





# Journal of Nepal Public Health Association (JNEPHA)

VOLUME 6 | ISSUE 2 | NO. 7 | JUL.-DEC. 2015

## TABLE OF CONTENTS

### EDITORIAL

- 1 Health Care System in Federal Nepal 1

### ORIGINAL ARTICLES

- 2 A Home delivery Care Practices and Associated Factors in a Jhangad Community of Eastern Nepal 2-9  
*Shah S, Jha TC, Chandra R*
- 3 A Descriptive Study on Indoor Air Pollution in Talku Area of Pharping VDC in Kathmandu Valley 10-17  
*Surya Gaire, Ishwar Tiwari, Birat Ghimire, Prem Rai Joshi, Indu Kumari Joshi*
- 4 Socio-economic Conditions and Life Style Related Characteristics of Tannery Workers of Hazaribagh, Dhaka: A cross-sectional study 18-24  
*Anil Giri, Nazeen suraiya*
- 5 Effect of Planned Teaching Intervention for Creating Awareness and Changing of Perceived Behavior on Female Foeticide among Pregnant Women in Belgaum 25-32  
*Meena Paudel, Dr. Sangeeta Kharde*

### REVIEW ARTICLES

- 6 Weighted Proportion and Associated Factors of MDR-TB in Developing Countries: A Systematic Review and Meta-analysis 33-41  
*Chiranjivi Adhikari, Binod Regmi, Alina Lamsal, Sabina Bhattarai, Swati Khanal, Ranjan Sharma, Anita Thapa*
- 7 A Study about the Life of Street Children in Kathmandu Valley 42-52  
*Pushkar Singh Raikhola*

### SHORT COMMUNICATION

- 8 Public Health Education in Nepal 53-59  
*Ramesh Bhatta*
- 9 Dowry System in Madhesi Community 60-62  
*Archana Yadav*
- 10 Sustainable Development Goals: Current Status of SDGs and their Targets, Policies and Institutions in Nepal. 63-67  
*Kunjana Pandey*

# Journal of Nepal Public Health Association (JNEPHA)

VOLUME 6 | ISSUE 2 | NO. 7 | JUL. - DEC. 2015

## NEPHA Executive Board Members (2014-2016)

### President

Bhogendra Raj Dotel

### Immediate Past President

Ram Prasad Bhandari

### Vice-President

Mohan Krishna Shrestha

### General Secretary

Prof. Salau Din Myia

### Treasurer

Binod Regmi

### Secretary

Ramesh Bhatta

### Sub-Treasurer

Ramanand Pandit

### Members

Mahendra Prasad Shrestha

Badri Bahadur Khadka

Dilli Raman Adhikari

Kedar Raj Parajuli

Dr. Khageshwor Gelal

Durga Khadka (Mishra)

Gyan Bahadur B.C.

Nepal Public Health Association  
Public Health Research Center  
Journal of Nepal Public Health Association

## Editorial Board

### Chief Editor

Dr. Rajendra B.C.

### Executive Editors

Dr. Dillee Prasad Paudel

Asst. Prof. Binod Regmi

### Editors

Deepak Karki

Asst. Prof. Dr. Umesh Aryal

Dr. Sarad Sharma

Mohan Krishna Shrestha

Basundhara Sharma

Kunjana Pandey

Archana Yadav

### Principal Contact

Asst. Prof. Binod Regmi

Journal of Nepal Public Health Association

Nepal Public Health Association Building

117-Jeet Jung Marg, Thapathali Height, Kathmandu-11, Nepal

Tel: +977-1-4248513; 9851127909 (m)

Email: [editor@nepha.org.np](mailto:editor@nepha.org.np); [editor.jnepha@gmail.com](mailto:editor.jnepha@gmail.com)

### © Copyright and Reserved by

Journal of Nepal Public Health Association

All rights copyright and reserved. No part of this publication in general may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying and recording or any information storage system, without the prior information of the JNEPHA

# Journal of Nepal Public Health Association

Journal of Nepal Public Health Association is published by Biannually and distributed by Nepal Public Health Association.

The statement or opinions expressed in this Journal are the personal views of authors and do not represent the official views of NEPHA central executive board including regional, district and ilika or JNEPHA editorial board of Nepal Public Health Association.

	Individual		Institute	
	For Nepali (NRS)	Foreigner (USD)	For Nepali (NRS)	Foreigner (USD)
Print	750	15	1200	20
Online	N/A	N/A	N/A	N/A
Annual Subscrip- tion	2000	40	3400	55

## Journal of Nepal Public Health Association

117 Jeet Jung Marg, Thapathali Height, Kathmandu-11

P.O.Box. 3780

Tel No. +977-1-4248513

Web: [www.nepha.org.np](http://www.nepha.org.np)

E-Mail: [editor@nepha.org.np](mailto:editor@nepha.org.np); [editor.jnepha@gmail.com](mailto:editor.jnepha@gmail.com)

*Subscription payment should be sent in the form of bank draft in the name of Nepal Public Health Association or directly to the office representative*

### PDF Policy:

Full text access is free in HTML pages; however the Journal allows immediate open access to content in HTML + PDF.

Published Biannually

Subscriptions are for calendar year only

**Journal of Nepal Public Health Association (JNEPHA)** does not give public health and medical advice and will not be able to respond to inquiries about specific diseases, medical or surgical conditions, diagnosis, treatments or contact of another person.

### Benefits of Journal

Focus-based target audience of core practitioners, researcher, medical, nursing and other professionals within healthcare and pharmaceutical sector instead of general surfers.

### Advertisement

Online and print version of JNEPHA is the best medium of advertising in conjunction with your marketing strategy. So we will provide the generous space for you advertise in regionable cost.

Your advertisement support not only helps to make marketing of your products but also provide sustainability for publication of JNEPHA. The cost of advertisement could be fixed by dual beneficiary strategy. So you are always welcome with kind acknowledgement.

Please feel to free to contact us for further information regarding these.

### Disclaimer:

Public health knowledge is constantly changing. As new information become available, changes in public health process through primordial, primary, secondary, tertiary and rehabilitative approach would be highly recommended for publication. The authors, editors and the publishers have, as far, as it is possible, taken care to insure that the information given in this journal is accurate and up to date. However, readers are strongly advised to confirm that the information, especially with regard to data, public health strategies, policy, drug usage, complies with current legislation and standards of practice. Under no circumstances shall JNEPHA or NEPHA be liable for any loss or harm due to the use of information given in this journal.

### Design & Layout:

Binod Regmi and Dillee Pd. Paudel

### Published By:

Nepal Public Health Association

Public Health Research Center

Journal of Nepal Public Health Association

**EDITORIAL****Health Care System in Federal Nepal**

Nepal has entered from its unitary system into a new "Federal Democratic Republic system". The current constitution presents basic health care services as a fundamental right. The Ministry of Health and Population has been providing resources and services to meet health demands for about 30 million people. Federal system expected to bridge the persistent disparities between rural and urban areas which are rooted from the past. One of the measurable evidence for disparities is life expectancy of people which is 71 years in Bhaktapur district whereas 44 years in Mugu district.

According to the new constitution Federal Democratic Republic of Nepal shall be divided into three main level of structure i.e. federal, provincial and local. The division of power between the federal and the provincial government is determined according to the clauses mentioned in the constitution. In the constitution it is mentioned that health concern will be the responsibility of state government and each individual shall have equal access to health care. It also gives emphasis on right to access to clean water and hygiene. This is one of the major public health concerns.

Nepalese health system is continuously trying to adopt the decentralized system of health care system from long back. After transformation of the

government from centralized to federal system, instead of supplying resources from central level to bottom level, supply of resources from provinces can be effective and it can bring new wave in health sector reform. But to accomplish this clear division of labor should be done between federal, provincial and local government and also with public and private health care system. Health care provision and health care financing should be organized according to federal legislation and managed by federal government. To reduce increasing out of pocket expenditure, various federal countries have been practicing social health insurance, thus Nepal also can constitute this system to do so.

The welfare of the people should not be caught in competitive battles between different level of government and political cause. Best basic public health care services and best basic education for promotion for health should be granted to all Nepalese irrespective of provinces, age, sex, caste and socio-economic status. Provision of health as a fundamental right in constitution is not only the solution to promote health, reduce disparities and improve health outcomes but proper implementation, good governance and accountability is also crucial.

Hope federal Nepal will be the perfect, self-dependent and healthy country .

## ORIGINAL ARTICLE

## A Home delivery Care Practices and Associated Factors in a Jhangad Community of Eastern Nepal

Shah S<sup>1</sup>, Jha TC<sup>1</sup>, Chandra R<sup>1</sup>

<sup>1</sup>Lecturer, Nepalgunj Medical College, Kohalpur, Banke, Nepal

### ABSTRACT

**Background:** Pregnancy, childbirth and their consequences are still the leading causes of death, disease and disability among women of reproductive age in developing countries more than any other single health problem. Over 72 % of deliveries in Nepal are at home. The aims of good delivery care are: through asepsis, delivery with minimum injury to the infant and mother, readiness to deal with complications, mal-presentations and care of baby and mother at delivery. The objective of this study was to explore home delivery care practices and associated factors among recently delivered mothers in the Jhangad community of Eastern Nepal.

**Methods:** The study was of descriptive, cross sectional type. The Lot Quality Assurance Sampling (LQAS) technique was applied. Total 162 recently delivered mothers residing in Morang and Sunsari districts of Eastern Nepal were considered as study participants. Data was collected using an interview technique with semi-structured questionnaires and analyzed using SPSS applying descriptive and inferential statistics.

**Results:** Of the respondents, 69.1% were illiterate, 82% were wage laborers and 53% were living in a joint family. The majority (98.2%) of the deliveries was conducted inside the sleeping room. Only 11.7 percent of deliveries were carried out on plastic, 59.9 percent on old mat and 28.4 percent on the ground. About 48.1 percent of the deliveries were assisted by Mother-in-laws/Friends/Neighbors followed by a traditional birth attendant (27.2%) and trained traditional birth attendants (17.3%). Only 3.1% deliveries were conducted by Maternal and Child Health Worker (MCHW), 1.9% by Auxiliary Nurse and Midwife (ANM), 0.6% by Staff Nurse (SN) and 0.6% by Health Assistant (H.A.)/Sr.AHW. Only 22.8% of respondents used a Clean Health Delivery Kit (CHDK) in their last delivery and only 11.7 % of mothers conducted delivery in a clean place.

**Conclusion:** Very few deliveries were conducted by skilled birth attendants and the majority did not use CHDK. Different socio-demographic factors like economic status of the family and occupations of mothers were found to be statistically significant with clean place of delivery ( $P < 0.05$ ). Practices concerning home delivery care were based on deep-seated traditional beliefs and ignorance.

**Key words:** delivery care, home delivery, associated factors, Eastern Nepal

#### Corresponding Author

Sunil Shah

Lecturer, Nepalgunj Medical College,  
Kohalpur, Banke, Nepal

Email ID: sunilashus@yahoo.com

## INTRODUCTION

Government of Nepal has given priority to safe-motherhood program for reducing maternal and neonatal morbidity and mortality. The current statistics of the 4000 women and 30,000 newborns are dying every year in Nepal. This will be significantly reduced by striving to achieve the Millenium Development Goal (MDG) of 60% of deliveries attended by a skilled birth attendant (SBA) by 2015. The common five causes of maternal deaths, most of which are preventable with the provision of adequate Antenatal Care (ANC), safe delivery practices and timely referral and well organized and accessible family planning (FP) services<sup>1,2,3</sup>.

By tradition, home is the most common place for delivery in Nepal. The challenge is not to change the culture of home delivery, but to make it clean, safe and within the limits of referral management to avoid the death or serious illness of the mother and newborn<sup>4</sup>. The neonatal mortality care guideline recognizes that the home will remain the preferred place for the foreseeable future; it recommends that women with health problems during pregnancy should deliver in a health facility (HF)<sup>6,8</sup>.

Nepal government has formulated the "National Essential Maternal and Neonatal Health (MNH) Care Package" in 2006, which consists of basic sets of health care interventions that should be available at different levels of the health care delivery system, to all women and their newborns to prevent and manage common obstetric and neonatal complications. The MNH package defines all those ac-

tivities which should perform at family level to District Hospital health care delivery system for ensuring that every pregnancy result in the best possible outcome for mother and newborn<sup>5,8</sup>.

The presence of the SBA at delivery is associated with lower maternal and newborn deaths<sup>7,8</sup>. Its maximal influence is in the reduction of deaths during the first 24 hours after birth, which represents about 40 percent of all neonatal deaths. Appropriate care of the normal newborn is neither widely understood nor practiced in the community or health system. Traditional attitudes and practices dominate newborn care and are often hazardous. In Nepal home delivery is 81 percent of all births and about 50 % deliver with the assistance of a non skilled personnel's like friends or relatives<sup>10,11</sup>.

There is limited use of safe motherhood and neonatal health care services by disadvantaged ethnic groups because of limited knowledge on maternal and neonatal health issues and lack of prior preparation to access those services<sup>12</sup>.

## MATERIALS AND METHOD

This was a community based descriptive, cross sectional study conducted among mothers who delivered within 28 days in Morang and Sunsari districts of Eastern Nepal. The study was conducted from July 2013 to December 2013. All the mothers in the Jhangad community who had delivered at home before the 28 days were considered as the study population. In the first stage, geographical areas with the Jhangad population were divided into eight sub-



geographical areas and 20 samples were collected randomly from each sub-geographical area using the LQAS (Lot Quality Assurance Sampling) technique. LQAS is used to quantify results for an entire catchment area (e.g., district or province or nation) suitable for reporting purposes and most frequently used size  $\leq 20$  per sub geographical or supervision area.

A total of 162 samples was collected using pre-tested semi-structured questionnaire. Verbal consent was taken from the mother before starting the study. Those mothers who were not permanent residences for less than one year, who had delivered at home before 28 days and those who were in the Village Development Committee (VDC) during whole data collection period were included. The data was entered and analyzed in the Statistical Package for Social Sciences (SPSS- Version 16). Descriptive analysis, such as percentage, mean and standard deviation (SD) was used to describe the composition and Chi-Square test was applied to determine the relationship of the study variables. P-values  $<0.05$  was set to consider the level of significance. Qualitative data were analyzed by content analysis. The results were analyzed with both descriptive and inferential statistics.

## RESULTS

A total of 162 mothers responded and the response rate was 100 percent. The mean age of mothers who delivered within 28 days was 25.02 years with a

standard deviation of  $\pm 4.01$ . Of the respondents, 69.1% were illiterate, 82% were wage laborer, 53% were living with a joint family, 79.6% did not have sufficient income to maintain daily expenses and about 58% of the newborns were male (Table 1

**Table 1: Socio-demographic characteristics of respondents (n=162)**

Socio-demographic characteristics	Frequency	Percentage (%)
<b>Age group</b>		
15-19	9	5.6
20-24	62	38.3
25-29	72	44.4
30-34	12	7.4
35-39	7	4.3
Mean age $\pm$ SD=		
(25.02 $\pm$ 4.01) years		
<b>Educational status</b>		
Illiterate	112	69.1
Literate	8	4.9
Primary	28	17.3
Secondary	14	8.7
<b>Occupation of the mother</b>		
Wage labor	134	82.7
Agriculture	26	16
Service	2	1.3
<b>Type of family</b>		
Nuclear	76	46.9
Joint	86	53.1
<b>Economic Status</b>		
Lower	129	79.6
Middle	30	18.5
Higher	3	1.9
<b>Sex of the child</b>		
Male	94	58.0
Female	68	42.0
<b>Parity</b>		
	Mean=2.4	SD=( $\pm$ 1.26)
	8	

**Table 2: Practices of home delivery among the study population**

Characteristics of home delivery	Frequency	Percentage
<b>Place of home delivery</b>	159	98.2
Inside sleeping room	2	1.2
Field	1	0.6
Other		
<b>Surface of child birth</b>		
On plastic	19	11.7
On mat	97	59.9
On ground	46	28.4
<b>Attendant of home delivery</b>		
Mother-in laws/	78	48.1
Neighbors	44	27.2
TBAs	28	17.3
Trained TBAs	5	3.1
MCHW	3	1.9
ANM	1	0.6
Nurse	1	0.6
HA/Sr. AHW	2	1.2
Quake		
<b>Hand washing by birth attendant</b>		
Yes	137	84.5
No	10	6.2
Do not know	15	9.3
<b>Substances used for hand washing (n=137)</b>		
Soap and water	116	84.7
Water only	21	15.3
<b>Use of clean home delivery kit (n=162)</b>		
Yes	123	76
No	37	22.8
Don't Know	2	1.2
<b>Clean place of delivery (n=162)</b>		
Yes	19	11.7
No	143	88.3

To find out the clean practices during home delivery, respondents were asked about the place of birth, attendant during delivery, hand washing by birth attendant and the use of clean home delivery kit during their recent delivery (Table 2).

**Place of home delivery**

The majority of the deliveries (98.2%) was conducted inside the sleeping room whereas the other (1.2%) took place in a field and only 0.6% in another place (i.e. in the way to house).

**Surface of home delivery**

Only 11.7 percent of deliveries were done on plastic, 59.9 percent on old mat and 28.4 percent on the ground.

**Birth attendant at home delivery**

About 48.1 percent of the deliveries were assisted by Mother-in-laws/Friends/Neighbors, it is followed by a traditional birth attendant (27.2%) and trained traditional birth attendants (17.3%). Only 3.1percent deliveries were conducted by MCHW, 1.9 percent by ANM, 0.6 percent by SN and 0.6 percent by H. A./Sr.AHW.

**Hand washing by birth attendant**

Out of 162 respondents, 84.6 percent birth attendants got to wash their hands before assisting the delivery, 6.2 percent did not wash and remain 9.3 percent respondent couldn't recall it. Out of them, about 84.7 percent attendant used soap and water and 15.3 percent used only water for hand washing.

**Use of clean home delivery kit (CHDK)**

Only 22.8 percent of respondents had used CHDK

in their last delivery and 1.2% can't recall it.

**Clean place of delivery**

Clean place of delivery was considered as conduction of delivery in sleeping room on the plastic. Out of 162 respondents, only 11.7 percent had conducted delivery in a clean place while remaining in unclean places (mat and on the ground).

**Table 3 : Association of clean place of delivery and different socio-demographic factors**

Variable	Clean place of delivery		Statistical test value
	No	Yes	
<b>Age (Yrs)</b>			
<20	0	22	P=0.37
20-40	19	121	c2 = 2.58 at df=1
<b>Educational status</b>			
Illiterate	99	13	P=0.53
Literate	7	1	c2 = 5.036 at df=3
Primary	26	2	
Secondary	11	3	
<b>Parity</b>			
2 or < 2	5	33	P=0.55
3-5	10	66	c2 = 4.6 at df=2
6-8	4	44	
<b>Family type</b>			
Nuclear	67	9	P=0.46
Joint	76	10	c2 = 1.53 at df=1
<b>Economic status</b>			
Lower	118	11	0.04 (c2 2 = 10.03)
Middle	22	8	
Higher	3	0	
<b>Occupation</b>			
Agriculture	19	7	0.02 (c2 2 = 11.307)
Service	1	1	
Labor	123	11	
<b>Sex of newborn</b>			
Male	81	13	0.22 (c2 1 = 3.002)
Female	62	6	

### Clean place of delivery and association with socio-demographic factors

The association in a clean place of delivery with socio-demographic factors showed that the economic status of the family and occupation of the mother were statistically significant with clean-place of delivery (P-value <0.05). There was no statistical significance between clean place of delivery with age of mother, education status of mother, parity, family type and sex of neonates (Table 3).

### DISCUSSION

The objective of the study was to identify home delivery care practices and examined the association with socio-demographic variables among recently delivered mothers in the Jhangad community of Sunsari and Morang districts. This study describes home delivery care practices and examined their association with socio-demographic factors. Home delivery care practices in this setting had not been described previously.

Labor was the main occupation of the respondents, which is consistent with the fact that most Janjati people in Nepal are engaged in labor for a livelihood. The result indicates that the people from Janjatis group are mostly involved in labor and agriculture, whereas their involvement in service and business is very nominal. This is true because the people from Jhangad (Janjatis) group are less educated. WHO has recommended four strategic interventions or “four pillars” for safe motherhood. These

include family planning, antenatal care, clean/safe delivery and emergency obstetric care<sup>12</sup>. The study found that most of the deliveries, 98.1%, took place either in a sleeping room or some place inside the house, which was similar to the earlier studies done by T Sreeramareddy et al. in urban areas, (92.5%), and by Osrin D et al. in rural areas of Nepal (90%)<sup>(13,14,19)</sup>. An earlier study done by Thapa N. et al. highlighted that cattle-shed deliveries were contributing to higher rates of infant mortality in the remote rural areas of Nepal<sup>17</sup>. In the present study, most of the deliveries, 48.1%, were attended by a neighbor or mother-in-law followed by Traditional Birth Attendants (TBAs), 27.2%, which is not matched with the data reported by Nepal Demographic and Health Survey 2006, >50%. The study conducted by Osrin D. et al of the rural areas of Nepal has revealed that the mother-in-laws are the primary attendants during the delivery and care of the newborn<sup>19</sup>. This study also shows consistency with the present study and is not similar to an earlier study of urban areas of Nepal (5%) done by Sreeramreddy CT et al<sup>14</sup>. Such a difference may be due to demographic structure of the rural Jhangad population.

The studies in urban slum of Delhi conducted by Rahi M et al (91.3%) revealed the mother-in-laws or untrained attendants, mostly conduct the deliveries which is consistent to the present study (75.5%)<sup>15</sup>. Maternal and child health workers who are identified as key birth attendants by the policy makers conducted only 3.1 percent of deliveries in this study. This study highlights that attendance of health worker

at home deliveries is low in semi-urban areas also. The present study shows that only 6.3% of the mother had delivered by health workers. More or less similar has been reported in Nepal by NDHS 2006 (7%)<sup>11</sup>.

