better in lowering death and recurrence than OS but did not reach statistical significance.

Our findings were supported by previous evidence (Bogani et al., 2017; Bogani et al., 2014; Ditto et al., 2017; Gallotta et al., 2016; Koo et al., 2014; Lecuru et al., 2006; Q. Lu et al., 2016; Y. Lu et al., 2015; Melamed et al., 2017; Minig et al., 2016; H. J. Park et al., 2013; J. Y. Park, Bae, et al., 2008; J. Y. Park, Kim, et al., 2008; Zhang et al., 2015), which also found no difference in survival outcomes, but suggested that MIS might be better in operative outcomes(Bellia et al., 2016; Chen et al., 2016; Gallotta et al., 2017).

As for knowledge generation, this study is the first to simultaneously consider all three approaches of gynecologic surgery in ESOC patients. However, its limitation is that all the included studies are retrospective cohort studies which might be faced with confounding bias, missing data and small sample size. There might also be the possibility that the type of surgery entirely depended on the patient's or surgeon's favorite, cost, tumor size, or prognostic factors. Therefore, prospective randomized controlled trials are required to strengthen the results.

# CONCLUSION

We conclude that RS might be the best intervention in lowering death and disease recurrence. However, the feasibility of this intervention in developing countries should be assessed and further large-scale observational studies and randomized controlled trials are required to update this NMA.

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# Superficial Surgical Site Infections between Trans-Umbilical and Periumbilical Inscision in Pelvic and Abdominal Laparoscopic Surgery: A Systematic Review and Network Meta-Analysis of Randomized Control Trials

Ela Singh Rathaur <sup>1</sup>, Boonying Siribumrungwong <sup>1, 2</sup>, Pawin Numthavaj <sup>1</sup>, Chumpon Wilasrusmee <sup>3</sup>, Sasivimol Rattanasiri <sup>1</sup> and Ammarin Thakkinstian <sup>1</sup> <sup>1</sup> Section for Clinical Epidemiology and Biostatistics, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Thailand. E-mail: rathaurse@gmail.com, elasingh@hotmail.com <sup>2</sup> Division of Vascular and Endovascular Surgery, Department of Surgery, Thammasat University Hospital, Pathum Thani, Thailand <sup>3</sup> Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Thailand

# ABSTRACT

**Background:** Laparoscopy is commonly used in abdominal and pelvic surgeries (APS). Both incision types (i.e., trans-umbilical (TUI) and periumbilical incisions (PUI)) along with the number of endoscopic-ports affect surgical site infection (SSI), but results are controversial.

**Methodology:** A Systematic review (SR) and Network metanalysis (NMA) were conducted by identifying studies from Medline and Scopus databases. Randomized control trials (RCT) were selected of studies in adult patients who underwent APS and compared SSI between any pair among PUI-MP, TUI-MP, PUI-SP, and TUI-SP. A NMA with consistency model was applied to pool risk ratio (RR) of SSI. The probability of being best intervention was estimated and ranked using surface under cumulative ranking curve (SUCRA).

**Results:** The total of 61 RCTs with 6,351 patients were selected. Considering only the incision type, TUI was about 13% lower SSI risk than PUI [pooled RR of 0.87 (0.54, 2.96)], whereas considering only the port numbers, risk of SSI of MP and SP were not different [pooled RR of 1.02(0.98-3.36)]. The probability of being the best in lowering SSI was PUI-MP (48.6%) with SUCRAs of 0.8.

**Discussion:** Our study found that the incision types might affect SSI. TUI might be better than PUI in lowering SSI. However, further RCTs should be updated in this NMA.

#### **INTRODUCTION**

Laparoscopy with either conventional multiports or single port has been widely performed in abdominal and pelvic surgeries (APS) (Chow, Purkayastha, Nehme, Darzi, & Paraskeva, 2010; Piskun & Rajpal, 1999; Potter, Tung, Faubion Jr, & Moir, 2012; Rao, Rao, & Bhagwat, 2011). Similarly, transumbilical incision (TUI) has been advocated by many surgeons with the prospect of better cosmesis and satisfaction compared to periumbilical incisions (PUI) (Lee & Hong, 2016). However, despite some advantages, the TUI has a drawback including higher rates of surgical site infections (SSI) if it was performed through the umbilicus which is known as a store house of micro bacterial colonization (Glyn, 2006; Kleeff et al., 2015). Both incision types (i.e., TUI and PUI) and number of endoscopic-port [(i.e., multiport (MP) and single port (SP)] may play a role in SSI incidence.

Occurrence of SSI leads to increased morbidity, length of hospital stay, pain, nursing care, antibiotic usage and rate of readmission. As a result, it could reduce quality of life (QOL) and increase economical burden to the patients (Brasel, Borgstrom, & Weigelt, 1997; Olsen et al., 2008; Urban, 2006).

The incidence of port site infections in the literature is about 5-6.5 % (Den Hoed, Boelhouwer, Veen, Hop, & Bruining, 1998; Jan et al., 2011; Shindholimath, Seenu, Parshad, Chaudhry, & Kumar, 2003) and the risk of SSI is approximately 1.5 to 3% in elective clean surgery (Uckay et al., 2010). Despite the advances in the field of antimicrobial agents, sterilization techniques, surgical techniques, operating room ventilation, SSI is still prevalent. Attempts to reduce SSI infections are therefore very important.

Some studies showed a significant reduction of SSI by switching TUI to PUI (Sharples, McArthur, McNamara, & Lengyel, 2010) whereas other studies found no effects of incision types (Awaiz et al., 2015; Lee & Hong, 2016; Lee, Hong, & Kim, 2012; Rajkhowa, Gogoi, & Baruah, 2016). The results are still controversial and there is variation of preferences among surgeons as to which incision to perform (Bouffard-Cloutier, Paré, & McFadden, 2017; Lee & Hong, 2016; Lee et al., 2012; Rajkhowa et al., 2016). Moreover, to the best of our knowledge, none of the systematic review (SR) and network meta-analysis (NMA) has yet assessed the effect of type of incision and number of ports on SSI. Therefore, our study aimed to compare the SSI rates among TUI and PUI and number of ports (i.e., SP and MP) in APS.

#### **METHODOLOGY**

#### **Selection of studies**

Studies were identified from Medline, Scopus databases and reference lists since inception to June, 2018.

Two reviewers (E.S.R, and B.S.) independently selected studies using the following criteria: randomized control trials (RCT) conducted in adult patients who underwent APS; comparison between any pair among PUI-MP, TUI-MP, PUI-SP, and TUI-SP; and reported SSI.

#### Data extraction and Risk bias assessment

Two reviewers independently extracted data including basic information (i.e., study design, setting, country, etc.), characteristics of participants (i.e., age group, context of surgery, antibiotic

prophylaxis, type of wound, etc.), intervention and SSI. Any disagreements were solved by discussion and consensus with a third party (P.N., B.S., C.W., and A.T.).

Two authors (E.S.R and P.N.) independently assessed the risk of bias using the Cochrane collaboration's tool which consisted of six domains of bias: selection, performance, detection, attrition, reporting, and other. In case of disagreement, consensus (including with a third party (A.T.)) was sought.

# Statistical analysis

A risk ratio (RR) with 95% confidence interval (CI) was estimated and pooled across studies for those RCTs directly compared between two interventions. Heterogeneity was assessed by Cochrane's Q test and I2. Publication bias was assessed using a funnel plot and Egger test.

A two stage NMA with consistency model was applied to pool RR of SSI. The probability of being the best intervention was estimated and ranked using surface under cumulative ranking curve (SUCRA). All analyses were performed using STATA version 15.0. A two-sided P value less than 0.05 was considered the threshold for statistical significance, except for heterogeneity where P < 0.1 was used.

# RESULTS

Ultimately, 72 individual studies were identified, among which 61 RCTs with 6,351 patients were selected that reported SSI, (Figure 1) .Comparisons were TUI-SP versus PUI-MP (N=23), TUI-SP versus TUI-MP (N=17), PUI-SP versus PUI-MP (N=8) and others, (Figure 2).

Among 61 RCTs, most studies had low risk for random sequence generation, allocation concealment, attrition, reporting and other form of bias, but high risk in the areas of performance and detection bias.

The NMA suggested that the pooled RRs (95% CI) were 1.37 (0.70, 2.67), 1.75(0.80, 3.84), 1.12 (0.68, 1.81) and 1.41 (0.58, 3.44) for TUI-MP, PUI-SP, TUI-SP and UI-MP compared to PUI-MP, see Table 1. Among MP, TUI had 37% higher SSI risk than PUI. Conversely for SP, TUI had about 0.64 (0.26, 1.55) times lower SSI risk than PUI. However, none of these were statistically significant. The above results might have been confounded by the type of incision or port numbers. Thus, considering only the type of incision, TUI was about 13% lower SSI risk than PUI with pooled RR of 0.87 (0.54, 2.96)], whereas considering only the port numbers, the risk of SSI of MP and SP were not different with pooled RR of 1.02 (0.98-3.36).