Infection accounts up to 36% of neonatal deaths. Therefore, WHO emphasizes “five cleans” during the delivery. The “five cleans” are: a clean delivery surface, clean hands of the birth attendant, a clean blade, a clean tie and a clean cord stump with nothing applied to it. There were 84.6% of the birth attendants who had washed their hands before delivery, which is better than the studies from Bangladesh conducted by Barnett et.al. (67%) and from rural Nepal conducted by Osrin et.al. which reported that 55% of the attendants washed their hands<sup>(19,20)</sup>. The Clean Home Delivery Kit (CHDK) was used in 22.8% of the deliveries, which was higher than reported by NDHS 2006, 9%, and the study from West Bengal, 15%, and less than the earlier study done in urban Nepal by Sreeramreddy et al, 34.5%<sup>14,16</sup>.

## CONCLUSION

Very few (22.8%) of mothers used the clean home delivery kit during delivery. Most of the deliveries were conducted without support of skilled birth attendants. Practices concerning home delivery care are based on deep-seated traditional beliefs and ignorance. Maternal mortality can be significantly reduced through improved delivery care practices and use of community-based health services. Sev-

eral efforts have been made to reduce maternal mortality. Nepal government has formulated the ” National Essential Maternal and Neonatal Health Care Package” in 2006, which consists of basic sets of health care interventions that should be available at different levels of the health care delivery system, to all women and their newborns to prevent and manage common obstetric and neonatal complications.

## ACKNOWLEDGEMENTS

I acknowledge residents, colleagues, library unit, medical record section and mothers helping to collect data; DPHO for allowing us to carry out the study and Professor Rajendra Raj Wagle from IOM, TU and Professor S.M. Sahu from Nepalgunj Medical College for their mentorship. I would like to thank the staffs of health facilities and the study participants.

## REFERENCES

1. WHO. Make every child count, World Health Report 2005.
2. Park K, "Park's Textbook of Preventive and Social Medicine", 17th Edition, Banarsidas Bhanot Publication, India, 2002.
3. South East Asia Region. Regional Strategy for Reduction of maternal mortality in the South East Asia Region, India; 2000: RC-53 (13).
4. FHD/DoHS/HMG Nepal, 2002. National Safe-motherhood plan (2002-2017).
5. National Essential Maternal and Neonatal Health Care Package: Ministry of Health & Population/

- GN Department of Health Services, Family Health Division; 2006.
6. MCHRC. Confidential inquiry into Stillbirths and Deaths in infancy. Maternal and Child Health Research Consortium; London, 1998.
  7. Desk Review Research on BCC/IEC Program in Health, Ministry of Health & Population, Nepal; June, 2006.
  8. Bolam A, Manandhar D.S, Shrestha P. et al. Factors affecting home delivery in the Kathmandu Valley. Center for International Child Health. Institute of Child Health, London and MIRA Project, Maternity Hospital, Kathmandu Nepal; 1998.
  9. National Essential Maternal and Neonatal Health Care Package: Ministry of Health & Population/GN Department of Health Services, Family Health Division; 2006.
  10. Nepal Demographic and Health Survey, Ministry of Health & Population/New Era/ORC Macro, Kathmandu Nepal; 2001.
  11. Nepal Demographic and Health Survey, Ministry of Health & Population/New Era/ORC Macro, Kathmandu Nepal; 2006.
  12. Equity and Access program, EAP Action Aid/SSMP, Kathmandu Nepal, 2006.
  13. Darmstadt GL, Bhutta ZA, Cousens S et.al. Evidence-based, cost-effective interventions: how many newborn babies can we save? *Lancet* 2005; 365(9463): 977-988
  14. T Sreeramareddy, Hari S, et al. Home delivery and newborn care practices among urban women in western Nepal: a questionnaire survey. *BMC, pregnancy childbirth* 2006; 6:27
  15. Rahi M, Taneja DK, Misra A et al. Newborn care practices in an urban slum of Delhi.
  16. *Indian Journal of Medical Sciences*, 2006; 60(12): 506-513.
  17. Dasgupta S, Das P, Mandal NK et al. A study on intra natal care practices in a district, West Bengal. *Indian Journal of Public Health*, 2006, Jan-Mar; 50(1): 15-8.
  18. Thapa N, Chongsuvivatwong V, Geater AF et al. Infant death rates and animal-shed delivery in remote rural areas of Nepal. *Journal of Social Science Medicine*, 2000; 51:1447-56
  19. Adikari RK and Kratz EM: *Child Health and Nutrition*, third edition, Health Learning material centre, Kathmandu; 2001.
  20. Osrin D, Tumbahangphe KM, et al. Cross sectional community based study of care of newborn infants in Nepal. *BMJ* 2002; 325:1063. doi: 10.1136/bmj.325.7372.1063.
  21. Barnett S, Azad K, Barua S et al. Maternal and Newborn-care Practices during
  22. Pregnancy, Childbirth, and the Postnatal Period: A Comparison in Three Rural Districts in Bangladesh. *Journal of Health, Population & Nutrition*, 2006 Dec; 24(4).

## ORIGINAL ARTICLE

## A Descriptive Study on Indoor Air Pollution in Talku Area of Pharping VDC in Kathmandu Valley

Surya Gaire<sup>1</sup>, Ishwar Tiwari<sup>1</sup>, Birat Ghimire<sup>1</sup>, Prem Rai Joshi<sup>1</sup>, Indu Kumari Joshi<sup>1</sup>

<sup>1</sup>Researcher, Center for Health Research and International Health

### ABSTRACT

**Introduction:** Most of the households in developing countries rely on coal and biomass in the form of wood, dung and crop residues for domestic energy. About half of the world's population is estimated to use solid bio-fuels. Indoor air pollution in developing world from biomass smoke is considered to be a significant source of public health hazard, particularly to the poor and vulnerable women and children.

**Methods:** The study was carried out in one of the Village Development Committees (VDCs) of Pharping area in Kathmandu district: Telku VDC. Oral informed consent was taken from each household representative before interviewing. The descriptive cross sectional study design was used for the research.

**Result:** The study shows that majority of people are dependent on bio fuel like wood and most of them do not have separate kitchen with sufficient ventilation in it. Majority of the respondent has got higher exposure in the kitchen that could have led to be more vulnerable to diseases as well as suffer from respiratory illness.

**Conclusion:** The study reflects unsatisfactory condition of locally built houses in terms of indoor air pollution. The people of the study area spent longer hours inside the poorly ventilated house and near the traditional stove with high smoke exposure, which can be considered as one of the risk factor for exposure to diseases. Due to the remoteness and lack of fuel alternatives, majority of the population of the study area depend upon the fuel wood. Therefore, promotion of environmental friendly fuel and awareness on health effects of indoor air pollution can make better living of people in the community.

### Corresponding Author

Surya Gaire

Researcher

Center for Health Research and International Health

Email ID: sugaire@gmail.com

## **INTRODUCTION**

Indoor air pollution is defined as pollution exposure at home and work. Pollutants causing indoor air pollution includes Carbon monoxide (CO), Nitrogen oxides (NO<sub>x</sub>), Tobacco smoke, Asbestos, Formaldehyde, Suspended particulate matter (SPM), Ozone, Carbon dioxide and Viable particulate matter. Sources of Indoor air pollution found commonly are Combustion, smoking, building materials, office and domestic electrostatic machine and other sources etc. Indoor air pollution in developing world from biomass smoke is considered to be a significant source of public health hazard, particularly to the poor and vulnerable group like women and children who spend most of the time in kitchen.<sup>1</sup>

It has been estimated that approximately half the world's population, and up to 90% of rural households in developing countries, still rely on biomass fuels.<sup>2</sup> In developed countries, modernization has without exception been accompanied by a shift from bio fuel to petroleum products (kerosene, LPG) and electricity. In developing countries, even where cleaner more sophisticated fuels are available, households often continue to use biomass.<sup>3</sup>

More than three billion people worldwide continue to depend on solid fuels, including biomass fuels (wood, dung, agricultural residues) and coal, for their energy needs. Many people spend large portion of time indoors - as much as 80-90% of their lives. Poverty condemns around half of the world's population to use solid fuels for cooking and heat-

ing their homes. According to The world health report 2002 indoor air pollution is responsible for 2.7% of the global burden of disease. Indoor smoke leads to the deaths of over 1.5 million men, women and children each year. In developed countries, smoking is responsible for over 80% of cases of chronic bronchitis and for most cases of emphysema and chronic obstructive pulmonary disease.<sup>4</sup>

Though the world has moved into the cleaner technologies, with the increase in the awareness level about the effects of pollutants on human health, the residents of rural areas of developing countries are still facing the pollutants coming out of their kitchen. Indoor air pollution is the serious risk for the respiratory ill health. This study will provide a database on what is the situation of the health condition of the local people and how it is related to the indoor air pollution and kitchen characteristics.

## **MATERIALS AND METHOD**

The Descriptive cross-sectional study design was used in this research. The study was conducted in Talku dudechaur VDC, Pharping of Kathmandu district in Central Development region of Nepal. Sample size for household was taken to be 64, which was estimated by using statistical formula at 95% confidential level. In all the households, physical examination of household parameters were carried out, which included: location of kitchen, partition and dimension, types of stoves present, number of ventilation present etc. Respondent sample size was also taken to be 64 (one from each household). The formula for the de-



termination of sample size was as follows:

$$n = \frac{NZ^2P(1-P)}{Nd^2 + Z^2P(1-P)}$$

where, n = sample size

N = total number of household

Z = confidence level (at 95% level Z = 1.96)

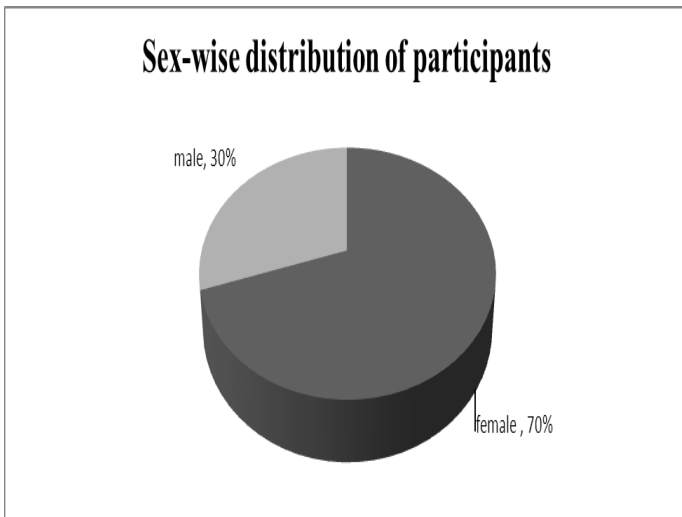
P = estimated population proportion (0.05, this maximize the sample size)

d = error limit of 5% (0.05)

Simple random sampling technique was used to study the sample population. Data were processed in MS Word and MS Excel and analysed in pie charts and bar diagrams.

## RESULTS

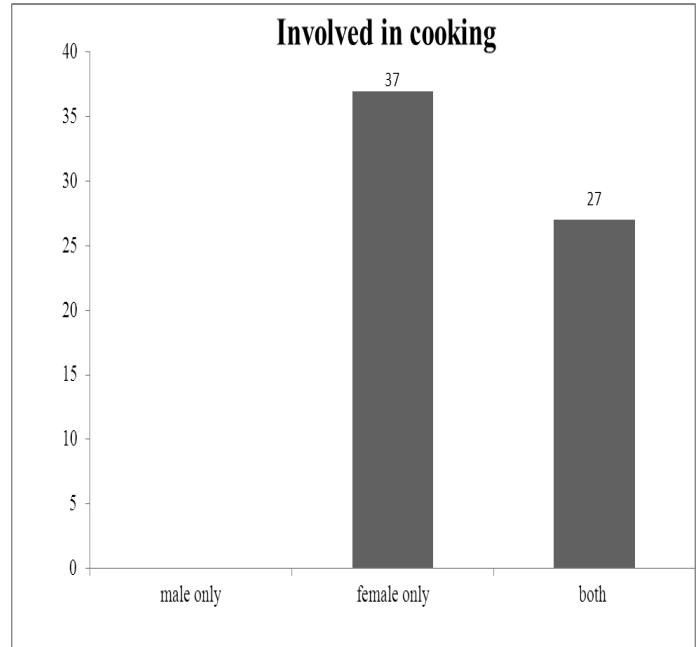
The study was carried out using 64 samples out of which 70% were female and 30% were male participants (Figure 1).



**Figure 1: Sex-wise distribution of participants**

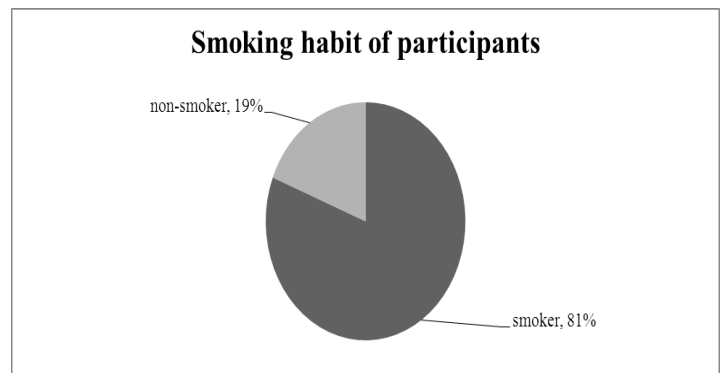
Out of total participants, 58% of them were female only who were involved in cooking, while there

were not any "male only" who were involved in cooking. However, 42% participants of both male and female were involved in cooking.( Figure 2).



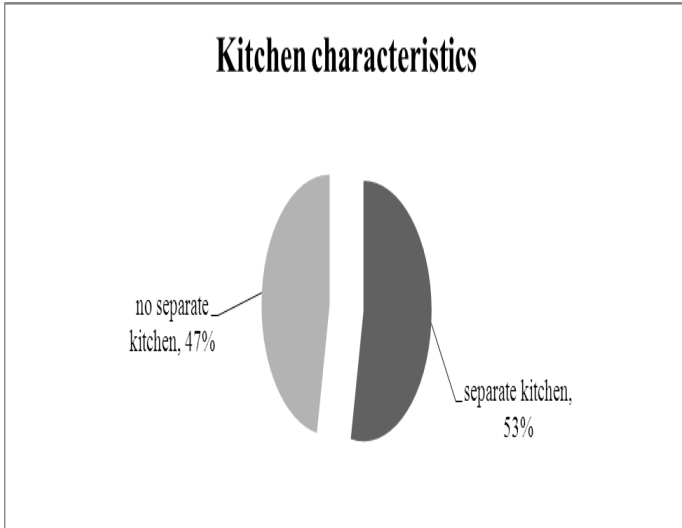
**Figure 2: Participants involved in cooking**

Similarly, 81% were smokers and 19% were non-smokers (Figure 3)



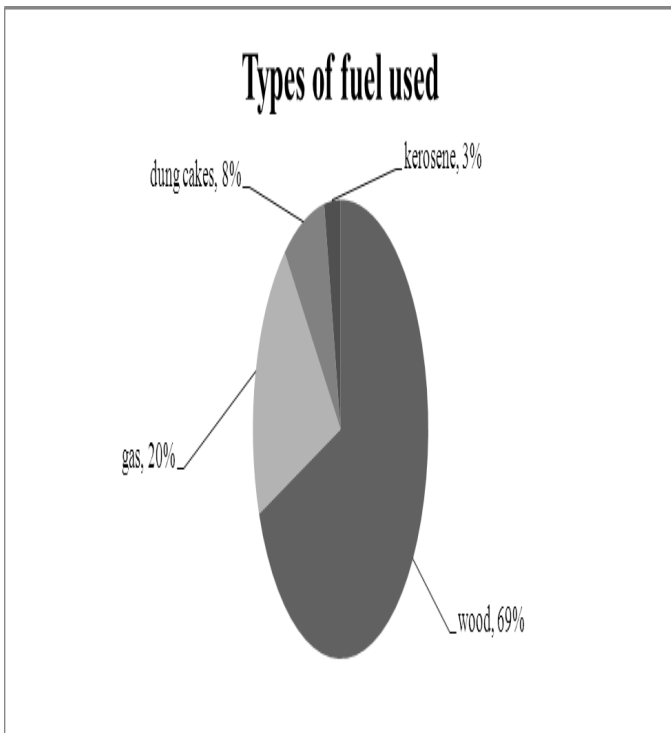
**Figure 3: Smoking habit of participants**

The result shows that 53% of the participants have separate kitchen in their home, while 47% of them have no separate kitchen( Figure 4).



**Figure 4: Household kitchen characteristics**

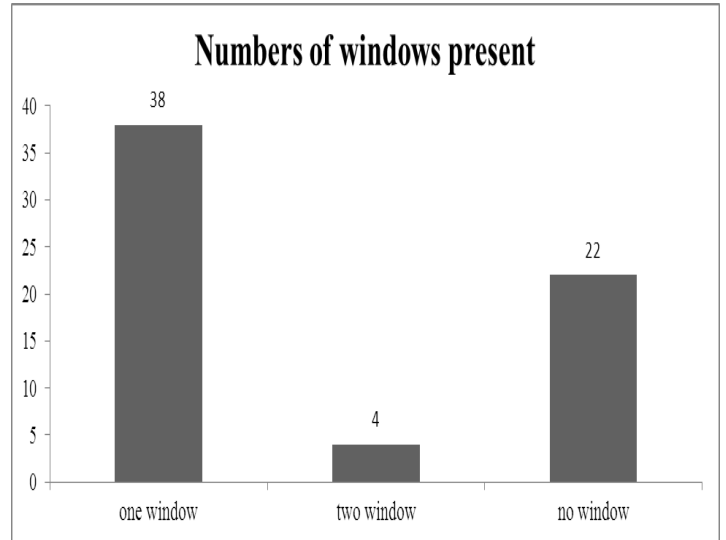
Wood as a source of fuel is used by 44 (69%) of the participants, gas by 12 (20%) and dung cakes and kerosene by 5 (8%) and 3 (3%) participants respectively (Figure 5).



**Figure 5: Types of fuel used during cooking**

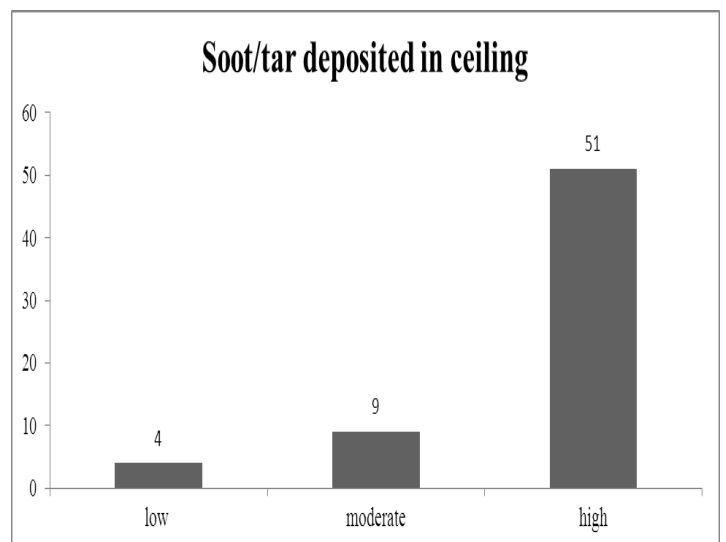
Likewise, 38 (60%) participants have one window in their kitchen 4 (6%) participants have two win-

dows in their kitchen, while 22 (34%) of the participants don't even have single window in their kitchen (Figure 6).



**Figure 6: Number of windows present in the kitchen**

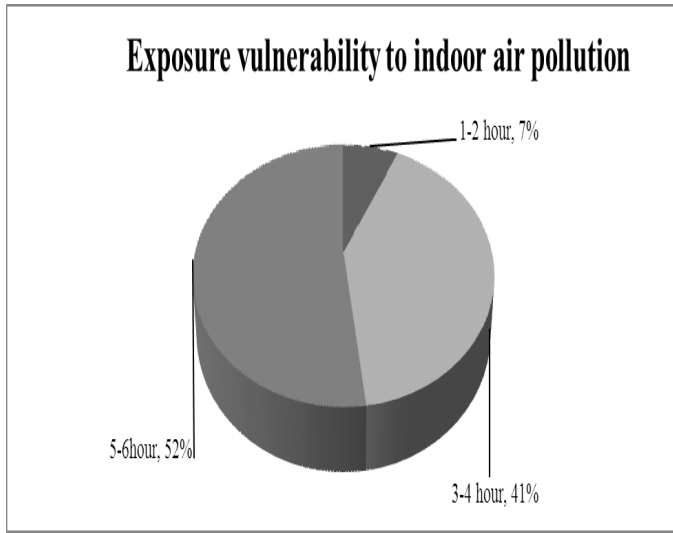
Similarly, 80% households were observed to have high soot/tar deposition in ceiling, 14% with moderate deposition, while 6% were observed to have low soot/tar deposition in the kitchen( Figure 7)



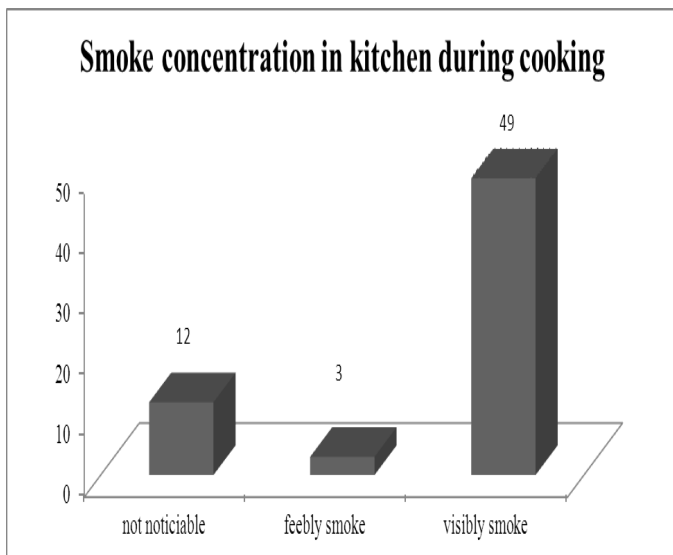
**Figure 7: Soot/tar deposited in ceiling kitchen-**

While analysing out the duration of exposure to the

smoke, it was found that 7% participants reported 1-2 hour of exposure duration, 41% reported of 3-4 hour exposure duration, while 52% participants reported of 5-6 hour exposure duration to smoke in the kitchen. Almost all the households had the problem of load shedding (Power cut) in the area.