The probability of being the best in lowering SSI was PUI-MP (48.6%), followed by TUI-SP (21.3%), TUI-MP (9.3%) and PUI-SP (4.6%) and with SUCRAs of 0.8, 0.7, 0.4 and 0.2 respectively (Table 1.) An adjusted funnel plot showed no asymmetry thus, no publication bias found.



Figure 1: Flowchart showing selection of studies



Figure 2: Network of eligible treatment comparison mapping by SSI

Intomontions	Periumbilical	Unclear	Transumbilical	Periumbilical	Transumbilical
Interventions	multiport	multiport	Single port	Single port	multiport
Periumbilical					
multiport		1.41		1.75	
(reference)	0.8 [48.6]	(0.58,3.44)	1.12 (0.69,1.81)	(0.80,3.84)	1.37 (0.70,2.67)
Unclear	0.71			1.24	
multiport	(0.29,1.73)	0.4 [16.2]	0.79 (0.36,1.73)	(0.41,3.75)	0.97 (0.37,2.53)
Transumbilical	0.89	1.26		1.57	
Single-port	(0.55,1.45)	(0.58,2.75)	0.7 [21.3]	(0.65,3.79)	1.22 (0.69,2.16)
Periumbilical	0.57	0.81			
Single-port	(0.26,1.25)	(0.27,2.43)	0.64 (0.26,1.55)	0.2 [4.6]	0.78 (0.29,2.10)
Transumbilical	0.73	1.03		1.28	
multiport	(0.37,1.43)	(0.40,2.69)	0.82 (0.46,1.45)	(0.48,3.44)	0.4 [9.3]

Table 1: The result of mixed treatment comparison (SSI)

Values in the diagonal line in the square brackets are surface under cumulative ranking curve area and percentage probability of being the best treatment. Values besides the diagonal cells are risk ratio with 95% confidence interval of surgical site infection compared with between the interventions in the column heading with the intervention in the left row.

# DISCUSSION

Our findings indicate that only the incision type is associated with high risk of SSI (i.e., TUI had about 13% lower SSI risk than PUI) but not for the port numbers, which is similar to a quite a large scale RCT by Rajkhowa, et al. (Rajkhowa, et al., 2016) but conversely to a study by Sharples, et al., (Sharples et al., 2010) that found higher SSI in TUI than PUI. However, other studies found no effects of incision types on SSI (Lee & Hong, 2016; Lee et al., 2012; Paes, Stoker, Ng, & Morecroft, 1987) but that might result from low power of tests.

This study has some strengths as to our knowledge, this is the first NMA that simultaneously assessed the effect of incision types and port numbers on postoperative SSI. Our findings might aid surgeons, patients and stakeholders by recommending the type of incision and port numbers. However, some limitations could not be avoided (e.g., related to the definition of SSI, which has been defined differently across studies.) SSI can be classified into three categories based on CDC criteria: superficial SSI, deep SSI, and organ space SSI. However, most studies did not report SSI and broadly defined various complications as wound infection, site infection etc. Thus, SSI could not always be re-defined into categories based on summary/aggregated data. Furthermore, SSI might be affected by preoperative and postoperative care (e.g., antimicrobial prophylaxis, minimal dissection, dressings etc.) the details of which were not provided in all the included RCTs, though the authors of this study extracted as much information as possible from the selected RCTs and included it in the analysis.

#### CONCLUSION

Type of incisions, (i.e., TUI and PUI) might play a role on lowering SSI but not for the number of ports. Lowering SSI will not only reduces morbidity but also antimicrobial usage which further reduces the problem of antimicrobial resistance that is becoming a global health problem

affecting patients equally regardless of socio-economic status. However, further RCTs should be conducted and updated in this NMA.

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# Network Meta-Analysis of Survival Outcomes between Open, Laparoscopic and Robotic Surgery in the Early Stages of Cervical Cancer

Litha Purwanti<sup>1</sup>, Ammarin Thakkinstian<sup>1</sup>, Pawin Numthavaj<sup>1</sup>

#### and Chuenkamon Charakorn 1,2

<sup>1</sup> Section for Clinical Epidemiology and Biostatistics, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand. E-mail: Lithapurwanti94@gmail.com

<sup>2</sup> Section for Clinical Epidemiology and Biostatistics, and Division of Gynecologic Oncology, Department of Obstetrics and Gynecology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok 10400, Thailand.