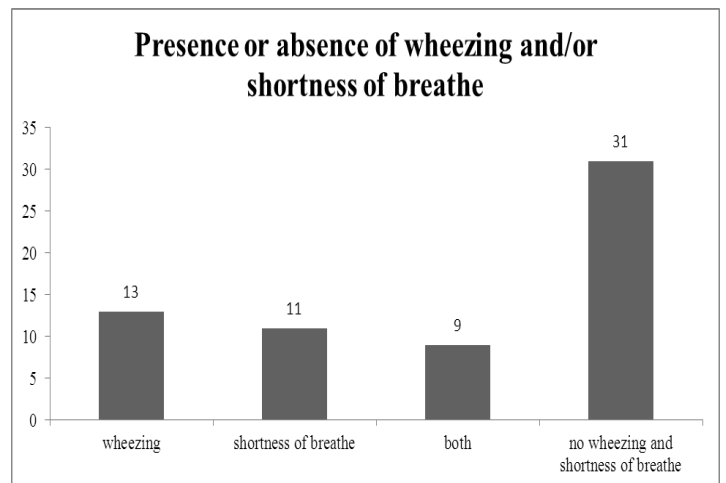


**Figure 8: Exposure Vulnerability (in hour) to indoor air pollution**



**Figure 9: Smoke concentration in kitchen during cooking**

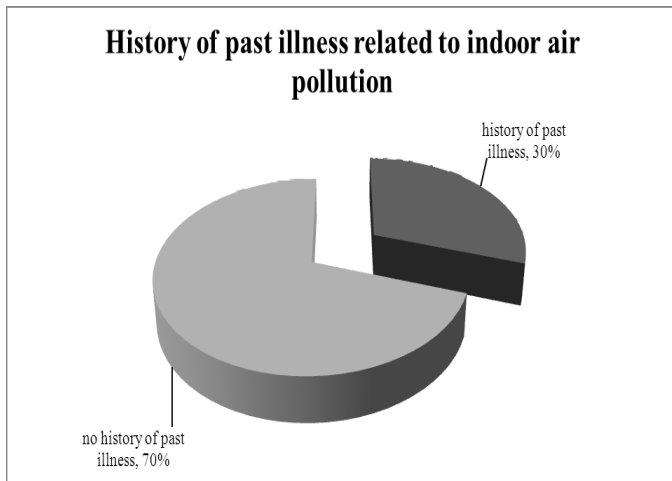
Amount of smoke in kitchen during cooking were observed and/or asked with the subjects. Among the respondents, 19% participants reported that there is no noticeable smoke in their kitchen, 5% reported having feebly smoke, while 77% reported of visibly smoke present in their kitchen while cooking( Figure 9).



**Figure 10: Presence or absence of wheezing or shortness of breathe**

All the participants were asked if they are suffering from wheezing and/or shortness of breath since last 2 months; 20% participants reported of wheezing, 17% reported of shortness of breath, 14% reported of both wheezing and shortness of breath while 49% reported of neither wheezing nor shortness of breath (Figure 10).

Participants were also asked if they were suffering from any kind of indoor air pollution related diseases like bronchitis, TB. The result shows that 30% participants reported history of past illness while 70% reported no history of past illness.



**Figure 11: History of past illness related to indoor air pollution**

## DISCUSSION

During the survey in Telku VDC, it was found that the use of biomass fuels has deteriorated the indoor air quality of houses. It was found that almost half of the households don't have separate kitchen. The reason for no separate kitchen was due to poverty, lack of awareness on benefits of separate kitchen. Majority of people are women who are affected by the indoor air pollution because they are found in kitchen most of the times. According to NDHS survey 2011<sup>5</sup>, majority of people in Nepal (75%) are still dependent on solid bio-fuel. In this study, larger number of population use wood as a major source of fuel. It is because wood is most easily available from nearby forest and also people couldn't afford for gas stove and other improved cooking stoves due to their low income or no earning at all. The greater percentage of the visibly smoke concentration in house was because of the greater percentage of the biomass used as fuel and also be-

cause of the fact that almost one-third of the households have no window/ventilation in their kitchen. Reasons attributed to the majority of the participants to have been exposed for longer hours (5-6 hours) was that the single person or two were regularly involved in cooking from morning to evening (2-3 times). The power cut is also a major factor to drive people to use fossil fuel as many of them said, "What is the reason to buy rice-cooker if there is no power". The reasons for shorter hours exposed to indoor air pollution were that some members of the family had to go for outdoor activities including economic and educational activities. In a study<sup>6</sup>, prevalence of chronic bronchitis in females were highly prevalence (i.e.12.57%) among non-smoker, which shows strong association of indoor air pollution and respiratory disease. In another study<sup>7</sup>, significantly more respiratory disorder was seen high among people using biomass fuels than those who use cleaner fuels (kerosene, LPG and biogas). Similarly, in this study, more than half of the respondent from the study area suffered from respiratory illness. This result could have further favoured by the smoking habit of the respondents, as we found in our study that 81% were smoker.

## CONCLUSION

Indoor air pollution in Nepal from biomass smoke is considered to be a significant source of public health hazard and Pharping VDC is no exception to this. The sources of indoor air pollution are use of solid fossil fuels. Almost half of the household do not have

separate kitchen. Many Nepalese still use traditional cooking stoves that produce lots of smoke causing a high degree of indoor air pollution. Wood is most easily available from nearby forest and also people couldn't afford for gas stove and other improved cooking stoves due to low income so wood as fuel is used in most households. Visibly smoke concentration was seen in most household and it was accompanied by inadequate windows and ventilation in house and this result in more soot/tar deposited in the wall and ceiling and also the respiratory illness. Majority of the respondent spend longer hours in the kitchen. More than half of the respondent of the study area suffer from respiratory illness. It is obvious that many respiratory infections are caused by poor air quality. In Nepal, every year children under 5 years of age die due to ARI and women are being more vulnerable to such diseases as they are involved in cooking activities.

The problem of indoor air pollution can be solved by the use of available alternative technology. Following recommendations can be considered to improve the indoor air quality and life style of people in the community. Household air quality monitoring system can help in identifying the smoke concentration that correspondingly improves the health status of the people who are directly exposed to the smoke. Mass public awareness on effect of indoor air pollution on health must be promoted. Researches must be conducted to study the impact of air pollution in human health.

Separate kitchen with standard dimension and ventilation will help in minimizing the pollution and reduce the prevalence of disease caused by the same.

### ACKNOWLEDGEMENT

I express my immense gratitude Center for Health Research and International Relations, Nobel College. I would also like to express my gratitude towards my colleagues: Birat Ghimire, Ishwar Tiwari, Indu Joshi and Prem Raj Joshi who helped me to complete this research work with less trouble. This research paper would not have been successfully prepared without the help of participants. I would like to acknowledge all the participants who supported us by providing information of their household and behaviour.

### REFERENCES

1. Joshi SK. Solid biomass fuel: Indoor air pollution and health effects. Kathmandu University Medical Journal [Internet] (2006). Vol. 4 (14): 141-142. Available from: <http://www.kumj.com.np/issue/14/141-142.pdf>
2. Bruce N, Perez-Padilla R, Albalak R. Indoor air pollution in developing countries: a major environmental and public health challenge. Bulletin of the World Health Organization 2000;78(9):1078-1092.
3. Smith KR. Biofuels, air pollution and health. A global review. Plenum Press, New York.1987
4. Singh U, Garg A, Rani B. Indoor Air Pollution & Its Impact on Public Health: A Review. Ad-

- vances in Bioresearch 2012: Vol (3)21 – 26.
5. Nepal. Nepal Demographic and Health Survey 2011. Government of Nepal
  6. Pandey MR. Prevalence of chronic bronchitis in a rural community of the hilly region of Nepal. Thorax. 1984 May; 39(5):531-6
  7. Shrestha IL, Shresths SL. Indoor air pollution from biomass fuels and respiratory health of the exposed population in Nepalese households. Int j occup Environ Health. 2005. Apr-June;11(2):150-60

## ORIGINAL ARTICLE

**Socio-economic conditions and life style related characteristics of tannery workers of Hazaribagh, Dhaka: A cross-sectional study****Anil Giri<sup>1</sup>, Suraiya Nazeen<sup>1</sup>**<sup>1</sup> University of Asia Pacific, Faculty of Science, Department of Pharmacy, Dhaka, Bangladesh**ABSTRACT**

**Aims:** To assess the socio-economic condition and life style related characteristics of tannery workers who have been working in the tannery area of Hazaribagh.

**Methods:** A cross-sectional study from 1<sup>st</sup> May to 30<sup>th</sup> August of 2013 of 167 tannery workers who had been employed for  $\geq 2$  years at leather tanneries of Hazaribagh, -Dhaka, was taken (from 10 different tanneries). Face to face interviews were performed using a semi-structured pre-tested questionnaire.

**Results:** Most of the respondents were male 96.4% (of 167) with mean age of  $28.75 \pm 7.285$  years. 53.3% had secondary education, 43.1% had primary education, 2.4% were illiterate and 1.2% were graduate. About 44.3% of the respondents had BDT 7000-11000 of monthly income and 11.4% had BDT 2000-6000. Almost 34% of the respondents lived in Slum area. About 79% of the respondents were smoker and they were smoking for more than 5 years (57.6% of 132).

**Conclusion:** This study measures the predominant factors relating socio-economic conditions and life style of tannery workers.

**Keywords:** Bangladeshi Taka (BDT), Socio-economic condition, Tannery workers

**Corresponding Author****Anil Giri**

University of Asia Pacific, Faculty of Science, Department of Pharmacy, Dhaka, Bangladesh

Email ID:ansuanil@gmail.com

Contact:+88-0-1921489606

## **INTRODUCTION**

Bangladesh has been developing its economy rapidly on market-based economy. Its per capita income in 2012 was estimated to be US \$ 2,100 and according to the International Monetary Fund, Bangladesh ranked as the 44<sup>th</sup> largest economy in the world in 2012 in purchasing power parity terms<sup>1</sup>. Tannery sector plays a significant role in the economy of Bangladesh in terms of its contribution to export and domestic market<sup>2</sup>. At almost \$1 billion a year in sales, the leather industry is one of Bangladesh's most profitable sectors. Last year, it earned \$451 million by exporting leather and leather products between July and December, an increase of about 20 per cent from the same period in 2011<sup>3</sup>. In Bangladesh, tanning or the process of making leather is mostly carried out in the south-western region of Dhaka city, occupying 25 hectares of land at Hazaribagh, where about 90% of tannery industries of Bangladesh are located<sup>4</sup>. The homes of tannery workers in Hazaribagh are built next to contaminated streams, ponds, and canals. Informal leather recyclers who burn scraps of leather to produce a number of consumer products also heavily pollute the air and at least 160,000 people have become victims of pollution due to presence of toxic chemicals, mainly chromium<sup>5</sup>. Some of the worker started their work at the age of 13 and earn 6,000 BDT (100 USD) a month working for a 12-hour shift, seven days a week. They lived in a slum area and had to left school for this job<sup>6</sup>. The World Health

Organization says 90 per cent of Hazaribagh's tannery workers will die before age 50. Most will suffer respiratory illnesses. Most will have skin diseases and these tanneries are not only poisoning the people who live there but others, too, hundreds of miles away<sup>3,7</sup>.

The purpose of this study was to assess the socio-economic condition and life style related characteristics of the tannery workers who had been working for  $\geq 2$  years in tannery factory around Hazaribagh area, Dhaka.

## **MATERIALS AND METHOD**

### **Sampling**

This cross-sectional study was done in the Hazaribagh Industrial area of Dhaka city. It involved 167 tannery workers from 10 factories who had been working in the tannery for  $\geq 2$  years. All the leather factories that were in production during the field period of this research and granted permission for this research were included in the study. This amounted to 29% of the hide factories in the industrial zone. The purpose of the study was explained to the people involved in this study and was carried out between May 1 and August 30 in 2013.

### **Questionnaire**

In order to determine the socio-economic conditions and life style related characteristics of 167 individuals, the following information was obtained through face-to face interviews: their ages, religions, marital



status, schooling level, monthly income (individual and family both), numbers of family members, living condition, smoking habit, habituation with Gaza (marijuana), previous jobs, working duration per day and duration of services. We also asked if they had shortness of breath and whether they ever fell in an any accident during the work.

### Statistical analysis

Descriptive analysis was done to describe characteristics of our study population. Evaluation of different variables was made with a Chi-square test. Statistical significance was accepted for  $P < 0.05$  for results that were two-tailed. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 16.0, (Chicago, USA).

### RESULTS

The study group of 167 workers consisted of 161 (96.4%) males and 6 (3.6%) females. Mean ( $\pm$  SD) age (years) of respondents was 29 ( $\pm$  7) with a median of 30. Among them 110 (65.9%) were married and 57 (34.1%) were unmarried. The mean income (Taka per month; One USD = 77.22 BDT) was 10733 ( $\pm$  3804) and median income was 10,000 BDT per month. Income ranged from 2,000 to 21,000 BDT per month and almost 44.3% of the workers had income between 7000-11000 BDT per month. Likewise the mean ( $\pm$  SD) monthly family income was 18281.44 ( $\pm$ 5666.309) and median family monthly income was 18,000 BDT.

**Table 1: Distribution of socio-economic characteristics of leather tannery workers (respondents) of Hazaribagh, Dhaka-Bangladesh from 1<sup>st</sup> of May to 30<sup>th</sup> of August (n = 167)**

Variables	n (%)	Mean $\pm$ SD
<b>Age (in years)</b>		
15-24	59 (35.3)	28.75 $\pm$ 7.28
25-34	66 (39.5)	5
35-44	42 (25.1)	
<b>Sex</b>		
Male	161 (96.4)	
Female	6 (3.6)	
<b>Marital status</b>		
Married	110 (65.9)	
Unmarried	57 (34.1)	
<b>Education</b>		
Illiterate	4 (2.4)	
Primary	72 (43.1)	
Secondary	89 (53.3)	
Graduate	2 (1.2)	
<b>Monthly Income (BDT)</b>		
2000-6000	19 (11.4)	
7000-11000	74 (44.3)	10732.93 $\pm$
12000-16000	70 (41.9)	
17000-21000	4 (2.4)	3803.683
<b>Monthly Family Income (BDT)</b>		
5000-10000	19 (11.40)	18281.44 $\pm$
11000-16000	49 (29.3)	5666.309
17000-22000	58 (34.7)	
23000-28000	35 (21.0)	
29000-34000	6 (3.6)	
<b>Number of Family Members</b>		
1-4	47 (28.1)	
5-8	114 (68.3)	
9-12	6 (3.6)	
<b>Living Condition</b>		
Kacha House	3 (1.8)	
Tin Shed with wall	87 (52.1)	
Slum	57 (34.1)	
Building	20 (12.0)	
<b>Living distance from workplace</b>		
Far away	6 (3.6)	
5 miles or less	7 (4.2)	
1 miles or less	40 (24.0)	
Around	114 (68.3)	
<b>Working Years in tannery</b>		
2-6	92 (55.1%)	
7-11	50 (29.9%)	
12-16	15 (9%)	
17-21	5 (3%)	
22-26	5 (3%)	

Income ranged from 2,000 to 34,000 BDT per month and almost 35% of the family had 17,000 to 22,000 BDT per month and 114 (68.3%) of the respondents had 5-8 family members. Approximately 53% of the workers had secondary education, 43% had primary education, only 1% were graduated and 2% were illiterate. The mean ( $\pm$  SD) duration of work (years) was 7 ( $\pm$  5.054), and median duration was 6 years. Almost 114 (68.3%) lived around the tannery factory and about 40 (24%) lived one mile or less distance from the tannery factory (Table 1). Almost 132 (79%) of the respondents were smoker and 76 (57.6%) were smoking for >5 years. The minimum number of cigarette they were taking per day was 1-6 for 12.1% of respondents and 25-30 cigarettes for 5.3% of respondents per day. 28.0% of the respondents had been taking cigarette for 3-5 years and about 38.6% of respondents had been taking 13-18 numbers of cigarettes per day. The present study also shows that 66.5% of respondents chewed betel nut and among them about 44.3% of them chewed it occasionally. Also about 8.4% of respondents were found habituated to Gaza (marijuana) and about 2.4% of the respondent took it occasionally (Table 2).

**Table 2: Distribution of Life style related characteristics of leather tannery workers (respondents) of Hazaribagh, Dhaka-Bangladesh from 1<sup>st</sup> of May to 30<sup>th</sup> of August (n = 167)**

\*n=132

Variables	n (%)
<b>Smoking habit</b>	
Yes	128 (76.6)
No	35 (21.0)
Occasionally	4 (2.4)
<b>Duration of Smoking (Years)*</b>	
19	19 (14.4)
2-3	37 (28.0)
3-5	76 (57.6)
>5	
<b>Cigarette taken per day*</b>	
1-6	16 (12.1)
7-12	43 (32.6)
13-18	51 (38.6)
19-24	15 (11.4)
25-30	7 (5.3)
<b>Betel nut chewing</b>	
Yes	37 (22.2)
No	56 (33.5)
Occasionally	74 (44.3)
<b>Smoking Gaza (Marijuana)</b>	
Yes	14 (8.4)
No	149 (89.2)
Occasionally	4 (2.4)

**Table 3: Association between the socio-economic and life style related variables**

S. N	Variables	P-value	95% Confident level		
			Lower limit	Upper limit	
1	Monthly Family Income	Living Condition	0.002	0.008	0.064
2	Smoking Habit	Monthly Income	0.001	0.001	0.047
3	Duration of years of smoking	Breathing problem/ tightness of chest	0.000	0.000	0.018
4	Monthly Income	Duration of working years in tannery	0.000	0.000	0.018

The study reveals the significant association between the monthly family income and their living condition ( $P=0.002 < 0.05$ ). Also found smoking habit is significantly associated with monthly income ( $P=0.001 < 0.05$ ) and there found no relation between education qualification of the workers and their monthly income ( $P=0.132 > 0.05$ ) (Table 3).

## **DISCUSSION**

In this prevalence study, socio-economic conditions and life style related characteristics of tannery workers have researched. We looked particularly the associated variables that affect the socio-economic and life style related characters of the tannery workers of Hazaribagh, Dhaka. In the present study the mean age of the tannery workers was  $28.75 \pm 7.285$  years. The study in Turkey, the report of the Human Right Watch and another report from the Europe also supported the present study<sup>(8-10)</sup>. In this study out of 167 respondents 66% were married, majority of them had 6-10 years of education (secondary level 53.3%) and about 2.4% were illiterate, the income per month ranged from 2000 BDT- 21000 BDT (1 USD = 77.95 BDT). The majority of the workers had income of 7000-11000 BDT. The mean income per month was 10732.92 BDT and SD was  $\pm 3803.683$ . In a similar study in Pakistan-Karachi ( $n=641$ ), it was found that 51.3% were married and about 41.2% were illiterate as well 34.9% had 6-10 years of formal education. And the majority of the workers (48.7%) had monthly income of 3000-5000 rupees (1 USD =

60.25 Pak rupees)<sup>11</sup>. It showed that Bangladesh paid high salaries among the tannery workers than that of Pakistan and Bangladesh had high numbers of workers who are educated than that of Pakistan. This may be because of the population growth and the unemployment problem in Bangladesh which compelled those educated people to work in the tannery. Another article posted in The Guardian newspaper said that the workers in Hazaribagh were paid monthly wages of between 6000- 25000 BDT even though such salaried mean Labour costs in Bangladesh in about half of those in china and major competitor tannery of the south Asian state. And also there found the positive association between the duration of years of working in the tannery and monthly income ( $P\text{-value} = 0.000 < 0.05$ ) which may be the reason behind the difference in monthly income between the tannery workers of Bangladesh and Pakistan<sup>12</sup>. Also this study revealed the monthly income is not associated with their educational qualification ( $P\text{-value} = 0.132 > 0.05$ ) but with the years of experience.

The variation had found in the living condition between the Pakistani tannery worker and tannery workers of Bangladeshi which may be due to the Tin Shed with wall houses was whether defined and/or included in the category of Pacca house in the study of Pakistan<sup>11</sup>. Almost about 75% of the workers have been working in the tannery for not more than 11 years in this study. Another similar study by CONTANCE in Europe revealed the similar result which supports this study<sup>10</sup>. Majority of tannery workers

(about 79%) found active smoker and more than half of them were smoking for at least 5 years or more. The similar study in Turkey showed the high prevalence of smoker among the tannery workers<sup>8</sup>. This study also reveals the majority of the tannery workers chewed betel nut and some workers were even found habituated with Gaza (marijuana).

## **CONCLUSION**

The socio-economic condition and life style related characters were associated with each other. Majority of them lived in the slum area within a mile or less from the working area which suggested that they had poor living condition and were in poor health due to their own bad habits and work related condition. More studies are needed to confirm the study findings and to protect the health and living condition of the tannery workers of Hazaribagh, Dhaka.

## **LIMITATION OF STUDY**

The limitation of our study was that it was cross-sectional and therefore causality cannot be determined. The study population included workers from some selected tanneries; therefore, it may not be represented of all the workers of the tannery of Dhaka city and the situation may provide differing results if another timeframe had been chosen. Small sample size was also a major limitation of the study.

## **ACKNOWLEDGEMENT**

Our special thanks to Dr. MA Sheikh and Dr. HS Mahmud for their generous help in providing support and their guidance during the study. And our thanks to all the officers, workers and management teams of those selected tanneries for their generous support and help.

## **REFERENCES**

1. Economy of Bangladesh. [Online 2013]. [cited 23<sup>rd</sup> December 2013]; Available from: URL : [http://en.wikipedia.org/wiki/Economy\\_of\\_Bangladesh](http://en.wikipedia.org/wiki/Economy_of_Bangladesh)
2. Maruf. A. A, Moosa. M. M, Rashid. S. M. M, Khan. H, Yeasmin. S. Culture dependent molecular analysis of bacterial community of Hazaribagh tannery exposed in Bangladesh. *Agric. Food Anal. Bacteriol. J* 2012; 2:132-138.
3. Aulakh R. Bangladesh's tanneries make the sweatshops look good. [Online sat Oct 12 2013]. [Cited 24<sup>th</sup> December 2013]. Available from: URL:[http://www.thestar.com/news/world/clothes/ourback/2013/10/12bangladeshs\\_tanneries\\_make\\_the\\_sweatshops\\_look\\_good.html](http://www.thestar.com/news/world/clothes/ourback/2013/10/12bangladeshs_tanneries_make_the_sweatshops_look_good.html)
4. Zahid. A, Balke. K, Hassan. M, Flegr. M. Evaluation of aquifer environment under Hazaribagh leather processing zone of Dhaka city. *Environ. Geol. J* 2006; 50:495-504.
5. Dhaka Tribune: Hazaribagh named 5<sup>th</sup> most polluted place on earth. [Online November 6, 2013]. [Cited 24<sup>th</sup> December 2013]. Available from: URL: <http://www.dhakatribune.com/environment/2013/nov/06/hazaribagh-named-5th>

- most-polluted-place-earth
6. Barton C. Workers pay high price at Bangladesh tanneries. [Online Feb 18, 2011]. [Cited December 24, 2013]. Available from: URL: [http://www.google.com/hostednews/afp articleALeqM5iwSXXRPZbFIy4732S9g6EzJpy\\_jgdcId=CNG.c833fafc38d908d065aceed315285407.3a1](http://www.google.com/hostednews/afp articleALeqM5iwSXXRPZbFIy4732S9g6EzJpy_jgdcId=CNG.c833fafc38d908d065aceed315285407.3a1)
  7. Toxic Tanneries-The Health Repercussions of Bangladesh's Hazaribagh Leather. Human Rights Watch (USA); 2012 Oct: 46-47.
  8. Issever H, Ozdilli K, Ozyildirim B, Hapcioglu B, Ince N, Ince H, et al. Respiratory Problems in Tannery Workers in Istanbul [Serial online] 2007. [Cited 2013 April 5<sup>th</sup>]; 16:177-83.
  9. Toxic Tanneries-The Health Repercussions of Bangladesh's Hazaribagh Leather. Human Rights Watch (USA); 2012 Oct: 46-47.
  10. Social and Environmental Report: the European leather industry. Contance and industriAll; 2012.
  11. Shahzad K, Akhtar S, Mahmud S. Prevalence and determinants of asthma in adult male leather tannery workers in Karachi Pakistan: A cross sectional study. BMC Publ Health. 2006; 6:292.
  12. Burke J. Bangladesh factory tragedy gives hope to leather workers. The Guardian [Online, 2013 July 7]. [cited 2013 July 25]; Available from: URL: <http://www.guardian.co.uk/world/2013/jul/07/bangladesh-tanneries-human-rights-violations>

**ORIGINAL ARTICLE****Effect of Planned Teaching Intervention for Creating Awareness and Changing of Perceived Behavior on Female Foeticide among Pregnant Women in Belgaum, Karnataka, India****Meena Paudel<sup>1</sup>, Dr. Sangeeta Kharde<sup>2</sup>,**<sup>1</sup>Research Head Nursing, Helen Keller International , Nepalgunj, Nepal<sup>2</sup>Professor & HOD, Department of Obstetrics and Gynecology, K.L.E.University's Institute of Nursing Sciences, Belgaum, India**ABSTRACT**

**Background:** Men and woman are considered as an important asset of social and family setup. As per the population norms, the number of male and female ratio should be equal. Indian census report 1901 to 2011 showed that sex ratio was varied from 972 to 929 female per 1000 male. The declining sex ratio in the country has sent shockwaves across all section of society. Female feticide which is a main cause of reducing sex ratio is one of the most immoral crimes in the country. The desire for sons, whether strong or weak, is directly related to daughter discrimination and neglect. In India the practice of female foeticide has apparently continued even in the recent year. To reduce such crime, attitude of the people should be changed by creating awareness in the society.

**Methods:** The pre experimental one group pretest post test design study was done among 60 purposively selected first time registered pregnant women ANC OPD of KLE's Dr. Prabhakar Kore Hospital and MRC, Belgaum. Pre test post test information collection technique was applied using 30 items awareness questionnaire (structured) and 30 item perception related questionnaire on the basis of 5 point likert scale before and after teaching intervention. Ethical clearance was obtained from the Institutional Ethical committee, KLEU'S Institute of Nursing Sciences, and consent was taken before data collection. A planned teaching program was introduced as intervention. The changed score was analyzed using appropriate statistics and effectiveness was measured at p value < 0.05 as level of significance.

**Result:** All together 60 pregnant women were selected for the study purpose. Out of them almost 85% were of young age ( $\geq 20$  years) whereas, remaining 15% were teen agers (<20 years). Almost 2/ 3<sup>rd</sup> of them have bounded in married life within three years. About 56.67% did not have any children and 36.67% had a child. About 20% of the participants had good awareness, 60.33% had average and 10.67% had poor awareness towards female feticide at before intervention. After planned teaching intervention (post-test), all participants' awareness level changed into good. Similarly, 10% of the of them who perceived female feticide (FF) is bad was changed to 85% and 70% neutral mass perception before intervention was found to be changed positively (FF is bad practice) and reduced to 13.3%. The effectiveness of planned teaching intervention was statically significant (  $p=0.0001$ ).

**Conclusion:** The planned teaching intervention program is effective to reduce the female feticide. Hence such program should be implemented in the area where the sex selective abortion is high.

**Key words:** Teaching intervention, effect, awareness, perceived behavior, female feticide, pregnant women, Belgaum

**Corresponding Author****Meena Paudel**

Research Head Nursing, Helen Keller International , Nepalgunj, Nepal

Email ID: Meenapaudel012@gmail.com

## **INTRODUCTION**

Men and woman are considered as an important asset of social and family setup. To set a healthy society, male-female ratio is very important and crucial. As per the population norms, the number of male and female ratio should be equal<sup>1</sup>. Female foeticide is the act of aborting female fetus after detecting the gender of the unborn child either by safe method i.e. medical termination of the pregnancy or manual vacuum aspiration or dilatation and curettage or by unsafe method<sup>1</sup>. After conception the women who desire son will visit various private medical practitioners for sex determination and they undergo Ultrasonography (USG) or amniocentesis and if they found the growing fetus is female they seek to abort it because of son preference<sup>2</sup>.

According to Indian census report 1901 to 2011 the male female sex ratio is varied from 972 to 929 per 1000 male. The problem of male-female sex ratio was first cited in 1901 and it continued to drop and remained imbalanced.<sup>3</sup> The declining sex ratio in the country has sent shockwaves across all section of society. It seems that the socio-cultural factors are ruling in psyche of the people that they even accept wrong ways of life for the sake of social superiority. The desire for sons, whether strong or weak, is directly related to daughter discrimination and neglect. This results in the death of the daughter. In India the practice of female foeticide has apparently continued even in the recent year.<sup>4</sup>

The increasing imbalance between men and women is leading to many antisocial activities like illegal trafficking of women, sexual assault, polygamy, and dehumanization of the society. Female foeticide is one of the most immoral crimes in the country. Female foeticide is a serious problem of society and country. Health care professionals have great tasks in front of them to change mindset of society, to create a socio-cultural environment which is supportive for girls children survival and monitor the activities of society.<sup>5</sup> There are estimated 26 million legal and about 20 million illegal abortions occur in the world every year; most of these occur in developing countries. The census report of 2011 presents a grim reality indicating an imbalance in the ratio of female and male. It is a common fact that the sex ratio in India is lower than the international standard i.e., sex ratio in India is 934 while world average is 1000.<sup>6</sup> There are several explanations for the decreased sex ratio; one of the important reasons might be a female foeticide. The practice of female foeticide is a notion of gender discrimination which involves the son preference in India.<sup>5</sup> Despite the enactment of prenatal diagnostic technique (PNDT) act in 1984, the misuse of medical sciences has facilitated the rapid growth of this crime in the Indian society. The pregnant women are victimized to undergo sex determination by their husbands or families, sometimes the women themselves prefer male child. In India, culture is very strong and law is not so aggressive regarding illegal abortion.<sup>7</sup> Hence, the objective of the study was to evaluate the effectiveness of planned teaching program on aware-

ness and perception regarding female foeticide among pregnant women attending antenatal care outpatient department in a selected hospital Belgaum, Karnataka."

## **MATERIALS AND METHOD**

### **Design and setting**

In order to accomplish the objectives of the present study, an evaluative approach was adopted. The pre experimental one group pretest post test design was chosen. The study was conducted among the first time registered pregnant women attending the in Gynecology and Obstetrics (antenatal care outpatient) department (ANC OPD) of KLE's Dr. Prabhakar Kore Hospital and MRC, Belgaum. All together 60 pregnant women registered in the department were selected purposively.

### **Information collection tools and process**

Pre test post test information collection technique was applied using 30 items awareness questionnaire (structured) regarding female foeticide with covering Introduction of the female foeticide, factors responsible for the female foeticide, causes of female foeticide, consequences of the female foeticide, the sex determination test and prenatal diagnostic technique act, prevention of the female foeticide in India. For the 30 items on awareness of female foeticide, a score of '1' was awarded to correct response while a score of '0' was awarded to an incorrect response. Similarly, the perceived be-

havior regarding female foeticide was assessed using five point Likert scale with the score of 1 awarded to the option 'strongly disagree'. 2 for the option 'disagree', 3 for the option 'undecided', 4 for the option 'agree' and 5 for the option 'strongly disagree'. All together 30 items structured questionnaire with a minimum score of 30 and maximum score of 150 was used.

### **Ethical clearance**

Ethical clearance was obtained from the Institutional Ethical committee, KLEU'S Institute of Nursing Sciences, Belgaum. Permission was obtained from the Medical Director of the concerned Hospital. Written consent was taken from all participants with assuring confidentiality of their responses.

### **Hypothesis formulation and testing**

The research hypothesis was set as, "The mean post test awareness & perception scores of pregnant women will be significantly higher than their mean pre-test awareness & perception scores regarding female foeticide at 95% confidence interval".

### **Intervention**

For the planned teaching intervention, all the participants were divided two groups and two days (3 hours each day) planned teaching program was administered to the participants as a training with covering all aspects of female foeticide following the pretest on the same day for each group. The post test was carried



out after a period of 7<sup>th</sup> day of planned teaching intervention for each group on 21 January 2014 to 26 January 2014.

### Data analysis and interpretation

The data obtained was analyzed in terms of objective of the study by using descriptive and inferential statistics with the support of computer based data management software MS Excel and SPSS version 20. The baseline data were analyzed in terms of frequency, percentage, mean, and standard deviation. The awareness was categorized using mean(X) and standard deviation as; (SD+X) = Good awareness, (SD+X) – (SD-X) = Average score and (SD-X) = Poor awareness. Similarly perceived behavior was classified accordingly; (SD+X) = positive perception, (SD+X) – (SD-X) = Neutral perception and (SD-X) = negative perception. The effectiveness of planned teaching was calculated using paired ‘t’ test at the level p value < 0.05 as significant. All the results were presented in tabular, graphical and narrative form as per necessity.

## RESULTS

### Demographic features

Regarding the demographic features of the study participants, about 15(25%) of pregnant women belonged to 23-24 years of age group and 14 (23.33%) belongs to 21-22 years and 10(16.67% of pregnant women belonged to ≤20 years of age group. About 20(33.33%) pregnant women were

under graduation level of education and only one (1.67%) pregnant woman was illiterate. Out of 60 pregnant women 51(85%) were house wives and rest of others were government employee, self employee and private company employee. Total of 52(86.67%) pregnant women belonged to Hindu religion and 8 (13.33%) belonged to non Hindu religion. Total 22 (36.67%) of pregnant women had Rs<2000 monthly family income and 11(18.33%) had Rs 2001 to Rs 4000.

**Table 1: Demographic features of the participants**

Demographic variables	Frequency	Percentage	
<b>Age ( in completed years)</b>	≤20	10	16.67
	21-22	14	23.33
	23-24	15	25.00
	25-26	11	18.33
	≥27	10	16.67
	<b>Educational status of the women</b>	No formal education	1
Primary education		8	13.33
Secondary education		18	30
Higher secondary education		7	11.67
Graduation		20	33.33
Post graduation		6	10
<b>Occupation</b>	Government employee	3	5
	Private employee	3	5
	House wife	51	85
	Self employee	3	5
	<b>Type of religion</b>	Hindu	52
Non-Hindu		8	13.33
<b>Monthly family income</b>	<Rs 2000	22	36.67
	Rs. 2001 to 4000	11	18.33
	Rs. 4001 to 6000	12	20
	> Rs. 6000	15	25
<b>Type of family</b>	Nuclear family	22	36.67
	Joint family	38	63.33
<b>Place of residence</b>	Rural	32	53.33
	Urban	28	46.67

About 38(63.33%) belonged to joint family and 22 (36.67%) belonged to nuclear family. About 32 (53.33%) of pregnant women are from rural area and 28(46.67%) of pregnant women are from urban area and rest of others were from semi urban.(Table 1).

**Obstetric characteristics of the participants**

**Table 2: Obstetric characteristics of the participants**

Characteristics		Fre- quency	Percentage
<b>Age group of pregnancy</b>	Young age	50	83.33
	Teen age	10	16.67
<b>Duration of married life</b>	≤3years	40	66.67
	≥4years	20	33.33
<b>Number of children</b>	0	34	56.67
	1	22	36.67
	≥2	4	6.66
<b>Gravida of the women</b>	Primi	33	55
	Multi	27	45

Regarding the obstetric features of the participants, about 40(66.67%) of pregnant women finished 3years or less years of their married life and 20 (33.33) of pregnant women finished four years of their married life. Pregnant women 34(56.67%) did not have any children and 36.67% had only one child. Total 33(55%) of pregnant women are primi-gravida and 27(45%) of multi-gravida. ( Table 2).

**Change in level of awareness**

Regarding the changing level of awareness among the 60 participants before and after intervention, the

study revealed that about 20% had good awareness, 60.33% had average awareness and 10.67% have poor awareness at before intervention towards female foeticide. But after planned teaching programme (post-test), all of the women (100%) had good awareness towards female foeticide. The planned teaching intervention brought significant change (p=0.001) in awareness. ( Table 3)

**Table 3: Distribution of awareness scores among pregnant women regarding female foeticide. (n=60)**

Awareness score	Pretest		Post test		P value
	Fre- quency	Per- cen- tag- e	Fre- que- ncy	Per- cent- age	
<b>Good (&gt;18)</b> (X + SD)	12	20	60	100	0.001
<b>Average (11-17)</b> (X -SD) to (X + SD)	38	60.33	0	0	
<b>Poor (&lt;11)</b> (X - SD)	10	10.67	0	0	

**Change in level of perception**

Regarding the change in perceived behaviour on female foeticide among 60 pregnant women in the pre-test, only 10% of the participant perceived it has negative effect ie. 10% perceived it positively i.e., it was changed into 81.17% after intervention. Similarly the neutral score has been changed from 65.0%

to 13.3% and the negative perception (Feticide has no negative effect) changed from 20% to 5 % (post test). This showed that the planned teaching programme had significant effective ( $p=0.001$ ) for changing the perceived behavior. (Table 4).

**Table 4: Distribution of perception scores among pregnant women regarding female foeticide (n=60)**

Level of perception	Pre test result		Post test result		P value
	Fre-quency	Percent	Fre-quency	Percent	
<b>Positive (&gt;122) (X + SD)</b>	9	15.0	49	81.7	0.001
<b>Neutral (102-122) (X -SD) to (X + SD)</b>	39	65.0	8	13.3	
<b>Negative (&lt;102) (X - SD)</b>	12	20.0	3	5.0	

## DISCUSSION

In the present study the findings revealed that more than four fifth (83.33 percent) of pregnant women belonged to the age group of 20-30 years, while 16.67 percent belonged to adolescent age group (<20 years). This finding was somehow supported by a similar study conducted by Shidhye PR, Giri PA, Nagaonkar SN, Shidhye RR.<sup>8</sup> The findings showed that nearly three quarter (73.4 percent) women were in the age group of 20-30 years and 12.6 percent were teen agers. Regarding gravida in the present study more than half of the participants

(55 percent) were of primi-gravida. This finding was somehow contrast with the findings of similar study carried out by Shukar-ud-din S, Ubaid F, Shahani E, Saleh F.<sup>9</sup> The findings showed that almost one third of the pregnant women (29.6 percent) were primi-gravida while 70.4 percent were multi-gravida. The present study revealed that about one third (33.33percent) of pregnant women had under graduation level of education and similar Number (30 percent) had secondary level, whereas primary level of education was 13.33 percent. Very few participants (1.67 percent) were illiterate. The similar findings were found in the study done by Donald SC, Sonaliya KN, Garsondiya J.<sup>10</sup> The findings showed that half of the pregnant women had secondary level of education, a quarter had primary level and 16.5 percent had graduation. In the present study about 85 percent of participants were house wives and five percent were private employed. The finding was in-line with the study conducted by Donald SC, Sonaliya KN, Garsondiya J. The findings showed that 78 percent of pregnant women were house wives and 12.5 percent were private employed.<sup>10</sup>

The present study revealed that almost 87 percent of the pregnant women belonged to Hindu religion. Similar findings were found in the study done by Donald SC et al. The findings showed that almost 95.5 percent of pregnant women were belonged to Hindu religion.<sup>10</sup> Present study showed that almost half/half of the participants were from rural and urban area respectively. The finding was differing with the

finding of the similar study carried out by Kansal R, Khan AM, Bansal R, Parashar P. The findings showed that the participant from urban and rural in the ratio of 1:3 i.e., one quarter from urban and three quarters from rural area.<sup>11</sup>

Present study showed that almost 3/5<sup>th</sup> of the participant had average level of awareness score on female foeticide whereas, the good level of awareness score in one-fifth of the participants. The finding was matched with the similar study findings provided by Christian D et al. Regarding the perception scores on female foeticide, almost seven out of ten of the pregnant women had average perception scores, one-fifth had poor perception scores and one out of ten had good perception scores on the topic of female foeticide. The finding was in-line with the finding of similar study conducted by Christian D Et al.<sup>10</sup>

While assessing the effectiveness of planned teaching programme on female foeticide, the pre and post test data analysis on awareness scores revealed that mean post test awareness score ( $26.53 \pm 1.40$ ) was higher than the mean pretest awareness score ( $12.03 \pm 4.03$ ), ( $p < 0.00001$ ). The finding was supported by the study finding of Rathod S. The finding showed that the mean post test score ( $37.12 \pm 4.32$ ) was higher than mean pretest knowledge score ( $17.76 \pm 4.32$  at ( $p < 0.05$ )).<sup>10</sup>

## **CONCLUSION**

The Study findings showed that there is a statistically significant difference in the mean post test

scores as compared to mean pretest scores of awareness and perception regarding female foeticide among pregnant women. This study result supports that the use of planned teaching programme is an effective intervention to gain awareness and improve the perception among pregnant women. The sensitization regarding the female foeticide aspects and PNDT act and selective sex determination using unethical practices will be prevented.

## **REFERENCES**

1. Banashri B, Savanoor BA. Female foeticide: Need to change the mindset of people. QIMRJ 2012 Dec; 1(2): 164-68.
2. Ahmad N. Female foeticide in India. Issues Law Med 2010; 26(1): 13-29.
3. Rao R. Stop foeticide. Social Welfare 2012; 48 (8): 27-35.
4. Clelland, Darnell T. Factors leading to sex selective abortion in Canada: a preliminary investigation. Research project. 8 April 2013.
5. Barot S. A problem- and-solution Mismatch: Son preference and Sex-Selective Abortion Bans. GPR 2012; 15(2): 127-30.
6. Zaman W, Chaudhury RH. Engendering population census in South and West Asia. UNFPA: 2004 Mar.
7. Boughton J. Female foeticide: The ethical issues of ultrasound in India and China. Med Page Today,s: 2013 May 06.
8. Shidhaye PR, Giri PA, Nagaonkar SN, Shidhaye

- RR. Study of knowledge and attitude regarding prenatal diagnostic techniques act among the pregnant women at a tertiary care teaching hospital in Mumbai. *J Edu Health Promot* 2012 Oct; 1(6): 36-40.
9. Shukar-ud-din S, Ubaid F, Shahani E, Saleh F. Reason for disclosure of gender to pregnant women during prenatal ultrasonography. *Int J Women's Health* 2013; 5(3): 781-85.
10. Christian DS, Sonaliya KN, Garsondiya J. Pregnant women's awareness for saving the girl child-A study from suburban population of Ahmedabad City, Gujarat, India. *J Phram Biomed Sci.* 2013 Sep; 34(34): 1720-23.
11. Kansal R, Maroof KA, Bansal R, Parashar P. A hospital-based study on knowledge, attitude and practice of pregnant women on gender preference, prenatal sex determination and female feticide. *Indian J Public Health* 2010; 54(4): 209-12.
12. Rathod S. A study to evaluate the effectiveness of planned teaching programme on knowledge regarding prevention of unsafe abortion among ANM student in selected institutions at Bijapur. [PG Nursing]. Bangalore: RGUHS; 2013.

## REVIEW ARTICLE

**Weighted Proportion and Associated Factors of MDR-TB in Developing Countries:  
A Systematic Review and Meta-analysis**

<sup>1</sup>Chiranjivi Adhikari, <sup>2</sup>Binod Regmi, <sup>3</sup>Alina Lamsal, <sup>3</sup>Sabina Bhattarai, <sup>3</sup>Swati Khanal, <sup>3</sup>Ranjan Sharma, <sup>3</sup>Anita Thapa

<sup>1</sup>Lecturer, Public Health Program, School of Health & Allied Sciences (SHAS), Pokhara University

<sup>2</sup>Treasurer, Nepal Public Health Association (NEPHA)

<sup>3</sup>Bachelor of Public Health Graduate, 4<sup>th</sup> Batch, Public Health Program, SHAS, Pokhara University

**ABSTRACT**

**Background:** Multidrug-resistant Tuberculosis (MDR-TB) is caused by the infection of Mycobacterium Tuberculosis (MTB) resistant to at least one of the two most potent anti-TB drugs naming isoniazid and rifampicin. MDR-TB has become more prevalent in the last 15-20 years and poses formidable challenges in public health. The study aimed to calculate the weighted proportion of MDR-TB and its associated factors in developing countries.

**Methods:** The abstracts and full articles published in Pub-Med and Google Scholar search engine published from 1998 and 2012 AD were searched. The full access of the articles was completed through HINARI and google scholar. We calculated weighted proportion and standard error of proportion with 95% CI in MS-Excel 2007. We listed factors affecting MDR TB as  $p < 0.05$ . Fifty full articles were accessed but only 22 met the inclusion criteria.