#### ABSTRACT

Minimal invasive surgery (MIS) including laparoscopic radical hysterectomy (LRH) and robotic radical hysterectomy (RRH) have become more popular than open radical hysterectomy (ORH) in early stage cervical cancer (ESCC). However, their effect on overall survival (OS) and disease free survival (DFS) remain controversial. We therefore conducted network meta-analysis (NMA) to compare these outcomes among ORH, LRH, and RRH. Cohort studies were eligible based on patients with ESCC (IA1-IIA2) that compared any pair of treatments. NMA vielded the pooled risk ratios (RRs) for recurrence of 0.90 (95%CI: 0.73, 1.11), 0.92 (95%CI: 0.66, 1.27), 1.02 (95%CI: 0.72, 1.44) for LRH vs ORH, RRH vs ORH, and RRH vs LRH, respectively. The corresponding RRs for death were 0.82 (95%CI: 0.61, 1.09), 0.49 (95%CI: 0.28, 0.87), 0.60 (95%CI: 0.33, 1.11). However, these RRs showed no statistical significance. Meanwhile, result of surface under the cumulative ranking curve (SUCRA) indicated that the best operation in lowering recurrence was LRH, whereas RRH was the best in lowering death. Both MIS might be better in lowering recurrence and death than ORH. Unfortunately, MIS are mostly available and accessible in developed countries due to the requirement of advance technology, cost, and skilled surgeons available in those settings. ESCC patient should get benefit from MIS globally, particularly in developing countries where cervical cancer (CC) commonly occurs.

*Key words: Death, early stages of cervical cancer, laparoscopic radical hysterectomy, network meta-analysis, open radical hysterectomy, recurrence, robotic radical hysterectomy* 

#### **INTRODUCTION**

Cervical cancer (CC) is the fourth most commonly occurring cancer in women with an annual estimate of 570,000 new cases, mostly occurring in low-middle income countries (WHO, 2018). Women with CC can be detected earlier and treated appropriately in a developed country. However, health care systems in developing country, particularly in rural areas, find it difficult to provide regular cancer screening tests needed for early detection. Delay in seeking diagnosis and treatment remains a challenge in most developing countries (Nelson et al., 2016). Radical hysterectomy (RH) is the standard treatment for early stages of cervical cancer patients (ESCC), which could be open radical hysterectomy (ORH), laparoscopic radical hysterectomy (LRH), or robotic radical hysterectomy (RRH) (Wang, Deng, Xu, Zhang, & Liang, 2015).

Traditionally, ORH had been the only available surgical approach procedure for RH in ESCC patients (Shazly, Murad, Dowdy, Gostout, & Famuyide, 2015). Subsequently, RRH and LRH have become more popular than ORH due to increased postoperative comfort, a shorter post-operative hospital stay, lower blood loss, lower complication rates, and lowered recurrence and death (Cantrell, Mendivil, Gehrig, & Boggess, 2010; Corrado et al., 2018; Gortchev, Tomov, Tantchev, Velkova, & Radionova, 2012; Nezhat, Datta, Liu, Chuang, & Zakashansky, 2008; Shah et al., 2017; Xiao & Zhang, 2015; Zhu et al., 2017). However, both minimal invasive surgeries (MIS) have lengthy learning curves among staff and also high costs for implementations (Morris, 2005). Therefore, these techniques are mostly performed and available in developed countries.

These surgical techniques (i.e., ORH, LRH, and RRH) are currently applied in clinical practice but their oncological outcomes are still controversial. In addition, evidence of RRH compared with ORH and LRH is still lacking. We therefore conducted a systematic review and network metaanalysis to compare oncological outcomes (i.e., recurrence and death) between ORH, LRH, and RRH in ESCC patients.

# MATERIAL AND METHODOLOGY

The study was conducted complying with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines (Hutton et al., 2015). We retrieved relevant studies from SCOPUS and MEDLINE databases up to October 2018 without language restriction.

The selection of studies was performed by author (L.P). Comparative observational studies were eligible if they met the following criteria: patients were ESCC (IAI-IIA stage) who underwent RH with pelvic lymph dissection; compared at least one pair among RRH, LRH, and ORH; had at least one of the oncological outcomes of either death or recurrence. Studies were excluded with following criteria: radical trachelectomy for fertility preservation, radical vaginal hysterectomy, neo-adjuvant chemotherapy.