**Interpretation and conclusion:** Weighted proportion of MDR TB was calculated as 6.45% (95% CI, 6.26-6.64); ranging from 0.5% in Netherlands to 49% in Iran. The factors associated with MDR TB are weight, history of substance use, housing conditions, delay in treatment, gender, treatment category, history of treatment.

**Corresponding Author**

**Chiranjivi Adhikari**

Lecturer, Public Health Program, SHAS, Faculty of Health Sciences, Pokhara University, Kaski, Nepal

Email ID: chiranadhikari@gmail.com

Contact: +977-9851192200

## INTRODUCTION

Tuberculosis (TB) is an air-borne bacterial disease that usually affects the lungs. However, it can also affect other parts of the body such as brain, kidneys, or the spine. In most cases, TB is a curable disease; however, it becomes cumbersome when resistance develops. Multidrug-resistant TB (MDR-TB) is caused by *Mycobacterium Tuberculosis* (MTB) resistant at least to one of isoniazid and rifampin; the two most potent anti-TB drugs. Extensively drug resistant TB (XDR-TB) is a rare type of MDR TB that is resistant to isoniazid and rifampicin, plus any fluoroquinolone and at least one of three injectable second-line drugs (i.e., amikacin, kanamycin, or capreomycin). Because XDR-TB is resistant to the most potent anti-TB drugs, patients are left with treatment options that are much less effective. XDR-TB is of special concern for persons with HIV infection or other conditions that can weaken the immune system. These persons are more likely to develop TB once they are infected, and also have a higher risk of death once they develop TB. The aim of the study is to calculate the weighted proportion of MDR-TB and its associated factors in developing countries.

Drug-susceptible TB and drug-resistant TB are spread the same way. Resistant TB bacteria are put into the air when a person with TB coughs, sneezes, speaks, or sings. These bacteria can float in the air for several hours, depending on the environment. Persons who breathe in the air containing these TB

bacteria can become infected.

Resistance to anti-TB drugs can occur when these drugs are misused or mismanaged. Examples include when patients do not complete their full course of treatment; when health-care providers prescribe the wrong treatment, the wrong dose, or length of time for taking the drugs; when the supply of drugs is not always available; or when the drugs are of poor quality.<sup>27</sup>

## MATERIALS AND METHOD

### Search strategy and selection criteria

We searched abstracts in Pub Med and Google Scholar for published articles between 1998-2012. The abstracts and articles were searched, retrieved and managed by using Endnote (version X3) software. The key words entered were 'prevalence', 'MDR TB', 'developing countries', 'proportion of MDR TB in India', 'factor associated with MDR TB in developing countries', 'Odds ratio of MDR TB in developing countries', 'MDR TB turkey or Bangladesh'(Tab. 1).

**Table 1. Key words and number of hits for final retrieved articles**

S N	Search term and number of final retrieved articles	No. of articles selected
1	'Prevalence' AND 'MDR TB' AND 'developing countries'	10
2	Proportion of MDR TB in India(	6
3	Factor associated with MDR TB in developing countries	2
4	Odds ratio of MDR TB in developing countries	2
5	'MDR TB' AND 'Turkey' OR 'Bangladesh'	2

### Screening and data extraction

Only published articles in English language and based on observational studies carried out among patient of pulmonary TB of developing countries were reviewed. Fourteen cross-sectional descriptive studies, 4 retrospective and 4 prospective studies were included. The data extraction was done manually and filled in the table (table 1 and fig. 1).

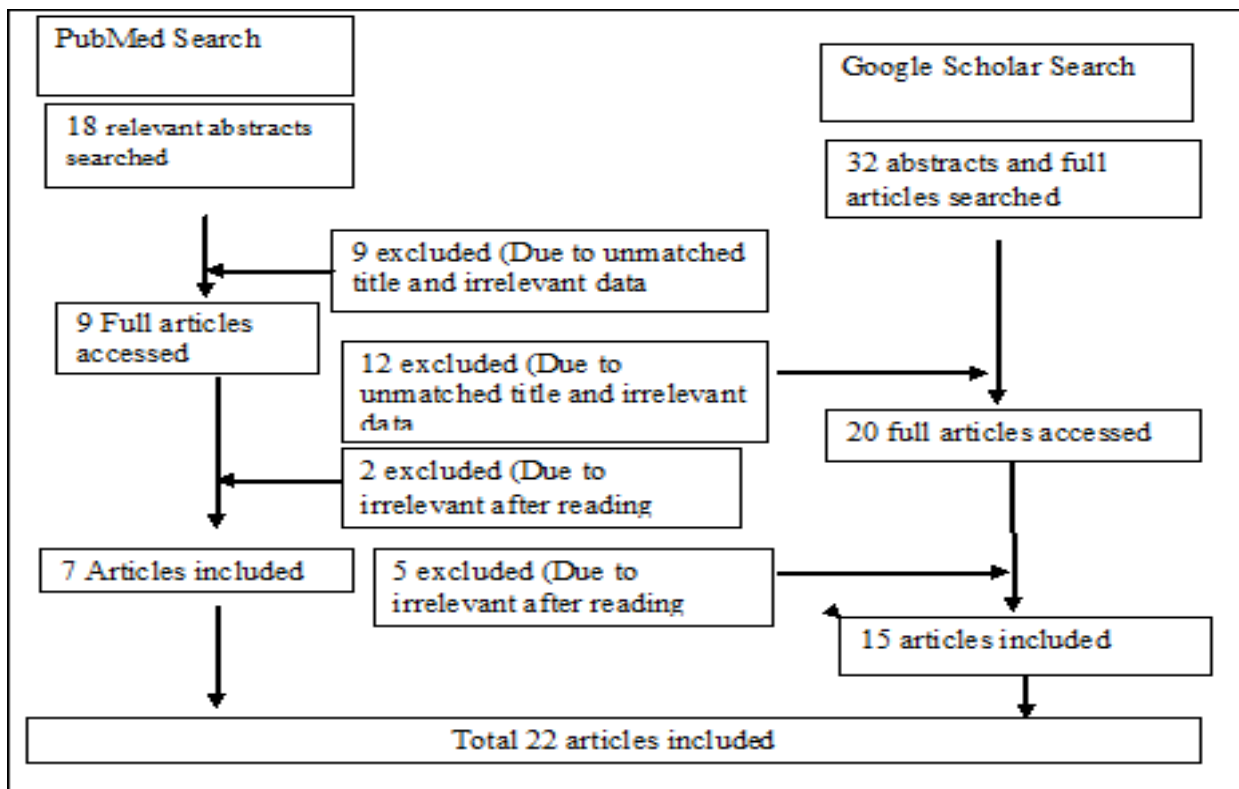


Fig. 1. Data extraction flow chart

### Statistical analysis

The weighted percentage was calculated from the percentages of different 22 original studies conducted in 15 developing countries. The 95% CI was calculated on the basis of standard error of percentages of 22 sample studies. Both weighted and 95% CI of percentages were calculated in MS-Excel 2007.

### RESULTS

The weighted proportion of studies conducted in developing countries like India, Bangladesh, Ethiopia, Indonesia, Netherlands, Pakistan, Georgia, turkey South Africa, Iran, Poland, Thailand, Russia and Myanmar.



Weighted proportion is the summary proportion calculated in MS-Excel 2007. The weighted proportion of MDR TB was 6.45% (95% CI, 6.26-6.64); ranging from 0.5% in Netherlands to 49% in Iran (table 2).

**Table 2: Weighted proportion of MDR TB in developing countries**

S N	Article	Place	Study year	Study population	Sample size	Study design	Prevalence	SE
1	Hanif M <sup>1</sup> 2006	New Delhi India	2006 May to July	Mycobacterium tuberculosis isolates from previously treated cases	2800	Retrospective study	47.1%	0.00943 95% CI(47.08-47.12)
2.	Kandi S <sup>2</sup> 2013	Hyderabad, India	December 2010 to March 2011.	patients attending the out-patient department	100	An analytical, observational, prospective cohort study	28%	0.045 95% CI(27.91-28.08)
3.	Sethi S <sup>3</sup> 2013	North india	2010	Newly diagnosed cases	121	Sputum and blood specimens analysis	9.9%	0.027 95% CI(9.84-9.95)
4.	Javaid A <sup>4</sup> 2008	Pakistan	2009	untreated newly diagnosed pulmonary TB patients	672	Cross-sectional study, sputum samples	1.8%	0.005 95% CI(1.78-1.81)
5	Surucuoglu S <sup>5</sup> 2008	Turkey	2005 July to august	Pulmonary TB patients	355	Analysis of demographic and clinical data (hospital based)	7.3%	0.0138 95% CI(7.27-7.32)
6	Churchyard G <sup>6</sup> 2000	South Africa	1 July 1993 to 30 June 1997	Patient of M. tuberculosis pulmonary disease	2241	Cross sectional study	2.8%	0.0035 95% CI(2.79-2.80)
7	Ramachandran <sup>7</sup> 2009	Gujrat India	2005	isolates from new patients,	1571	cross-sectional community-based descriptive study	2.4%,	0.0039 95% CI(2.39-2.40)
8	Anuradha B <sup>8</sup> 2005	Hyderabad India	2001-2003	retreatment cases	909	retrospective analysis of the data in a tuberculosis unit	2%	0.0046 95% CI(1.99-2)
9	Phyu S <sup>9</sup> 2007	Myanmar-Yangon	-August and October-December 2002.	sputum smear positive TB patients who attended National TB Programme	259	Community based cross sectional descriptive study	4.2%	0.0125 95% CI(4.17-4.22)

10	Habeenzu C <sup>10</sup> 2008	Lusaka Zambia	Between January 2000 and July 2001	Prisoners	6118	a case-finding study	9.8%	0.0038 95% CI(9.79-9.80)
11	Tabarsi P <sup>11</sup> 2008	Iran	2003-2005	Patients suspected of having MDR-TB (patients with a history of CAT II regimen)	53	Hospital based descriptive study	49%	0.069 95% CI(48.86-49.13)
12	Jugheli L <sup>12</sup> 2003	Georgia	2001-2003	prisoners with pulmonary tuberculosis (PTB).	270	Retrospective evaluation of resistance	14.4%	0.021 95% CI(14.35-14.44)
13	Lambregts <sup>13</sup> 1998	Netherlands	1993-1994	Dutch pulmonary patients	1836	Retrospective	0.5%	0.0016 95% CI(0.49-0.50)
14	Khaleu <sup>14</sup> 2005	Bangladesh	2001-2003	Urban and rural TB patients	10600	Cross sectional	5.5%	0.00070 95% CI(5.49-5.50)
15	Klatt, M <sup>15</sup> 2003	Poland	2000	Pulmonary TB patients	3725	Prospective	1.2%	0.0018 95% CI(1.19-1.20)
16	Kelly, PM <sup>16</sup> 2006	Indonesia	2006	Pulmonary TB patient	107	Cross sectional	2%	0.0135 95 CI(1.97-2.02)
17	Kaushi 2011 <sup>17</sup>	New Delhi India	2008-09	Pulmonary TB patients	218	Prospective, observational study design	1.1%	0.0071 95% CI(1.08-1.11)
18	M Rudy <sup>18</sup> 2004	Russia	2001-02	Prisoners and civilians	600	Cross sectional study design	22.7%	0.0171 95% CI(22.66-22.73)
19	Abebe G <sup>19</sup> 2010	Ethiopia	2010-11	18 years and above	136	Cross sectional study design	1.5%	0.0104 95% CI(1.47-1.52)
20	Rechaipichitkul W <sup>20</sup> 2002	Thailand	1995-2000	17 -64 yrs	899	Cross sectional study design	2.4%	0.0051 95% CI(2.38-2.41)
21	Lomtadze N <sup>21</sup> 2009	Georgia	2005-06	25 above	1314	Population based study	15%	0.0099 95% CI(14.98-15.01)
22	Rakesh lodha <sup>22</sup> 2004	South africa	Under five children	1992-1993	338	Prospective study	1%	0.0054 95% CI(0.98-1.01)
Total sample size, calculated pooled SE and weighted proportion with 95% CI					130642	SE=0.188426	6.45	95% CI(6.26-6.64)

The weighted proportion of MDR TB was calculated as 6.45. Similarly, pooled standard error (SE) was calculated as 0.188426 ( $=0.0961*1.96$ ) and 95% CI as 6.26-6.64 (Table 3)

Weighted proportion of MDR TB was calculated by multiplying the given sample size with corresponding proportion (prevalence) and summation of the weighted proportion was done and finally the result was divided by the total sample size of MDR TB. Alcoholism, substandard housing condition, year of enrollment for treatment, gender, weight, treatment category and history of treatment were found to be higher odds of MDR TB (table 3).

**Table 3: Factors affecting MDR TB (p=less than 0.05)**

SN	Variables	Reference category	Odds ratio (min-max)	No. of studies	Study references
1.	Substance use	Alcoholism	1.56–5.62	2	23,24
2.	Housing conditions	Sub standard	1.07–3.11	1	24
3.	Year of enrollment	Sooner or later	1.09–2.41	1	24
4.	Gender	Male and female	1.5 – 8.2	2	21,23,24
5.	Treatment category	Regular and irregular	2.5-7.4	1	23
6.	Weight	Less than 35	1.9-7.8	1	23
7.	History of Treatment	Previously received	3.03-12.49	3	14,21,23

## DISCUSSION

The review has evaluated a limited number of studies published in English during 1993-2011 AD. Altogether 22 studies have mentioned the proportion of MDR TB utilization and different factors associated with it. Important role of alcoholism, substandard housing condition, year of enrollment for treatment, gender, weight, treatment category and history of treatment were seen. Out of 22 reviewed articles, the weighted MDR TB proportion was calculated 6.45 (95% CI, 6.26-6.64) and ranged from 0.5% in the Netherlands to 49% in Iran. Substance abuse, treatment category, gender, history of treatment and weight are the strong factors having odds ratio above five whereas substandard housing condition and year of enrollment having above three odds ratio show up as moderate factors.

According to the review article conducted in the Gulf Cooperation Council (GCC; Saudi Arabia, Qatar, Bahrain, Kuwait, Oman, United Arab Emirates) between the year 2002 to 2013, the overall prevalence was seen to be 4%.<sup>26</sup> According to the review article implicating a study conducted in Canada, 21 countries were included in the study where the odd ratio for male gender was found to be 0.46–0.82, for alcohol abuse 0.39–0.63 and low BMI 0.23–0.72<sup>25</sup>. The result shows that prevalence of MDR TB is low in developed countries than in developing countries.

## **CONCLUSION AND INTERPRETATION**

MDR-TB is a large public health burden in the developing countries. Poor socioeconomic status is considered as a major factor responsible for MDR TB. In general financial struggle, health center distance, transport facilities, alcoholism, stigma, inadequate education, traditional beliefs, private clinics, Substandard housing, smoking, imprisonment, cavitations in chest are additional factors for MDR-TB.

Rates of first line drug resistance are high, particularly in prisoners and previously treated cases. TB control programs should initially focus on standardized treatment to maximize cure, combined with measures to reduce institutional TB spread (particularly in prisons) coupled with early diagnosis of MDR-TB to reduce the spread and development of resistance. The epidemiological situation

varies greatly across countries, principally due to poor treatment practices and poor implementation of control programs in the past-and even today, to a lesser degree-and recent data have suggested that national TB programs that use existing drugs efficiently can postpone and even reverse the MDR-TB epidemic.

## **CONTRIBUTORS**

CA developed the review guideline. AL, SB, SK, AT and RS retrieved the articles; extracted the data; calculated the summary proportion and SE; and prepared the draft manuscript. CA and BR reviewed and prepared the final manuscript.

## **ACKNOWLEDGEMENTS**

We duly acknowledge to all the authors of retrieved original articles and surveys.

## **CONFLICTS OF INTEREST**

We declare that we have no conflict of interest.

## **REFERENCES**

1. Hanif M, Malik S, Dhingra VK. Acquired drug resistance pattern in tuberculosis cases at the State Tuberculosis Centre, Delhi, India. *Tuberculosis (Edinb)*. 2006 May-Jul;86(3-4):319-23.
2. Kandi S, Prasad SV, Sagar Reddy PN, Reddy VC, Laxmi R, Kopuu D, et al. Prevalence of multidrug resistance among retreatment pulmonary tuberculosis cases in a tertiary care hospital, Hyderabad, India. *Lung India*. 2013 Oct;30(4):277-9.

3. Sethi S, Mewara A, Dhatwalia SK, Singh H, Yadav R, Singh K, et al. Prevalence of multidrug resistance in Mycobacterium tuberculosis isolates from HIV seropositive and seronegative patients with pulmonary tuberculosis in north India. *BMC Infect Dis.* 2013;13:137
4. Javaid A, Hasan R, Zafar A, Ghafoor A, Pathan AJ, Rab A, et al. Prevalence of primary multidrug resistance to anti-tuberculosis drugs in Pakistan. *Int J Tuberc Lung Dis.* 2008 Mar;12(3):326-31.
5. Surucuoglu S, Ozkutuk N, Celik P, Gazi H, Dinc G, Kurutepe S et al. Drug-resistant pulmonary tuberculosis in western Turkey: prevalence, clinical characteristics and treatment outcome. *Int J Tuberc Lung Dis.* 2008 Mar;12(3):326-31.
6. Churchyard G, Corbett E, Kleinschmidt I, Mulder D, De Cock K. Drug-resistant tuberculosis in South African gold miners: incidence and associated factors. *The International Journal of Tuberculosis and Lung Disease.* 2000;4(5):433-40.
7. Ramachandran R, Nalini S, Chandrasekar V, Dave PV, Sanghvi AS, Wares F. et al. Surveillance of drug-resistant tuberculosis in the state of Gujarat, India. *Int J Tuberc Lung Dis.* 2009 Sep;13(9):1154-60.
8. Anuradha B, Aparna S, Hari Sai Priya V, Vijaya Lakshmi V, Akbar Y, Suman Latha G et al. Prevalence of drug resistance under the DOTS strategy in Hyderabad, South India, 2001-2003. *Ann Saudi Med.* 2005 Jul-Aug;25(4):313-8.
9. Phyu S, Lwin T, Ti T, Maung W, Mar WW, Shein SS, Grewal HM. Drug-resistant tuberculosis in Yangon, Myanmar. *Int J Tuberc Lung Dis.* 2007 Nov;11(11):1216-20.
10. Habeenzu C, Mitarai S, Lubasi D, Mudenda V, Kantenga T, Mwansa J, Tuberculosis and multidrug resistance in Zambian prisons, 2000-2001. *Respirology.* 2008 Jan;13(1):108-11.
11. Tabarsi P<sup>1</sup>, Nooraki A, Mirsaeidi M, Amiri M, Baghaei P et al. Representative drug susceptibility patterns for guiding design of re-treatment regimens for multidrug-resistant tuberculosis in Iran. *Int J Tuberc Lung Dis.* 2008 May;12(5):561-6
12. Jugheli L, Rigouts L, Shamputa IC, Bram de Rijk W, Portaels F. et al. High levels of resistance to second-line anti-tuberculosis drugs among prisoners with pulmonary tuberculosis in Georgia. *Int J Tuberc Lung Dis.* 2003.
13. Lambregts-van Weezenbeek C, Jansen H, Nagelkerke N, Van Klingeren B, Veen J. Nationwide surveillance of drug-resistant tuberculosis in the Netherlands: rates, risk factors and treatment outcome. *The International Journal of Tuberculosis and Lung Disease.* 1998;2(4):288-95.
14. Zaman K, Rahim Z, Yunus M, Arifeen SE, Baqui AH, Sack DA, et al. Drug resistance of Mycobacterium tuberculosis in selected urban and rural areas in Bangladesh. *Scandinavian journal of infectious diseases.* 2005;37(1):21-6.
15. Augustynowicz-Kopec E, Zwolska Z, Jaworski A, Kostrzewa E, Klatt M. Drug-resistant tuberculosis in Poland in 2000: second national survey and

- comparison with the 1997 survey. *The International Journal of Tuberculosis and Lung Disease*. 2003;7(7):645-51.
16. Kelly PM, Ardian M, Waramori G, Anstey N, Syahrial H, Tjitra E, et al. A community-based TB drug susceptibility study in Mimika District, Papua Province, Indonesia. *The International Journal of Tuberculosis and Lung Disease*. 2006;10(2):167-71.
17. Sharma SK, Kaushik G, Jha B, George N, Arora S, Gupta D, et al. Prevalence of multidrug-resistant tuberculosis among newly diagnosed cases of sputum-positive pulmonary tuberculosis. *Indian Journal of Medical Research*. 2011;133(3):308-11.
18. Ruddy M, Balabanova Y, Graham C, Fedorin I, Malomanova N, Elisarova E, et al. Rates of drug resistance and risk factor analysis in civilian and prison patients with tuberculosis in Samara Region, Russia. *Thorax*. 2005;60(2):130-5.
19. Abebe G, Abdissa K, Abdissa A, Apers L, Agonafir M, de-Jong BC, et al. Relatively low primary drug resistant tuberculosis in southwestern Ethiopia. *BMC research notes*. 2012;5(1):225
20. Reechaipichitkul W. Multidrug-resistant tuberculosis at Srinagarind Hospital, Khon Kaen, Thailand. *Southeast Asian journal of tropical medicine and public health*. 2002;33(3):570-4.
21. Lomtadze N, Aspindzelashvili R, Janjgava M, Mirtskhulava V, Wright A, Blumberg HM, et al. Prevalence and risk factors for multidrug-resistant Tuberculosis in Republic of Georgia: a population based study. *The international journal of tuberculosis and lung disease: the official journal of the International Union against Tuberculosis and Lung Disease*. 2009;13(1):68.
22. Kabra S, Lodha R, Seth V. Some current concepts on childhood tuberculosis. *Indian Journal of Medical Research*. 2004;120:387-97.
23. Santha T, Garg R, Frieden T, Chandrasekaran V, Subramani R, Gopi P, et al. Risk factors associated with default, failure and death among tuberculosis patients treated in a DOTS programme in Tiruvallur District, South India, 2000. *The International Journal of Tuberculosis and Lung Disease*. 2002;6(9):780-8.
24. Franke MF, Appleton SC, Bayona J, Arteaga F, Palacios E, Llaro K, et al. Risk factors and mortality associated with default from multidrug-resistant tuberculosis treatment. *Clinical infectious diseases*. 2008;46(12):1844-51.
25. Johnston JC, Shahidi NC, Sadatsafavi M, Fitzgerald JM. Treatment outcomes of multidrug-resistant tuberculosis: a systematic review and meta-analysis. *PLoS One*. 2009;4(9):e6914.
26. Areeshi MY, Bisht SC, Mandal RK, Haque S. Prevalence of drug resistance in clinical isolates of tuberculosis from GCC: a literature review from January 2002 to March 2013. *The Journal of Infection in Developing Countries*. 2014;8(09):1137-47.
27. Centers for Disease Control and Prevention. Clifton Rd. Atlanta, GA 30329-4027, USA.

## REVIEW ARTICLE

**A Study about the Life of Street Children in Kathmandu Valley****<sup>1</sup>Pushkar Singh Raikhola, PhD**<sup>1</sup>Lecturer, Mahendra Ratna Campus, Tahachal**ABSTRACT**

**Background:** The problem of street children has been a global phenomenon affecting both affluent and poor societies. The number of street children has grown in recent decades because of widespread recessions, political turmoil, civil unrest, increasing family disintegration, natural disasters and growing urbanization. The street life can be regarded as being on the very margins of life. The poverty and desperation for survival in the country take the problem to unimaginable depths of despair. In this context, the study aimed to identify the current situation of street children of Kathmandu valley.

**Methods:** This study was descriptive in nature. At least 12% (i.e. 58) samples were selected of Kathmandu valley on the basis of using Snowball sampling technique. The quantitative data was collected through structured interview schedule. Ten prominent areas were identified for collection data. Data analysis and processing were done in Ms-excel datasheet.

**Results:** The mean age of the respondents attending was 13.5 years. There are large numbers of street children from indigenous (i.e.51.72%) and other minorities like Dalit, Brahmin and Chhetri. The study showed that more than two third majorities (91.37%) of respondents were of male whereas 8.62% were of female. Most of the street children (approximately 33%) had spent 4 to 5years on the streets. A high percentage of respondents (41.37%) identified violence at home as a reason for coming to the street. Approximately, 7% respondents were found to be sexual and physical abused by their parents. About 26% respondents were motivated by search for a job and poverty of their families was a reason of leaving home. Approximately 9% of the street children were abused by street adults, drivers (also Khalasi/conductor) and while some of the children got abused by tourist or foreigners. Cigarettes and Sniff Dendrites are the most commonly used substance by street children. The situation of street children has been made worse because of the negative hostile public attitude and police harassment which was reported as 34.48% followed by a problem of struggle for survival (31.03%). Approximately 26% respondents were suffered with common health problems such as depression, skin infection, head lice, worms, fever, and cough. The study showed that a vast majority (65.5%) of the respondents willing to return to their home and reunion or reintegration with their families whereas, 22.4% respondents were still willing to live on the street and would like to do such activities like rag pickers, collecting and selling plastic, begging, glue sniffing and also enjoying with friends.

**Conclusion and Discussions:** Although small in number, street children of Nepal are very visible community and are definitely the most vulnerable group of children. The street children in Kathmandu claim that if they are provided with a favorable environment for their overall development and are given proper opportunities, they are willing to leave street life for a better life. But street children's problems cannot be solved in isolation; they are cumulative of various exploitative and discriminative backgrounds. More research needs to be conducted on the street children, in order to understand the challenges they face as well as the complexities of the street-child phenomenon.

**Key words:** Street children, violence, abuse, Kathmandu valley

**Corresponding Author****Pushkar Singh Raikhola, PhD**

Lecturer, Mahendra Ratna Campus, Tahachal

Email ID: pushkar\_raikhola@yahoo.com

Contact: 9851122964

## **INTRODUCTION**

The problem of street children has always been a global phenomenon affecting both affluent and poor societies alike. Emergence of individualism as a dominant force over collectivism, resultant crumbling of the traditional family structure, and weakening of the close family ties have only further exacerbated the problem in modern societies.<sup>1</sup> There are many children in the world who have become synonymous with social deprivation at its worst. When we talk about such deprivation, the situation with regards to Nepal does not differ much.<sup>2</sup> The problem of street children is universal and is comparatively very high on those countries where there is rapid growth of urbanization. The number of street children has grown in recent decades because of widespread recessions, political turmoil, civil unrest, increasing family disintegration, natural disasters and growing urbanization. Out of 5000 street children there are 500- 600 street children in Kathmandu alone.<sup>3</sup> A joint report published by Action for Child Right International (ACR), Central Child Welfare Board (CCWB) Nepal and Child Protection Centers and Services (CPCS) (2009) also states that there are approximately 5000 street children in Nepal who are living and working on the street.<sup>4</sup> The groups of children from various regions every year enter in to the street life in different cities in Nepal. Being the capital city, the number of street children in Kathmandu is higher than other parts of country and seems to be increasing along with the expansion of

city.

Children living on the streets fall into several categories, often related to the socio-economic conditions that led to their situation. Many children live with their families, either on the streets or in slum houses. Other children live on their own because they have been orphaned or abandoned by their parents. Children also run away from their families or caregivers, fleeing poverty and physical abuse, and end up living and working alone on the streets. Although no comprehensive and reliable statistics are available on the actual numbers, living conditions, needs and interests of children living on the streets, estimates predict a continuing increase in the number of these children.<sup>5</sup> In Kathmandu it is particularly worrying to note that some street children have been deliberately, and for opportunist reasons, recruited to take part in political demonstrations. The situation of the children who are on the street without love and support by their family or without having any caretakers is the most difficult situation. The street life can be regarded as being on the very margins of life. Their situation can be argued as critical from psychological as well as the stages of social development perspectives i.e. they are not able to make decision on their own. Similarly, the psychological aspects of getting love, affection and counseling from a family unit is always lacking in the street. In this situation, the children on the street try to deal with the situation alone and try to create networks to fulfill their necessities. What are the current situations that they have to confront while being in the



street? This is the main issue that this study aims to explore in brief.

### Street Children; their Identity

There is no unanimity among researchers as to what is the exact meaning of the term 'street children.' 'Children without families', 'high risk children', 'abandoned and destitute children', 'children in need of care and protection' and 'children in especially difficult circumstances' are some of the terms commonly used while referring to street children with overlapping meanings. Researchers offer many different definitions and descriptions of what street children are.<sup>6, 1</sup>

The street children are known after various terms in different countries of the world. In northern developed countries they are known as *homeless-youth*, *runaways* or even *throwaways* in developing countries, like Kenya, they are called as *parking boys*, in the Philippines they are known as *pogey-boys*, in Brazil they are called as '*pivets*' and in India they are normally known as '*rag-pickers*' interestingly, in Peru they are normally known as '*pajaro-frutero*' meaning fruit bird, In Colombia, *gamin* meaning kid having negative connotation. In Zaire, these children are called as '*moineaos*' meaning sparrows and in Cameroon, '*poussins*', meaning chicks.<sup>6, 7</sup> In the Philippines, they are called "*hard core street children*" or "*children of the street*" who have adopted the city as their own home. In Vietnam, these youths are called "*dust of the street*". These are controversies and technical diffi-

culties in defining street children for unanimous acceptance all over the world as the situational aspects of these children differ from country to country and even place to place within a country. However, UNICEF (1988) defines street children as, "those for whom the street (in the widest sense of the world; i.e., unoccupied dwellings, wasteland, etc.), is more than their family, has become their real home, a situation in which there is no protection, supervision or direction from responsible adults".<sup>8</sup>

As with street children throughout the world, Nepal's street kids too have devised their own language, the vocabulary of which expresses their own unique situation. *Khate* is one such word. Originally meaning rag picker, it has now come to mean all street kids, and the word has now slipped into the vocabulary of Nepalese throughout the country. Everyone is familiar with the word through newspapers, stage, films, and so on, and it has now come to symbolize a group of people fighting for their very survival on the streets of our cities.<sup>9</sup> CWIN (1993) adopted and utilized the term *khate* in its publications and advocacy literature with the purpose of establishing it as a collective identity of the Nepali street children. This echoes the trend in other developing countries to perpetuate a single term in the locally dominant language to represent all street children despite debates regarding problems such a generalizing category creates. Among the street children, however, this term is popular only in Kathmandu where rag picking children call themselves and their work *khate*. Street children in Narayanghat (Chitwan) are also familiar with

the term *khate* and the rag picking children there identify themselves with it too. The concept of street children that UNICEF is universalizing is broader than the one used before which only referred to the children who lived on the street. This concept has also broadened the meaning of the street as well to include all public lands, buildings, temples, pavements, and *patis*. In Nepal, the term *khate*, however, has evolved into a synonym for street children or *sadak balbalika*, referring to all street children notwithstanding their work, family ties, or where they live.<sup>10</sup>

### Classification of Street Children

Based on the relationship of the child with its family, the United Kingdom Committee for UNICEF (1988)<sup>11</sup> and the World Health Organization (WHO)<sup>12</sup> distinguished between three categories of street children, namely: a) The children on the street: These children have more or less continuous family contacts. Their focus in life is still their home. A very few children of this category attend school and also work. Most of them return home at the end of each working day and have a sense of belonging to the local community in which their home is situated. b) Children of the street: This group of street children is smaller and more complex in nature. The children of this age group consider street as their home where they seek shelter, food and a sense of family among companions. Family ties exist for them but they have occasional and infrequent contact with their families. c) Aban-

doned children: This group may appear to form a part of the second group. However, by virtue of having severed all ties with a biological family, they are entirely on their own, not just for material but also for psychological survival.

In a background paper on street children, submitted at the National workshop on street children held in New Delhi (1988), UNICEF also clarifies that the appellation 'street children' is one which often highlights a certain set of working and living condition rather than personal or social characteristics of the individual children themselves. Too often, children in this condition are victims of stereotypes such as 'juvenile delinquents' for the public and authorities. It further says that the term 'street children' should refer to "all children who work in the street of urban areas without reference to the time they spend there or the reasons for being there."<sup>7</sup>

### MATERIALS AND METHOD

This study was descriptive in nature. Before collecting the necessary information and data the researcher carried out several street visits with street children for rapport building. Ten prominent areas were identified to visit street children. The main areas of street children are: Pasupati Temple area, Thamel, New road, New Bus Park, Old Bus Park, Kalanki, Koteshwar, Chabahil bus stop area, Jawalakhel and Lagankhel. At least 12% (i.e. 58) samples were selected as mentioned areas of Kathmandu valley on the basis of using Snowball sampling technique. The quantitative

data was collected through structured interview schedule. The secondary information comprised research reports produced on the issues of street children by various types of national and international organizations as well as the published books, dissertations, journal, magazines by individual and scholars as well. Before the personal interview, the researcher pre-tested the interview schedule in a small group of street children and finalized on the bases of result of pre-test and also suggestions from different experts concerned to street children. Data analysis and processing were done in Ms-excel datasheet. Ethical approval was obtained from Research Management Cell; Mahendra Ratna Campus, Tahachal as well as verbal informed consent was taken from each respondent before data collection.

## RESULTS

After collecting essential information and data from the respondents the researcher tabulated properly. And necessary tables were prepared and analysis and interpretation were made as follow:

### Demographic Characteristics of the Respondent

By the mobility of street children it is difficult to obtain precious and accurate statistics and information. The main demographic characteristics are shown in the following table.

Table 1 shows that the large majority of children were in the age group of 11 to 18 years (55.17%)

**Table 1: Demographic Characteristics of the Respondent**

Variables	Frequency	Percentage
<b>Age</b>		
< 10 years	8	13.79
11-15	32	55.17
16-18	18	31.03
Total	58	100.00
<b>Sex</b>		
Male	53	91.37
Female	5	8.62
Total	58	100.00
<b>Religion</b>		
Hindu	30	51.72
Buddhist	17	29.31
Christian	4	6.9
Kirat	7	12.06
Total	58	100.00
<b>Caste</b>		
Brahmin/Chhetri	9	15.51
Indigenous (Tamang, Rai, Magar, Thakali, Gurung, Sherpa/Lama etc.)	30	51.72
Dalit		
Madhesi	15	25.86
Total	4	6.9
	58	100.00
<b>Family Members</b>		
< 5 members	32	55.17
> 5 members	26	44.82
Total	58	100.00
<b>Education Status</b>		
Literate	39	67.24
Illiterate	19	32.75
Total	58	100.00
<b>Background of Parents</b>		
Farmer	29	50.00
Labor	19	32.75
Small Business	4	6.9
Ex-Army/Police	6	10.34
Total	58	100.00
<b>Absence of Parents</b>		
Yes	5	8.62
No	53	91.38
Total	58	100.00

followed by those in the age group of 16 to 18 years (31.03%). The mean age of the children attending was 13.5 years. A number of street children who run away from home are between 9 to 18 years of age. The study showed that more than two third majorities (91.37%) of respondents were of male whereas 8.62% were of female. Most of the respondents (51.72%) were Hindu followed by 29.31% Buddhist. Similarly, Kirat religion followers were found to be 12.06% followed by Christian (approximately 7%).

The study showed that, the light majority of respondents were identified from Indigenous caste (51.72%) followed by Dalits (Approximately 27%) and Brahmin/ Chhetri (15.51) respectively. Approximately 7% respondents were belongs to Madesi community. Regarding the size of family, the majority (55.17%) of children has less than five members in their family whereas about 45 percent children reported that they were from extended family. Average household size in Nepal seems continuously decreasing. In 2001 census the average household size was 5.4 and it was 4.8 in 2011 census.<sup>13</sup> The study showed that more than two third majorities (67.24%) of children were of literate and approximately 33% were of illiterate. Regarding the background of the parents 50% were of farmer, 33% were of labor, 10.34% were of ex-army /police and about 7 % were of small business backgrounds respectively. Of the total respondents,

8.62% children were of orphans and 91.38% as reported that their parents were at home.

### Time Spent on the Streets

The duration of time spent on the street by street children as shown in the following table.

**Table 2: Time Spent on the Streets**

Time Spent	Frequency	Percentage
< 1year	3	5.17
1-2 years	6	10.34
2-3 years	8	13.79
3-4 years	10	17.24
4-5 years	19	32.75
5-10 years	7	12.06
10+ years	5	8.62
Total	58	100.00

Table 2: shows that the most of street children (approximately 33%) had spent 4 to 5years on the streets. Very few (5.1%) had spent less than one year on the street. Similarly, 17.24% street children had spent their time 3-4 years on the street followed by approximately 14% children spent their time 2-3 years respectively.

**Table 3: Main Reason for Children leaving Home**

Main reason	Frequency	Percentage
Poverty or search for a job	15	25.86
Step-mother and headship of mothers	10	17.24
Sexual and physical abuse	4	6.89
Domestic violence	24	41.37
Lack of parents	5	8.62
Total	58	100.00

The respondents identified factors which encouraged (pull and push factors) them to come to Kathmandu and to the street. Table 3: showed that the higher percentage of respondents (41.37%) identified violence at home as a reason for coming to the street. Williams (1996)<sup>14</sup> is of the opinion that family violence is the main reason for children leaving home.<sup>15</sup> About 26% respondents were motivated by search for a job and poverty of their families was a reason of leaving home. This is clearly an important factor in pushing children to the street. Approximately, 7% respondents were found to be sexual and physical abused by their parents. About 9% children were reported lack of parents. If parents are absent or unavailable at homes, boys are raised to be independent at a fairly early stage and forced to be able to fend for themselves.

### Substance Abuse by Street Children

The prevalence of drug and alcohol use among street children in Nepal has been growing concern for all. The proportion of substance users among street children in Nepal varies greatly by availability of substances, gender, age, and background of children.

**Table 4: Substance abuse by Street children**

Types of substance	Frequency	Percentage
Cigarette	19	32.76
Tobacco	10	17.24
Alcohol	6	10.34
Sniff Dendrites	19	32.76
Other drugs	4	6.9
Total	58	100.00

The study showed that the Cigarettes (32.76%) and Sniff Dendrites (32.76%) were the most commonly used substance by street children (Table 4). Similarly, it was also found that the respondents were used Tobacco (17.24%) and Alcohol (10.34%) in the street. Approximately 7% respondents were found to be used other drugs like cocaine, opium, smack, brown sugar, tidigestic etc.

### Problems faced by Street Children

The street children have been facing different types of problems in Kathmandu valley.

**Table 5: Problems faced by Children on the Street**

Problem	Frequency	Percentage
Struggle for survival (hunger, sleep, shelter, safety, health check up)	18	31.03
Negative to hostile public attitude and police harassment	20	34.48
Health problem (Depression, skin disease, head lice, worms, fever, cough etc.)	15	25.86
Sexual abuse/exploitation (Street adults, Driver, Khalasi/ Conductor, Tourists etc.)	5	8.62
Total	58	100.00

Table 5 shows that the situation of street children has been made worse because of the negative hostile public attitude and police harassment which was reported as 34.48% followed by a problem of struggle for survival (31.03%). We have some stereotypes regarding to street children. We say they are nobody's child; for others, it's a social evil and so on.

Belonging to a group of friends is a natural phenomenon during the puberty and adolescence age, the gang sometimes plays a role far beyond socialization for street children. However, some respon-

dents reported that they were suffered by their seniors or bullies in a group or gang. Approximately 9% of the street children were abused by street adults, bus driver (also conductor) and while some of the children got abused by tourist or foreigners. Due to lack of personal hygiene and the living/working conditions the respondents reported a wide range of health problems. Approximately 26% respondents were suffered with common health problems such as depression, skin infection, head lice, worms, fever, and cough.

### Willing to return Street Life

If we provided a favorable environment to street children for their overall development and are given proper opportunities, they are willing to leave street life for a better life. This fact is shown in the following table.

**Table 6: Willing to return Street**

Willing to return street life	Frequency	Percentage
Yes	38	65.51
No	13	22.41
Did not response	7	12.06
Total	58	100.00

The above table showed that a vast majority (65.5%) of the respondents willing to return street life and reunion or reintegration their families whereas 22.4% respondents were still willing to live on the street and would like to do such activities like rag pickers, col-

lecting and selling plastic, begging, glue sniffing and also enjoying with friends. Twelve percent respondent did not response. These data clearly showed that the family is the most important factor of being street children.

## **DISCUSSION**

The phase they are at comprises the onset of puberty and the stage of adolescence. As children move into puberty, they begin to want their own personal space and develop a need for experimentation, novelty, and adventure. Impulsive behaviour and a decreased fear of consequences is characteristic of the phase of adolescence. Because of the characteristics of this phase, adolescents are more likely to decide to leave home on impulse, at the slightest confrontation.

Pokharel (2013)<sup>4</sup> also identified in his research that there are large numbers of street children from indigenous and other minorities like Dalit and from Madhesi community. Gullotta (1979)<sup>16</sup> is of the opinion that sexual and physical abuses at home are the major causes for children leaving home. Interestingly, 17.24% respondents were identified their main reason for living home was either having step mother or headship of mothers. A striking feature of street children is that they are often female-headed.<sup>17</sup> Rai, et al. (2002)<sup>3</sup> also states that the street children start from glue sniffing and end up taking other more hard drugs. Most street children sniff because it is cheap and easily available. These

respondents reported varying reasons for drug use: pleasure, group belonging, to forget street life, to forget hunger. Respondents also reported the use of substances to fight, to steal and to have sex, as well as to work. This is an alarming finding though not an unexpected one. It alerts us to the fact that the street child phenomenon is reaching serious proportions with more children being attracted to the streets and becoming more able to adapt and survive on the streets. The streets offer them a sense of freedom rarely experienced in the confines of a family. Some past research on the causes of children being on the streets produces contradictory findings, because of lack of agreement amongst researchers on the cause of the problem. Williams (1996)<sup>14</sup> is of the opinion that family violence is the main reason for children leaving home. Pandey (1991)<sup>6</sup> believes that children leave their homes because of lack of support on the part of caregivers in the home environment.

## **CONCLUSION**

Although small in number, street children of Nepal are very visible community and are definitely the most vulnerable group of children, who are at risk of poverty and deprivation, domestic violence, exploitation, stereotypes attitude, stepmother/headship of mothers, personal hygiene, drug use, physical and sexual abuse and so on. More research needs to be conducted on the street children, in order to understand the challenges they face as well as the complexities of the street-child phenomenon. The result of study indicates that the situation of street children

has been made worse because of the negative public attitude. The way of viewing street children as *Khate* and uncivilized by the people needs to be change.

More needs to be done to identify children who are victims of domestic violence and interventions made to stop domestic violence or find an alternative for the child before he/she comes to the street. The violence against street children by street adults seems a serious issue, which requires a planned action from the government as well as civil society. The majority of children continue to leave home and suffer on the streets mainly because of family disorganization.

More research needs to be conducted on the street children, in order to understand the challenges they face as well as the complexities of the street-child phenomenon. Consequently the reintegration of street children, some of whom are addicted to street life, is a tough challenge. Street children problems need to be addressed by all concerned with much seriousness and with commitment to empower them for their self reliance to give them respect for their dignity and potential. Street children's problems cannot be solved in isolation; they are cumulative of various exploitative and discriminative backgrounds.

## REFERENCES

1. Joag, Shreekant G and Lemos, Fr. Denis. Challenges of Social Marketing: Combating the

Problem of Street Children in Mumbai, India: Global Awareness Society International 22nd Annual Conference- Rome, Italy, May, 2013.