# RESULTS

A total of 21 and 26 studies out of 2,931 were eligible for pooling death and recurrence outcomes (Figure 1).

Risk Ratio (RR) (95%Confidence Interval (CI))						
Surgical	Surgical ORH LRH RRH					
Approaches						
Death						
ORH	6.4*	1.22 (0.92,1.63)	2.04 (1.15,3.60)			
LRH	0.82 (0.61,1.09)	53.5*	1.66 (0.90,3.08)			
RRH	0.49 (0.28,0.87)	0.60 (0.33,1.11)	90.1*			
Recurrence						
ORH	22.9*	1.11 (0.90, 1.38)	1.09 (0.79, 1.51)			
LRH	0.90 (0.73, 1.11)	68.5*	0.98 (0.69, 1.39)			
RRH	0.92 (0.66, 1.27)	1.02 (0.72, 1.44)	58.6*			

Table 1: Comparisons of risk of death and recurrence between RRH, LRH, and ORH

\*Each cell off diagonal line contains RR (95%CI) comparing intervention in the row with intervention in the column. Each diagonal cell contains probability of being best intervention in lowering death

A NMA was applied and showed that patients who underwent LRH and RRH were 0.82 (95%CI: 0.61, 1.09) and 0.49 (95%CI: 0.28, 0.87) times less likely to die when compared to the patients underwent ORH, see Table 1. Similarly, the patients who underwent RRH were 0.60 (95%CI: 0.33, 1.11) times less likely to die than the patients who underwent LRH. In addition, patients who underwent LRH and RRH were 0.90 (95%CI= 0.73, 1.11) and 0.92 (95%CI= 0.66, 1.27) times less likely to recurrence when compared to patients who underwent ORH, see Table 1. However, these RRs were not statistical significant. The surface under the cumulative ranking curve (SUCRA) showed that either LRH or RRH is the better technique in lowering recurrence and death than ORH (see Table 1).

# DISCUSSION

To our knowledge, this present study is the first comparative network meta-analysis between ORH, LRH, and RRH to assess the survival oncological outcome in ESCC patients. Our finding demonstrated that LRH and RRH could lower disease recurrence and death when compared to ORH in the treatment of ESCC.

The innovation of robotic systems allows surgeons to have greater visualization by binocular vision, using seven degrees of freedom with greater flexibility, and the motion of damping control is more accurate (Jin, Liu, Chen, Chen, & Ren, 2018). By using this advance technology, removing tumorous cancer can be safer and more effective.

In contrast to our finding, a previous trial found that patients with MIS were more likely to have tumor recurrences and more likely to die when compared to OS; likely due to the use of a uterine manipulator that could increase the propensity for tumor spillage. Moreover, the insufflation of CO2 could effect tumor cell growth (Ramirez, 2019). A similar finding was reached by Kong's study, that found that the use of CO2 insufflation might provoke cancer cell implantation, and have an influence on positive vaginal cuff margin risk (Kong et al., 2016). However, it remains unclear and controversial where previous studies concluded that the uterine manipulator does not affect the increasing risk of the incidence of tumor spillage and that it has no effect either on DFS or OS (Eltabbakh & Mount, 2006; Marcos-Sanmartin et al., 2016; Uccella et al., 2017). We, however, acknowledge some limitations in our study. Our findings were based on evidence from cohort studies in which confounding bias could not be avoided. Only a few number of RCT studies
were available, which were insufficient for pooling effects. Further RCTs with good methodologies are required.

#### CONCLUSION

MISs might be better than ORH in lowering recurrence and death. Therefore, the MISs may be alternative procedures for treating patients with ESCC. However, a further large scale RCT study should be conducted.



Figure 1: PRISMA flowchart of study selection

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### **Domestic Violence Against Women: Ways of Understanding**

Nur-E-Jannat Amee<sup>1</sup> and Marc Van der Putten<sup>1</sup>

<sup>1</sup> Faculty of Public Health, Thammasat University, Rangsit Campus, Pathum Thani, 12121 Thailand E-mail: nur@fph.tu.ac.th

#### ABSTRACT

**Background:** Although having a life free of violence is a basic human right, a significant proportion (30%) of women globally experience violence at home. In South Asia, the percentage rises up to 50% (WHO, 2013). Within the South Asian region, Bangladesh shows a staggering prevalence of 87% of women facing domestic violence in spite of having protective policies and laws. Women experiencing domestic violence face both short and long-term physical, psychological and social consequences impacting their health and well-being and quality of life. Some women seem to be resilient in spite of dealing with the negative impacts of the violence they experience. Being aware that there are various conceptualizations on domestic violence against women, the question remained whether there is a particular model that would be suitable to assess drivers of resilience among some women in facing domestic violence.