2. CWIN: The State of the Rights of the Child in Nepal. Kathmandu; 2002.
3. Rai, Abinash, Ghimire, Keshab Prasad, Shrestha, Pooja and Tuladhar, Sumnina: Glue Sniffing Among Street Children in the Kathmandu Valley; Anamnagar, Kathmandu: Indreni Offset Press; 2002.
4. Pokhrel, Prakash: Living on the Margins of Life: A Study about Street Children in Kathmandu, Nepal, Thesis Submitted for the Degree of Master of Philosophy in Indigenous Studies Faculty of Humanities and Social Sciences and Education University of Tromso, Norway; 2013.
5. UNICEF: Protection of Children Living on the Streets: Factsheet, UNICEF Bangladesh; 2013.
6. Pandey, R. Street children of India: A situational analysis: Allahabad, India: Chugh Publications; 1991.
7. Behura, N.K. and Mohanty R.P. Urbanisation Street Children and their Problems: New Delhi, India: Discovery Publishing House, 4831/24, Ansari Road, Prahlad Street, Darya Ganj; 2005.
8. UNICEF: Background paper prepared by UNICEF, New Delhi, for National Workshop on Street Children held from 29th to 30th August; 1988.
9. Pradhan, Gauri Khate: The Street Survivors. Voice of Child Workers, 1993; 19/20: 3-14.
10. Onta, Lazima. Situation Analysis of Street Chil-



- dren in Nepal. Report submitted to: the Child Welfare Society for UNICEF-Nepal. 1995.
11. UNICEF: Background paper prepared by UNICEF, New Delhi, for National Workshop on Street Children held from 29th to 30th August, 1988.
  12. WHO Publication at [http://www.who.int/substance\\_abuse/PDFfiles/module1.pdf](http://www.who.int/substance_abuse/PDFfiles/module1.pdf)
  13. Central Bureau of Statistics: Population Monograph of Nepal, Government of Nepal, National Planning Commission Secretariat, Ramshah Path, Kathmandu, 2014.
  14. Williams, C.G. Street children and abuse of power: *Africa Insight*, 1996, 26(3):221-230.
  15. Kuse, T Mashologu: Families of Street Children in the Transkei: A Developmental Perspective, *Social Work/Maatskaplike Werk*. (2007), 43(1).
  16. Gullotta T. Family relationships of the runaway child. *Social Casework: The Journal of Contemporary Social Work*. 1979, February: 111-114.
  17. Aptekar, L.: Street children in Nairobi. *Africa Insight*, 1996, 26(3):20-59.

**SHORT COMMUNICATION****Public Health Education in Nepal****Ramesh Bhatta<sup>1</sup>**<sup>1</sup>MPH (international Health), MA Sociology, MSc in Telemedicine and e-health  
Principal, Yeti Health Science Academy**ABSTRACT**

In Nepal, Public Health Education has developed since the ancient period. Historical evidences show that the concepts of Public Health are highlighted in various hindu epics and are also reflected in our different rituals and festivals. However, after 1986 A.D. Public Health Education was formally institutionalized in Nepal and related course (Bachelor in Public Health) was started at Maharajgunj Campus under Tribhuvan University.

This study is based on the review of the various related literatures and discussion made with different public health experts. Study has tried to reflect on how the concept of Public Health has developed and accepted in our society. Similarly it has also listed the chronological events on the development of Public Health education in Nepal.

Presently twenty six colleges (includes private and constituent colleges) under Tribhuvan University, Pokhara University and Purbanchal University are conducting Bachelor level courses (BPH) and Master level program (MPH) is conducted at four different universities. Similarly PhD in Public Health is conducted only at Tribhuvan University. Annually, Nepal has capacity to produce 1200 public health graduates, out of them about 100 students are completing their Public Health Course from abroad.

The growth and development of Public Health education has created various opportunities and also has developed the experts on various subspecialties of Public Health. However, there are various challenges that need to be immediately addressed to ensure the quality of education and also to produce appropriate and competent human resource as per need of the nation to deliver effective Public Health Service.

**Key words:** Public Health Education in Nepal, opportunities, challenges

**Corresponding Author****Ramesh Bhatta**MPH (international Health), MA Sociology, MSc in Telemedicine and e-health  
Principal, Yeti Health Science Academy  
Email ID: rameshcare@yahoo.com

## INTRODUCTION

Public Health Education has a demanding scope both in developed and developing countries. In present context Public Health Education is gaining popularity globally however the modality of delivery may be different which is more based on the need and context of country. Appropriate Public Health Education can be supportive to positively transform the health status of individual, family, community and ultimately of whole nation. Public health graduates are able to make a significant contribution towards improving the health of the population, particularly of the poor and marginalized groups.<sup>1</sup> However it is necessary to estimate the number of public health personnel that are required by the country so that it will minimize the mismatch between production and consumption of the resources. Similarly it is also important to ensure the quality of education and proper accreditation of public health personnel to make them competent and enhance their capacity.

Public health emphasizes the multi-sectoral approach and each determinants of health has its own importance to gain the holistic health.<sup>1</sup> For every individual health and ill health have their biological roots, but the biological processes and phenomena have been and are being influenced, impeded, and facilitated in contexts of changing political, economic, social, and cultural elements.<sup>2</sup> In every community; each period of history has its own model of health and its own public health. Hence the Public

Health education should be able to include and address such different dimensions, to make it contextual and dynamic.

Public health education should also focus on the dominant values of our societies, and the activities that have been practiced, explained or justified on several grounds.

### Public Health Education in Nepal

In Nepal, Public Health related information and its education process were found to be practiced since ancient period. Such information and knowledge has shaped our daily practices are also being transferred from one generation to another in the form of rituals or by showing its religious value.

One of the Sanskrit mantra that has been learned by our society is “*Sarvai bhabantu sukina, sarbai santu niramaya*” which means “may all become happy and may all be free from illness.”<sup>3</sup> It reflects the core concept of public health i.e. to make the whole society free from illness. Similarly, another Sanskrit “santi mantra” i.e. peace chanting “*Aum dyauh santirantariksam santi, prithivi santi, rapah santi, rosadhayah santi, vanaspatayah santirvisvedevah santirbrahma santi, sarvam santi santireva santi*”.<sup>3</sup> This mantra also supports the holistic concept of Public health and includes different areas that are focused and taught by the modern Public Health education. It means, peace to be maintained in heaven, sky, earth, water, herbs, trees and finally it also emphasize on realizing the internal peace.<sup>3</sup> Hence, it shows that from ancient pe-

riod community peoples were made aware about the different aspect that could make them and their community healthier, prosperous and free from illness.

### **Institutionalization of Public Health Education in Nepal**

Based on the need of the country, government of Nepal initiated the formal Public Health education under Tribhuvan University at Maharajgunj campus. Bachelor in Public Health (BPH) program was started in the year 1986 AD.<sup>4</sup>The curriculum of BPH was designed mainly to meet the need of middle level health managers so that they could ensure the accessibility and availability of health services at community level as per the principles of Primary Health Care.<sup>5</sup> Initially the course duration was for two years and only ten students having health science background in their certificate level were provided the opportunity to study the course. Similarly in the year 1987 AD certificate level course in Health Education and Sanitation was also started at Maharajgunj campus; however it was only conducted for few years.

In the year 1991 AD, master level course in Public Health was first time started at Maharajgunj campus. The course duration was for two years and it was named as MSc in Public health (MSc.PH). Initially the program enrolled only three students.<sup>6</sup> However, latter the course was named as Master in Public Health (MPH) and the duration of course was changed to one year (in the year 1998

A.D<sup>7</sup>, then to eighteen months (in the year 2006) and presently it is conducted for 2 years (from the year 2014). Presently, total thirty students are enrolled every year having twenty in Master in Public Health (MPH) (general course in Public Health), and remaining five each in Master in Health Promotion and Education (MHPE) and Master in Public Health Nutrition (MPHN) (MHPE and MPHN are specialized course under Public health).<sup>4</sup> The main objective of conducting these different courses was to produce competent public health managers and also to enhance the skill and knowledge of those health workers who are working at executive level.<sup>5</sup> It is expected that the MPH graduates will be able to significantly contribute in health research, policy formulation, planning, implementation, monitoring and evaluation of national, regional and district level health system.<sup>5</sup>

### **Broadening and Privatization of Public Health Education**

After the initiation of Public Health education at Maharajgunj Campus under Tribhuvan University, latter in the year 2002 AD, BPH program was also started by Purbanchal University (PU) under some of the PU affiliated private campuses.<sup>4</sup> Course duration of BPH program was for 3 years and student enrollments limitation was 40 students in each batch per year. Similarly in the year 2005 AD, BPH program was also started by Pokhara University under its constituent campus and affiliated campuses by enrolling 40 students in each batch. However the duration of the course was made for four years which was different

as compared to the duration adopted by Tribhuvan University and Purbanchal University.

Similarly, in the year 2005 AD B.P. Koirala Institute of Health Science (BPKIHS) located in Dharan, started MPH program having course duration of 2 year and by enrolling 10 students each year. <sup>(4)</sup>

<sup>(6)</sup> Further in the year 2011 AD, MPH programs were also started by two Private TU affiliated medical colleges, i.e. one at Chitwan and another at Birgunj. Number of student quota that was approved for these two private colleges were different, and it was based on their organizational capacity and available human resources that they have to run the academic program. Further in the year 2011, Maharajgunj campus under TU started PhD program in Public Health enrolling two students each year. <sup>(4)</sup>

Further, in the year 2016 AD Purbanchal University and Pokhara University also started two years MPH program at their constituent campuses. Regarding the number of student enrollment number, Pokhara University has capacity to enrolled total 14 students having seven in each specialization course (i.e. MPH Health Promotion and Education and MPH Public Health Service Management). <sup>(8)</sup> Similarly, Purbanchal University has capacity to enrolled total 20 students having ten in each specialization course (i.e. MPH Health Promotion and Education and MPH Public Health Service Management). <sup>(9)</sup> In near future, Patan Academy of Health Sciences (PAHS) is also planning to conduct MPH course. <sup>(6)</sup>

### **Tentative Number of Public Health Graduates Produced in Nepal Per Year**

- **Bachelor level:** About 1000 students (from 3 colleges under TU, 5 colleges under Pokhara University and 18 colleges under Purbanchal University).
- **Master level:** About 90 students (from 3 colleges under Tribhuvan University, BPKIHS, Pokhara University and Purbanchal University).
- **PhD level:** About 2 students (from Maharajgunj campus)

Similarly about 100 students are completing their Masters' and PhD level Public Health Education from abroad (India, Bangladesh, Thailand, Australia, Europe, America etc). In total, every year about 1200 Public Health Personnel are produced in Nepal. <sup>(10)</sup>

### **Opportunities of Public Health Education in Nepal**

Public Health graduates can be benefitted with multiple opportunities after completing their Public Health course. In Nepal scope of Public Health is broadening both in governmental and non-governmental sector (at different level, from peripheral level of health care delivery system to planning and policy making level). Public health focuses on multi-sectoral initiative and approaches hence potential job opportunities could also be created in other different sectors such as Municipalities, District Development Committees, water and sanitation division, <sup>(4)</sup> organizations related with agriculture, veterinary, environment, focusing on gender and social inclusion issues, disaster and conflict issues, issues related with consumer right to ensure to healthy food production, marketing and consumption etc. Similarly Public health personnel can

also support the concept of “Health in all Policies” by conducting advocacy related activities.<sup>11</sup>

Public Health graduates can be involved and employed as a Public Health researcher which has a great scope both in developing and developed countries. Public Health researches are important to generate evidences, based on which country could better plan and implement Public health programs.<sup>1</sup> Similarly they could also involve themselves in various universities and academic institutions to conduct teaching learning activities.

At international level, public health graduates could get different job opportunities in research and academic institutions, UN agencies and other governmental and non-governmental organizations. They could also uplift their carrier by applying and gaining the higher education from abroad universities. Similarly in present context, specializing and gaining expertise in particular area on Public Health has gained great value. So it could also be further taken as an opportunity to gain such expertise and provide their contribution.

Being a low income country, Nepal has many areas of Public Health that are still unexplored, which can be taken as potential areas and opportunities for carrier development. Similarly Nepal has also potentiality of developing Public Health Education Tourism. Since the country is tackling with multiple and diverse public health problems, which can be taken as good opportunity to develop it as learning center for international students and also for conducting better research that will ultimately support

to improve the public health education and public health programs that are conducted for our community peoples.

### **Challenges of Public Health Education in Nepal**

Ensuring the quality of Public Health Education is one of the most important challenges of Nepal. The privatization of education has created many challenges in the quality of public health education.<sup>5</sup> Existing scenario shows that the different colleges that are conducting the public health course are being accredited by the concern organizations without considering the basic criteria that are needed to run the program. Similarly the monitoring and supervision performed by these concern organizations (e.g. University, Council etc) are also unfair and untimely. The supervisions are being conducted in ad-hoc basis and there are no specific criteria determined for nominating the supervisors.<sup>5</sup> It seems that rather than providing the technical guidance, suggestion, and constructive feed-back they are more involved in gaining monetary benefits.

The present scenario shows that, in most of the private academic institutions that are conducting public health courses lack academic environment. Study shows that almost all schools of public health in low-income countries are perennially deficient in quality faculty.<sup>(1, 6)</sup> There are many reasons for this: inadequate supply, lack of appropriate training, absence of financial and motivational incentives, and migration.<sup>(1, 6)</sup> In Nepal also most of the academic institutions do not have sufficient faculty members and experts.

Similarly, those who are involved as faculty members are also not well trained and their involvement at such institution is for short period, since they are searching and attracted with the jobs offered by I/ NGOs. As a result there is high turn-over of the Public Health faculties in the academic institutions. For developing a competency and being dynamic Public Health Faculty, it is necessary to get updated information on the global and national health policies, programs and trends. For that it is important to get regular exposure on such areas and get opportunity to be involved in training, and research activities. However in most of the private academic institutions there are no such opportunities for the faculty members. Similarly there is poor linkage between Public health academic institutions and government and non-governmental bodies working in the areas of Public health. Due to such gap the government and other organizations are not able to utilize the information generated by the academic institutions and similarly the faculty and students are not being able to know about the recent progress and developments that are being made by the government.

Similarly there is mismatch in production and consumption of Public Health graduates. There is lack of appropriate strategic planning from the government side to estimate the amount of Public Health human resources that are need in the market and its consumption pattern (i.e. analysis of demand and supply).<sup>5</sup> It shows that due to lack of such estimation the unemployment trend is increasing among

the public health graduates.

Other challenges are related with the policy of university on enrollment criteria of new students, maintaining the academic calendar, examination system and making better academic environment. At present situation, the entrance criteria differ with the nature of university. So, it is important to maintain the uniformity in the entrance criteria for enrolling the good students. Similarly the university should also focus on making standard academic calendar and conduct the academic sessions and exams systematically and timely. Such improvements at universities will ultimately support to reduce the high drop-out rate of students from the course.

Similarly, the Universities should also focus on revising the curriculum contextually (based on the need and demand of the society and country). In many countries, the skills and competencies of public health graduates are not well matched to the task of addressing the population's health needs, particularly in the area of health policy, health management and leadership.<sup>6</sup> It is important to focus that the curriculum needs to be relevant, and reinforce public health approaches, such as inter-sectoral, interdisciplinary and community-oriented, as well as be benefitted from coordinated international collaboration. One of the approaches for making such positive changes could be to have close inter-university coordination that will support in removing the duplication as well as revising and refining the existing curriculum.

## CONCLUSION

As the field of public health advances toward addressing complex and emerging public health problems, future public health professionals must be equipped with leadership and inter-professional skills. So it is important to infuse innovative strategies into public health education based on evidences to enhance their leadership, collaboration, and overall professional development.

## REFERENCES

1. Petrakova A, Sadana R. Problems and progress in public health education. *Bulletin of the World Health Organization* 2007; 85(12): 901-980 (Retrieved on: 16<sup>th</sup> July 2016) Available from: <http://www.who.int/bulletin/volumes/85/12/07-046110/en/>
2. The impact of social and cultural environment on health. *Genes, Behavior, and the Social Environment: Moving Beyond the Nature/Nurture Debate*, 2006; pp 25-40. Available from: [http://www.ncbi.nlm.nih.gov/books/NBK19929/pdf/Bookshelf\\_NBK19929.pdf](http://www.ncbi.nlm.nih.gov/books/NBK19929/pdf/Bookshelf_NBK19929.pdf)
3. Wikipedia. Shanti Mantra. (Retrieved on: 20 July 2016). Available from: [https://en.wikipedia.org/wiki/Shanti\\_Mantra](https://en.wikipedia.org/wiki/Shanti_Mantra)
4. Khanal P, Mishra SR. Exploring opportunities for Public Health graduates in government health system in Nepal. *Health Prospect Journal of Public Health* 2014;13(1):7-11
5. Shrestha B. Report on establishment of Quality Assurance Mechanism in Public Health Professional Education and Training and capacity building of NEPHA. Nepal Public Health Association, 2008
6. Mahat A, Bezruchka SA, Gonzales V, Connell FA. Assessment of graduate public health education in Nepal and perceived needs of faculty and students. *Human Resource for Health* 2013; 11: 16
7. Dixit H. *The Quest for Health*. Kathmandu: Educational Enterprises; 2009
8. Student's News. Admission Open for Master of Public Health (M.PH) at Pokhara University (PU) (Retrieved on: 25 July 2016) Available from: <http://news.studentsnepal.com/2016/03/04/admission-open-master-public-health-m-ph-pokhara-university-pu/>
9. Edusanjal. Entrance exam notice for MPH and M.Pharmacy from Purbanchal University (Retrieved on: 25<sup>th</sup> July 2016) Available from: <http://edusanjal.com/admission/entrance-exam-notice-mph-and-mpharmacy-purbanchal-university>
10. Risal KN. Personal communication to access the status of Public health at Nepal health Professional Council, 21 Aug 2016
11. Levy M, Gentry D, Klesges LM. Innovations in Public Health Education: Promoting Professional Development and a Culture of Health. *American Journal of Public Health* 2015; 105(Suppl 1), S44 – S45. (<http://doi.org/10.2105/AJPH.2014.302351>)



## SHORT COMMUNICATION

### Dowry System in Madhesi Community

Archana Yadav<sup>1</sup>

<sup>1</sup>Program Officer, Nepal Public Health Association

#### INTRODUCTION

Dowry System is one of the social evils developed by society from ancient period and still in practice. Dowry is the property or money given to the bride to take her husband house's when she gets married. Dowry includes money, jewellery, furniture, means of transportation etc. This evil system is not confined to Terai region only, but the increasing in Hilly and other parts of the country.

As dowry is a great evil of our society, poor people have been poorer and poorer. They borrow money from the rich people for their daughter's marriage. They can't pay their debt in time because of the high interest. So, they are compelled to sell their land. Sometimes they leave their houses and go to big cities to earn money. In this way, it has created a big gap between rich and poor people.

#### Dowry System in Madhesi Community

Dowry system has created a number of problems in our society. When a boy marries a girl, he thinks that he will get dowry in his house. So, the bride whose parents are poor or cannot afford a dowry will not be able to get married. If the boy doesn't get dowry according to his demand, he will torture his wife. He may leave her and get married another.

If the bride brings a lot of property, she becomes proud and tries to dominate the bridegroom. We have heard many incidents in our country because of dowry system. Many women commit suicide after marriage because of the dowry system. There are many instances when a wife has committed suicide because of her helplessness to tolerate the harassment for dowry. There have been times when a wife has been murdered because her parents were not able to give enough dowry. Legally, dowry is banned in Nepal, but it still takes place in the Madhesi community. In real scenario of Madhesi community, there are two types of marriage:

1. Dowry Marriage: In this type of marriage, the bridegroom's family openly proposes the amount of dowry. And if the bride's family agrees it, the marriage program is organized. But the dowry should be given before or on the day of marriage ceremony. The bridegroom can deny the marriage if he does not get the decided dowry.
2. Adarsh Marriage: In this type of marriage, the bridegroom's family expect dowry but didn't tell to bride's family. Society is too unknown about the money given to bridegroom's family. Although in madhesi society, Adarsh marriage

means bride's family don't have to pay dowry. As the boys family expect about the dowry, bride's family try to fulfill their expectation level which leads to minimum amount of 10-15 lakhs.

Many sensible and educated youths have gone against the idea of dowry, and have the noble intention of marrying without taking any money.

The dowry system has continued in Nepal despite the provision against it in the Social Customs and Practices Act. But there isn't a single case in which anybody has been punished, and so the tradition has continued without question. It is mainly because of lack of awareness that women have been turned into a saleable commodity. Most of the women are not educated enough to deny the established social norms. Even those who are educated are carrying on this ugly tradition in the name of social prestige.

The dowry system in Nepal will rise day by day unless every mother-in-law thinks that she was a daughter-in-law at one time too. The dowry system will grow up in Nepal unless every mother feel that the treatments which she gives to her daughter-in-law can be received by her own daughter too. Both taking and giving dowry should be strictly forbidden. Those people who demand dowry should be boycotted from society. Education is not the only way to stop Dowry system. As both the boys and girls are educated but the boy's family demanded money and didn't think about the girl's qualifica-

tion. For e.g. if boys and girls both are doing job in Diploma level, the minimum dowry amount will be 10 Lakhs, for Bachelor: 15-20 Lakhs, Doctor: 20-30 Lakhs etc. A girl should be self confident, self-dependent to fight the society about dowry. Women must be empowered. Gender-based inequality should be completely abolished and the position of women in the society should be raised. Women must be taught since girlhood that their life is not useless without marriage. Women from every walk of life, literate or illiterate, poor or rich, young or old must unite together and come forward to protect their own honor and interest. Though the government has promulgated certain anti-dowry laws, these have not produced the desired results. People's efforts are also necessary if this evil is to be removed once and for all. The high expenditure of the marriage ceremony must be cut down.

## **CONCLUSION**

As we all know a journey of thousands mile starts from the first step. It may take time but it is possible and we can do it. The weapon for this is will power and determination. Similarly, education related to dowry system plays an important role to make people understand this social problem. So, the government should conduct public awareness programmes in the society against this social evil. There is also the necessity of spreading women's education to fight against the dowry system. There should be a strong law to eradicate this system from our society. Those

who give and take the dowry should be punished strictly, taking and giving dowry are an evil to the whole community. This curse of the dowry system must be eradicated at any cost. Thus, this system should be wiped out for a well-cultured and civilized society.