**Methodology:** This study was designed as a narrative documentary review applying a descriptive approach to qualitative data to frame domestic violence against women including key dimensions such as: demographic characteristics, internal resources (traits), and community protection. Data sources included published research papers. Internet-based search engines like Google, Google Scholar, Science Direct, POPLINE, and PubMed were used to facilitate a Boolean search strategy. Inclusion criteria were electronic documents published between 2000 and 2018 in English on the conceptualization of domestic violence against women; while abstracts only, and online master thesis reports, were excluded.

**Results:** Out of the 90 documents retrieved, 34 were selected for inclusion in this study. Key models of conceptualizing domestic violence included: a feminist perspective (Bagshaw, 2011); a rightsbased perspective (Kaur, 2010); the critical consciousness theory (Freire, 2019); a public health perspective (Garcia-Moreno et al., 2006); and a strengths perspective (Lee, 2001). Among these models, the latter focuses on the strengths of abused women. This "strength-based social work theory" views clients as practical, resourceful and resilient in the face of hardship and sufferings which act as drivers of self-determination as a means to resilience (Saleebey, 2002). Key dimensions in the strength-based model are: (1) hope, (2) resilience, (3) pride, (4) healing and wholeness, and lastly (5) personal qualities, traits and virtues.

**Conclusion:** The 'strengths perspective' in social work practice may provide a useful analysis framework for a planned benchmark study on what makes some of the battered women in Bangladesh resilient.

#### **INTRODUCTION**

Domestic violence is one of the most common forms of violence against women, which makes women in the families and societies captive, whether through physical, financial, emotional/psychological, or social abuse or any combination of these. Although having a life free of violence is a basic human right, a significant 30% of women globally experience violence at home. When it comes to South Asia, the percentage rises to 50% (WHO, 2013). Within the South Asian region, Bangladesh shows a staggering prevalence of 87% of women facing domestic violence in spite of having protective policies and laws. Women experiencing domestic violence face both short and long-term physical, psychological and social consequences impacting their health and well-being and quality of life. There is no shortness of studies on the precursors and effects of domestic violence against women in South Asian societies (Ziaei et al. 2016; Khan, 2015; Hossen, 2014; Kabir et al., 2014; Bajracharya and Amin, 2013; Chowdhury and Morium, 2013; Kamal, 2013; Parvin et al. 2012; Johnston and Naved, 2008; Silverman et al., 2007; Das et al., 2006; Salam et al., 2006). Some women seem to be resilient in spite of dealing with the negative impacts of the violence they experience. However, literature on strengths displayed by victimized women in male dominant societies are scarce. Being aware that there are various conceptualizations on domestic violence against women, the question remained whether there is a particular model that would be suitable to explore drivers of resilience among women in facing domestic violence. In summary, it is not clear what creates strength for some women to cope with domestic violence; that is a problem worth studying.

#### METHODOLOGY

This study was designed as a narrative documentary review applying a descriptive approach to qualitative data to frame domestic violence against women that includes key dimensions such as: demographic characteristics, internal resources (traits), and community protection. Data sources included published research papers. Internet-based search engines like Google, Google Scholar, Science Direct, POPLINE, and PubMed were used to facilitate a Boolean search strategy. Inclusion criteria were electronic documents published between 2000 and 2018 in English on the conceptualization of domestic violence against women; while abstracts only, and online master thesis reports, were excluded. Out of the 90 documents retrieved, 34 were selected for inclusion in this study.

#### RESULTS

As argued by Slabbert (2014): "There are no cultural, socio-economic, political, religious or educational boundaries to domestic violence. This understanding provides the underlying assumption in exploring the construct of domestic violence across societies. The conceptualization of domestic violence against women in the literature adopted different perspectives such as: a human rights-based perspective (Kaur, 2010); the theory of critical consciousness (Freire, 2019); a public health perspective (Garcia-Moreno et al., 2006); an empowerment and strengths perspective (Lee, 2001); and a feminist perspective (Anderson, 1997). Among these various conceptualizations the empowerment and strengths perspective (Lee, 2001) offered the best fit to the question: how to explore drivers of resilience among women facing domestic violence?

This "strength-based practice" is a "social work practice theory" that highlights people's independence and self-determination, will-power and strengths (Saleebey, 2002). It is a philosophy that views the client as practical, resourceful and resilient in the face of hardship and

suffering. Reynolds was a proto-theorist for the strength-based practice (NASW, 2019). The theory was further developed by Saleebey and colleagues at University of Kansas (Healy, 2005) in response to the traditional psychopathological approaches in social work.

The strengths perspective requires investigators to view participants as able to discover and explore their strengths and resources and therefore engage in an empowering relation. Initiatives to support women suffering from domestic violence should aim to assist these women in achieving their goals, realize their potentials and overcome their limitations to challenge oppression and abuse. The strengths perspective believes that women have abilities that can be used to improve their situation (Lee, 2001). Further, this study is informed by Paolo Freire's (2019) critical consciousness theory in exploring DVAW experienced by women in Bangladesh.

Freire is an influential scholar associated with anti-oppressive social work, developed in response to power inequity experienced by minorities, women, and the disabled (Sakamoto & Pitner, 2005). His critical theory incorporates not only an examination of power, oppression, and violence, but also emancipation from oppression by the marginalized. It is well suited to complement guidance in the analysis of domestic violence experienced by women in Bangladesh. Freire (2019) clarifies mechanisms of oppression. For example, dehumanization inhibits freedom through oppression, injustice, and exploitation. This is created when those who oppress impose their choices onto those who are oppressed. Violence and oppression prevent others from dominating or exploiting the perpetrator, and violence tends to be transmitted intergenerationally. After chronically experiencing oppression, those who are oppressed may adapt and become submissive. The passivity of those who experience oppression is not a characteristic, but rather a result of injustice, depriving them of their voice (Freire, 2019). Further, Freire (2019) indicates that those who experience oppression may seek escape from oppression through self-harm such as suicidal attempts, thus providing a potential framework for understanding domestic violence against women. Further, some of the oppressed may internalize their oppressor, by adopting his/her behavior concerning treatment of female family members. Striking out at female family members (i.e. female in-laws to newly-wed girls,) can be seen as an instance of how these mothers-in-law can internalize the oppression they experienced consciously or unconsciously and behave the same way or worse with their son's bride (Freire, 2008). The women who go through oppression, at some point, realize that there needs to be a change, either in the situation, or in themselves. Becoming aware of injustice is an important initial step which then can be coupled with actions that lead these women down the path toward emancipation (Freire, 2019). In line with Freire (2019), the strength theory adopts the position that it is the task of those who experience abuse to free both themselves and their abusers. Thus, women's descriptions of their domestic violence understanding and experiences nurture a critical consciousness, which is crucial for their liberation from violence.

To date, reports on the effectiveness of the strength-based approach are limited; however, some studies demonstrated that a strength-based approach improves quality of life and health (Krabbenborg et al. 2013); while others critique the strengths perspective in social work (Gray, 2011) and warn that problems can arise when the focus is on strengths only without consideration of weaknesses and other risks. However, when applied appropriately it provides a vehicle to deal with problems and risks. The strength-based approach has been used to deal with intimate partner violence across countries and cultures (Asay et al., 2015) as well as to explore and describe strengths of abused women (Slabbert, 2014).

Promoters of the strengths-based approach advocate that anything that assists an individual in dealing with domestic violence should be regarded as a strength. However, strengths vary from person to person and therefore it is challenging to determine an exhaustive list of key strengths. In dealing with victims of domestic violence assessment too often focus on deficits and inadequacies. Whilst there have been efforts to develop and use assessment tools that include strengths (Cowger & Snavely, 2002; Saleebey, 2001), these are still in the minority.

There is no shortness of guidelines for professionals undertaking assessment and while most emphasize that there should be a dialogue between clients and the professional, it follows then that assessment should be imbedded in an exchange that includes:

"...meaningful questions that will combat the relentless pursuit of pathology, and ones that will help discover hidden strengths that contain the seeds to construct solutions to otherwise unsolvable problems..." (Graybeal, 2001, p.235)

Tools such as the model discussed by Slabbert (2014) have been developed to guide professionals in drawing on strengths. Using frameworks that focus on strengths and weaknesses encourages a holistic and balanced assessment of the strengths and problems of an individual within a specific situation.

Slabbert (2014) describes various themes surfacing from her strength-based assessment among female victims from domestic violence that include: hope, resilience, pride, healing and wholeness, and personal virtues, whereas:

- Hope: deals with aspirations in terms of family relations, how to achieve these, and women's optimism in achieving these.
- Resilience: focuses on how women handle violence in terms of preventing and adapting to violent events.
- Pride: addresses women's self-esteem, self-worth, independence, and their relationships with other women in the family and the community.
- Healing and wholeness: explore the process of overcoming suffering
- Personal virtues: explores women's perceptions of their personal qualities, traits and virtues.

These themes then offer a framework for exploring what fuels resilience among some women facing domestic violence.

#### CONCLUSION

In summary, the 'strengths perspective' in social work practice provides a useful framework in exploring drivers of resilience among women facing domestic violence. Exploring and describing the characteristics and traits of these resilient women could provide a benchmark on domestic violence against women in Bangladesh.

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## The Optimal Role of Civil Society in Addressing the Health Workforce Crisis Based on Examples from Global Experience

#### **Michael Noble**

<sup>1</sup> Maastricht University, The Netherlands E-mail: mnoble@student.maastrichtuniversity.nl

#### ABSTRACT

**Background:** A significant barrier to the achievement of Universal Health Coverage is the development of a sustainable global health workforce, with the WHO recommending 4.5 healthcare workers (HCW) per 1000 population. This burden lays heavily on the developing world with a demand for 18 million HCW in LMIC's by 2030. It is well documented that the chronic underfunding of health care poses a significant problem, along with global inequities causing the mass migration of healthcare workers from the global south to north. Furthermore, the lack of accountability and transparency of the actors involved in human resources for health (HRH) has perpetuated this issue. In 2010, The World Health Assembly adopted the WHO Global Code of Practice on The International Recruitment of Health Personnel (Code) to address this problem, albeit only as a voluntary instrument. Following this, in 2016, the WHO introduced the Global Strategy on Human Resources for Health: Workforce 2030 (GSHRH2030) to work towards the goal of establishing a sustainable and equitable workforce. The introduction of both the Code and GSHRH2030 has opened up a role for civil society (CS).

**Methodology:** A literature review was conducted to find the optimum role of CS based on examples from global experience. 'civil society,' 'health workforce' and 'global' were the key search words used on LibSearch, the database of Maastricht University.

**Results:** CS can provide a platform for actors to discuss decision making strategies and policy analysis, whilst advocating for the benefit of society. The Heath Workforce Advocacy Initiative, a broad network of CS organizations, developed an advocacy toolkit to empower the advocation for improvements in HRH, at both local and global levels. Previous initiatives such as the HW4ALL, a CS organization, have contributed to a sustainable workforce in Europe by addressing the ethical dilemmas of health personnel mobility, such as the rights for workers and standards of training. In one case, the HW4ALL assumed the role of a whistleblower, exposing the exploitation of Spanish nurses who were hired by a private German agency. Neighboring countries are often mutually dependent to balance shortages of HRH and CS can assist in this collaboration. A case study of a southern Romanian hospital showed the benefits of civil society using monitoring and accountability mechanisms to prevent the shortage of HCW due to mass outwards migration, as well as ensuring the same salaries and working conditions for migrant workers from Bulgaria.

**Conclusions:** Ultimately, CS is at the epicenter of solid and accountable health systems. The optimum roles of CS should be that of a watchdog, enforcer and advocate; ensuring the accountability and transparency of actors implementing the Code and to support the strategy of establishing a sustainable and equitable workforce by 2030. Despite this, there are some limitations including the lack of funding and political engagement for the inclusion of CS.

# Working Group

#### **Members:**

- 1. Asst. Prof. Dr. Uma Langkulsen
- 2. Mrs. Peerapa Suksawang
- 3. Ms. Nuchanard Wongjumpa
- 4. Ms. Angkana Namsuk
- 5. Ms. Pisamai Makpaet
- 6. Ms. Sirada Sahaimitr
- 7. Ms. Neungruthai Klinson
- 8. Ms. Samittra Pornwattanavate
- 9. Ms. Prapaporn Pansuwan
- 10. Ms. Wannakan Lohathut
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- 13. Mr. Chayanit Nunwong
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- 30. Ms. Warliya Tangthai
- 31. Ms. Mintra ToThong