## **REFERENCES**

1. Dowry System in Nepal- Marriage is Supposed as Making Money. Available from: <http://www.imnepal.com/dowry-system-in-nepal-marriage-is-supposed-as-making-money/>
2. Dowry System in Nepal: Available from: <http://educationhealthandculture-suraj.blogspot.com/2010/04/dowry-system-in-nepal.html>
3. Dowry System in Nepal. The main problem of ( Terai, Madhesh) Nepal. Available from: <http://www.pralad.com.np/2016/09/dowry-system-in-nepal-main-problem-of.html>
4. Dowry System A Curse. Available from: <http://therisingnepal.org.np/news/12207>

## SHORT COMMUNICATION

### Sustainable Development Goals: Current Status of SDGs and their targets, Policies and Institutions in Nepal.

**Kunjana Pandey<sup>1</sup>**

<sup>1</sup>Project Co-ordinator, Nepal Public Health Association

#### INTRODUCTION

The sustainable development agenda has been under global discussion for more than two decades. The SDGs were first formally discussed at the United Nations Conference on Sustainable Development in Rio de Janeiro in June 2012 (Rio+20), and in the UNGA in September 2014. Ahead of the MDG deadline in 2015, the UN Open Working Group (OWG) for SDGs agreed a proposed set of 17 SDGs with 169 targets on a broad range of sustainable development issues for post- 2015 till 2030. The SDGs are to replace the MDGs once they expire. As the MDGs have provided a shared framework for global action and cooperation on development from 2000 to the end of 2015, the SDGs are built on the MDGs covering a wider range of sustainable development issues beyond those encompassed in the MDGs.

The SDGs, otherwise known as the Global Goals, build on the Millennium Development Goals (MDGs), eight anti-poverty targets that the world committed to achieving by 2015. The MDGs, adopted in 2000, aimed at an array of issues that included slashing poverty, hunger, disease, gender inequality, and access to water and sanitation. Enor-

mous progress has been made on the MDGs, showing the value of a unifying agenda underpinned by goals and targets. Despite this success, the indignity of poverty has not been ended for all.

The new Global Goals, and the broader sustainability agenda, go much further than the MDGs, addressing the root causes of poverty and the universal need for development that works for all people.

The Global Goals will now finish the job of the MDGs, and ensure that no one is left behind.

There are 17 Sustainable Development Goals and 169 targets. The following content delves into current status of SDGs and their Targets, the enabling policies and existing institutions for their operationalization in Nepal.

#### 1. End Poverty in all its forms everywhere

SDG 1 proposes ending poverty in all its forms everywhere. Using the international benchmark for extreme poverty of an income of US\$ 1.25 per day, less than 25 percent of the population is living below this line. The poverty gap ratio has narrowed to 5.6 percent, while per capita GNI stands at US\$ 772 in 2015. Poverty has fallen not just nationally but across all of its major dimensions. Poverty (as defined nationally) is targeted to decline from 23.8 percent to 5 percent

by 2030.

## **2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture**

SDG 2 proposes ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture. In Nepal, still 30 percent of children aged 6–59 months are underweight; while stunting persists in 37.4 percent of under five year old children and wasting in 11.3 percent of the same age group. The proposed target is to reduce the prevalence of stunting in children under five years, of underweight children (aged 6-59 months), and anemia among women of reproductive age and children to less than one percent.

## **3. Ensure healthy lives and promote well-being for all at all ages**

SDG 3 aspires to ensure healthy lives and promote well-being for all people of all ages. The progress in the health sector has been encouraging. The SDG 3 targets for Nepal for 2030 are to reduce maternal mortality ratio (MMR) to less than 70 per 100,000 live births, to reduce preventable deaths to less than 1 percent of newborns and children, and to eliminate the prevalence of the human immunodeficiency virus (HIV), TB, malaria, other tropical diseases and water borne diseases. The targets also include reducing non-communicable diseases (NCD) by one-third and raising the proportion of

births attended by skilled birth attendants (SBA) to 90 percent.

## **4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

SDG 4 aspires to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Nepal has made good progress in primary education with the NER now standing at 96.2 percent and the literacy rate of 15–24 year olds at 88.6 percent. Some of the proposed targets for 2030 include almost 100 percent enrolment and the completion of primary education, 95 percent of students being enrolled in grade one to reach grade eight, and 90 percent of children attending pre-primary education.

## **5. Achieve gender equality and empower all women and girls**

SDG 5 is about achieving gender equality and empowering all women and girls. Nepal has made substantial progress in ensuring equal access to education, with gender parity in primary and secondary level school enrolment. But discrimination and violence against women and girls remains despite significant improvements. The proposed targets for 2030 include eliminating gender disparity in all levels of education, wage discrimination at similar work, physical and sexual violence, and all harmful practices, and raising the presence of women in the na-

tional parliament and public service decision-making positions.

#### **6. Ensure availability and sustainable management of water and sanitation for all**

SDG 6 is about ensuring the availability and sustainable management of water and sanitation for all. Basic water supply coverage in Nepal was 83.6 percent in 2014, while sanitation had reached 70.3 percent of the population. Two-thirds of the Nepali population now uses latrines and 30 percent of urban households are connected to sewerage systems. The proposed targets for 2030 include 95 percent of households having access to piped water supplies and improved sanitation, all communities being free of open defecation, and all urban households being connected to a sewerage system.

#### **7. Ensure access to affordable, reliable, sustainable and modern energy for all**

SDG 7 aspires to access to affordable, reliable, sustainable and modern energy for all. Currently, nearly three quarters of households use solid fuels as their primary energy source for cooking while more than a quarter use liquid petroleum gas (LPG). Nearly three-quarters of households have access to electricity in their dwellings. The proposed targets for 2030 include 99 percent of households with access to electricity, only 10 percent of households using to firewood for cooking, the generation of at least 10 thousand megawatts of electricity, and decreasing energy intensity by 0.8 per-

cent per annum.

#### **8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

SDG 8 aspires for sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. The target for LDCs is at least seven percent per annum growth in per capita gross domestic product (GDP), which Nepal is targeted to achieve by 2030. Other proposed targets to meet this goal are growth of labour intensive sectors like agriculture and construction by 5 and 10 percent respectively.

#### **9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**

SDG 9 aims for resilient infrastructure, inclusive and sustainable industrialization, and innovation. So far, 12,500 km of the country's strategic road network and about 53,000 km of the local road network have been built. The share of industry in the country's total output is only 15 percent. The targets and indicators for 2030 are to increase road density from the current 0.44 km/km<sup>2</sup> to 5 km/km<sup>2</sup>, grow access to telecommunications (tele-density) to 100 percent, and raise the share of industry in total output to 25 percent.

#### **10. Reduce inequality within and among countries**

SDG 10 is about reducing inequality within and among countries. In Nepal, consumption inequality (as measured by the Gini coefficient) inequality 2014

was estimated at 0.33, and the share of the bottom 40 percent population in total income was about 12 percent. The proposed targets for 2030 are reducing consumption inequality from 0.33 percent to 0.16 percent, increasing the share of national income of the bottom 40 percent of the population from 12 percent to 18 percent, and increasing social, economic, and political empowerment indices to 0.70.

### **11. Make cities and human settlements inclusive, safe, resilient and sustainable**

SDG 11 aspires to make cities and human settlements inclusive, safe, resilient and sustainable. It is estimated that 7 percent of Nepal's urban population lives in squatter settlements and only 30 percent of houses are safe to live in. The proposed targets for 2030 include reducing multidimensional poverty, doubling the proportion of households living in safe houses, increasing the road density to five km/km<sup>2</sup>, making 50 percent of roads safe (for driving) by international standards, and creating at least 50 new satellite cities.

### **12. Ensure sustainable consumption and production patterns**

SDG 12 intends to ensure sustainable consumption and production patterns. In Nepal, only 10 percent of water resources have been used and fossil fuels comprise only 12.5 percent of energy consumption. The proposed targets for 2030 include limiting fossil fuel consumption to 15 percent of energy con-

sumption and improving the soil organic matter from 1 percent in 2014 to 4 percent in 2030.

### **13. Take urgent action to combat climate change and its impacts**

SDG 13 calls for urgent action to combat climate change and its impacts. In Nepal, the total emission of carbon dioxide (CO<sub>2</sub>), at 0.10 metric tonnes per capita, is negligible and the consumption of ozone depleting substances (ODS) is only 0.88 ODS tonnes. The proposed target for 2030 include halving the emission of CO<sub>2</sub>, ODS and greenhouse gases from agricultural, transportation, industrial and commercial sectors.

### **14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

SDG 14 is about conserving and sustainably using the oceans, seas and marine resources for sustainable development, and so is not relevant for Nepal. But as mountain resources are so crucial for Nepal's fresh water resources, hydropower, livelihood, agriculture, adventure tourism and environment protection, some specific targets can be set and indicators developed for this goal.

### **15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

SDG 15 calls for protecting, restoring and promoting the sustainable use of terrestrial ecosystems, sustainably managing forests and halting biodiversity loss. Nepal's current forest cover including bushes and grassland is 39.6 percent. Protected areas cover 23.2 percent of the country's land area. The proposed specific targets for 2030 are to increase forest cover to 45 percent and protected areas to 25 percent.

**16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**

SDG 16 calls for promoting peaceful and inclusive societies for sustainable development among others. Nepal scores only 3 out of 6 for transparency, accountability and corruption in public life. Violence against children and women is common. The specific targets for 2030 include ending deaths from violent conflict, violence against women and violence against children, and improving the transpar-

ency and accountability score to 5, and the score on the good governance scale to 2.

**17. Strengthen the means of implementation and revitalize the global partnership for sustainable development**

SDG 17 is about strengthening the means of implementation and revitalizing the global partnership for sustainable development.

**REFERENCES**

1. GON, National Planning Commission 2015, Sustainable Development Goals 2016-2030 National (Preliminary) Report
2. 2030 Agenda for Sustainable Development. Available from: <http://www.np.undp.org/content/nepal/en/home/post-2015/sdg-overview.html>
3. Sustainable Development Goals : Available from: <https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals>



## ABOUT THE JOURNAL

Journal of Nepal Public Health Association (JNEPHA) an official, peer reviewed, public health journal of the Nepal Public Health Research Association since 1998. It is published annually and it will be continuing tri annually from 2013 as open access journal and publishes articles on the following category: Editorial message, Original Article, Review Article, Case Report, Public Health Education and Code, Viewpoint and Letter to the Editor.

The journal publishes articles related to researches related to public health, allied sciences and all other discipline of the medical sciences, Social health issues, health system, environmental health, health economics, nutrition, microbiology, biochemistry, disease, epidemiological study and many more including ethical and behavioral issues pertaining to health. The journal gives preference to public health oriented studies over analytical and experimental studies. The Journal would publish peer-reviewed original research papers, case reports, systematic reviews and meta-analysis. Editorial, Guest Editorial, Viewpoint and letter to the editor are solicited by the editorial board.

### Goal of JNEPHA

The goal of JNHEPA is to increase the behavioral change in study of journal and ease of use of open access scientific and scholarly articles thereby promoting their increased usage and impact in public health development intervention. To achieve goal of JNEPHA the necessary objective is listed,

- ⇒ To provide the open access scientific journal on public health to all readers
- ⇒ To increase the article reading and analysis among the public health professionals and in academia sectors
- ⇒ To give the prospect of publication of article in peer reviewed journal
- ⇒ To advocate and lobbying of finding published in journal for necessary modification in intervention level
- ⇒ To coordinate and network to other journal to coverage wide range of readers
- ⇒ Provide the necessary capacity enhance activities for quality journal, scientific writing and scientific editing etc.

### The Editorial Process

The manuscripts will be reviewed for possible publication with the understanding that they are being submitted to one journal at a time and have not been published, simultaneously submitted, or already accepted for publication elsewhere. The manuscript not follow the instructions given

by guideline are normally rejected by the editors before a formal peer-review starts.

The Editors review all submitted manuscripts initially. Manuscripts with insufficient originality, serious scientific and technical flaws, or lack of a significant message are rejected or if good article are written poorly then author are requested to re-submit after the revision according to JNEPHA format. All manuscripts received are duly acknowledged. Manuscripts are sent to two expert reviewers without revealing the identity of the contributors to the reviewers. Each manuscript is meticulously reviewed by the JNEPHA editor based on the comments from the reviewers and takes a final decision on the manuscript. The contributors will be informed about the reviewers' comments and acceptance/rejection of manuscript.

Articles accepted would be copy edited for grammar, punctuation, print style, and format. Page proofs will be sent to the corresponding author, which has to be returned within three days. Non response to proof copy may delay the publication of the same article or may even get rejected from the journal.

### Terms and condition

The ethically and officially we grant the permission to read, download, copy, distribute, print, search or link to the full texts of articles available online at [www.journal.nepha.org.np](http://www.journal.nepha.org.np) freely. But the user need to keep acknowledge/referencing of copying and any more of use of published article, otherwise plagiarism or copyright will be attracted.

### Journal Management System

We manage the Journal of Nepal Public Health Association (JNEPHA) by electronic management of peer review processes for scholarly journals. These tools promise to facilitate efficient and centralized control and/or supervision by editors and journal staff of the submission, assignment, tracking and publication of articles through the web, as well as enabling a central archive of various tasks.

Peer review

All the manuscripts submitted to a journal are assessed and evaluated for their quality, value and credibility by the authentic and subject expert. Journal editors select subject experts to review and evaluate submitted manuscripts before accepting (or rejecting) them for publication. Authors are required to respond to feedback provided by peer reviewers and manuscripts must pass the peer review process in order to be published.

**References must follow the [slightly modified] Vancouver style:**

1. Surname AB, Surname CD. Article title. Journal abbreviation Year; Vol: Start page–End page.
2. Use one space only between words up to the year and then no spaces. The journal title should be in italic and abbreviated according to the style of Medline. If the journal is not listed in Medline then it should be written out in full. You could check journal abbreviations using Pub-Med.
3. List the names and initials of all authors if there are 3 or fewer; otherwise list the first 3 and add et al. (The exception is the Journal of Medical Genetics, which lists all authors.)

*For detail click here follow the references guideline from our webpage*

**Tables**

Tables should be self-explanatory and should not duplicate textual material. Tables with more than 10 columns and 25 rows are not acceptable. Number tables, in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each. Type or print each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Do not use internal horizontal or vertical lines. Give each column a short or an abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading.

- Explain all nonstandard abbreviations in footnotes, and use the following symbols, in sequence:  
\*, >, †, ||, \*\*
- Be sure that each table is cited in the text.
- If you use data from another published or unpublished source, obtain permission and acknowledge that source fully. Submit such tables for consideration with the paper so that they will be available to the peer reviewers.

**Figures (Illustrations)**

Graphs, charts, diagrams or pen drawings must be drawn by professional hands in Indian ink (black) on white drawing paper. In case of x-ray, miniature photo prints should be supplied. Photographs should be supplied in high quality glossy paper not larger than 203 mm x 254 mm (8" x 10"). In case of microphotographs, stains used and magnification should be mentioned. Each illustration should bear on its back the figure number and an arrow indicating the top. All illustrations should be black and white and should be submitted in triplicate with suitable legends. We accept electronic versions of illustrations, which should have a resolution of 300 dpi, and the dimension of 640 x 480 to 800 x 600 pixels dimension and picture format should be JPEG (\*.jpg, \*.jpeg) or TIFF (\*.tif, \*.tiff). Pictures will be published in B/W free of charge. But, if you want to publish your picture in color, please contact the editorial board for the cost and payment procedure.

For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send sharp, glossy, black-and-white or color photographic prints, usually 127 x 173 mm (5 x 7 inches). Letters, numbers, and symbols on figures should therefore be clear and consistent throughout and large enough to remain legible when the figure is reduced for publication.

Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background.

Photographs of potentially identifiable people must be accompanied by written permission to use the photograph.

Figures should be numbered consecutively according to the order in which they have been cited in the text. If a figure has been published previously, acknowledge the original source and submit written permission from the copyright holder to reproduce the figure. Permission is required irrespective of authorship or publisher except for documents in the public domain.

**Legends for Figures (Illustrations)**

Type or print out legends for illustrations using double spacing, starting on a separate page, with Arabic numerals corresponding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend. Explain the internal scale and identify the method of staining in photomicrographs.

**Units of Measurement**

Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

Temperatures should be in degrees Celsius. Blood pressures should be in millimeters of mercury, unless other units are specifically required by the journal.

Journals vary in the units they use for reporting hematologic, clinical chemistry, and other measurements. Authors must consult the Information for Authors of the particular journal and should report laboratory information in both local and International System of Units (SI). Editors may request that authors add alternative or non-SI units, since SI units are not universally used. Drug concentrations may be reported in either SI or mass units, but the alternative should be provided in parentheses where appropriate.

**Abbreviations and Symbols**

Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers. Avoid abbreviations in the title of the manuscript. The spelled-out abbreviation followed

- The pages should be numbered consecutively, beginning with the title page.
- Each section of the manuscript should commence on a new page (eg. Title in one page, Abstract in next page, introduction in new one and similarly for last one also)
- Must be use the template for respective manuscript for article submission provision

Particular attention should be taken to ensure the manuscript adheres to the style of the journal in all respects. Please do not use any signs for e.g. “and” for “and” or “@” signs for “at the rate” and related signs; however, you can use abbreviations used in standard textbooks, provided the full form has been given when it first appears in the text.

## 1. Title Page

### The title page should carry

- Type of manuscript (e.g. Original article, Case Report, Review Article etc)
- The title of the article, which should be concise, but informative;
- Running title or short title not more than 50 words;
- The name by which each contributor is known ( First name, Middle name and Sur name), with his or her highest academic degree(s) for record and institutional affiliation;
- The name of the department(s) and institution(s) to which the work should be attributed;
- The name, address, phone numbers, facsimile numbers and e-mail address of the contributor responsible for correspondence about the manuscript;
- The total number of pages, total number of photographs and Word count (At end of each section) - excluding title page, abstract, references, figures and tables.
- Source(s) of support in the form of grants, equipment, drugs, or all of these;
- If the manuscript was presented as part at a meeting, the organization, place, and exact date on which it was read.
- Registration number of clinical trials.

### Conflict of Interest Notification Page

To prevent the information on potential conflicts of interest from being over looked or misplaced, it needs to be part of the manuscript. However, it should also be included on a separate page or pages immediately following the title page. JNEPHA do not send information on conflicts of interest to reviewers.

## 2. Abstract

The second page should carry the full title of the manuscript and an abstract. The abstract should be structured for original articles as: Background, Method, Result and Conclusion. State the context, aims, settings and design, material and methods, statistical analysis used, results and conclusions. Below the abstract should provide 3 to 8 keywords arranged alphabetically. The abstract should not be structured for a review article and case report. Do not include references in abstract. *(The word limit of abstract is strictly 250 words and 150 for case*

*report and other article, organized into paragraphs.)*

## 3. Introduction

Provide a context or background for the study (that is, the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question. Both the main and secondary objectives should be clear, and any prespecified subgroup analyses should be described. Provide only directly pertinent references, and do not include data or conclusions from the work being reported.

This part should not contain tables, points and heading as far as possible and should be more in paragraph form. You must justify, why you do select this topic/problem for preparing the term paper. After the completion of the paper who will be benefited from the findings of the paper. So, try to justify and give the importance of your paper in logical order.

## 4. Methods

The Methods section should only include information that was used at the time the study planned or protocol written; all information obtained during the conduct of the study belongs to the results section.

### 4.1 Selection and Description of Participants:

For the methodology

- Write about design with specifying clearly including eligibility and exclusion criteria with rationale
- Study population, study area and sample frame with rationale
- The guiding principle should be clarity about how and why a study was done in a particular way.
- Author should define how they measured the variables and justify their relevance.
- Sample size and sampling procedure
- Data management and analysis procedure, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods, give reasons for using them, and evaluate their limitations.
- Randomized clinical trials should present information on all major study elements, including the protocol, assignment of interventions (methods of randomization, concealment of allocation to treatment groups), and the method of masking (blinding), based on the CONSORT Statement (<http://www.consort-statement.org>).

Note: Authors submitting review article should include a section describing the methods used for locating, selecting, extracting, and synthesizing data.

### 4.2 Ethics

Ethics should be maintain by author in research activities and is should include in manuscript when studies on human or in animal or in critical issue. Author should indicate whether the

## AUTHERS GUIDELINE (MANUSCRIPT)

### Manuscript Submission (Necessary document)

1. Forwarding letter
2. Authorship and declaration form with fill of author, co-authors and corresponding author
3. Manuscript
4. Copy of ethical clearance certificate or approval letter if applicable
5. Resume of First Author (Strictly not over the two pages)

**Note:** All the document should be in hard and soft copy in CD/DVD. If you submitted online then softcopy will not be necessary

### Contact Details

Nepal Public Health Association (NEPHA)

Journal of Nepal Public Health Association (JNEPHA)

Central Office

117 Jeet Jung Marg, Thapathali Height

Kathmandu-11, Nepal

Tel: +977-1-4248513

Email: [editor@nepha.com.np](mailto:editor@nepha.com.np)

[editor.jnepha@gmail.com](mailto:editor.jnepha@gmail.com)

Url: [www.journal.nepha.org.np](http://www.journal.nepha.org.np)

### Instructions to Authors

Manuscripts Must be Prepared in Accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journals" developed by the International Committee of Medical Journal Editors (October 2006). The uniform and specific requirement of JNEPHA are summarized below. Before sending a manuscript authors are requested to check for the latest instructions available. Instructions are also available from the website of the journal ([www.jnepha.org.np/JNEPHA](http://www.jnepha.org.np/JNEPHA)).

### Types of manuscript and word limits

**Original Article:** Descriptive study (cross sectional, survey, case sries), Analytical (Ecological, Case control, Cohort, cost effectiveness analyses) and Experimental (Quasi, comparative, Randomized controlled trials, Field trial, community trial, studies of screening and diagnostic test with high response rate). The original article only accepted whenever the text maximum upto 3500 words excluding references (up to 50) and abstract (up to 250).

Title, Abstract with keywords, Introduction, Methodology, Results, Discussion, Conclusion, Acknowledgement and References.

**Review Article:** Systemic critical assessments of literature and data sources. Up to 5000 words excluding references and abstract (250).

Title, Abstract with keywords, Introduction, Headings, sub headings and caption, Conclusion, Acknowledgement and References.

**Public Health Education/Health education/medical education:** Any article related to Public Health Education/Health education/medical education with abstract and references, word limit may vary (Maximum 3500 word) and abstract upto 200 words

Title, Abstract with keywords, Introduction, Headings, sub headings and caption, Conclusion, Acknowledgement and References

**Case Report/Case Study:** new/interesting/very rare cases with public health significance or implications can be reported. The care report only accepted whenever the text maximum up to 1500 words excluding references (up to 30) and abstract (up to 150), up to five photographs.

Title, Abstract with keywords, Introduction, Case reports, Discussion, Conclusion, Acknowledgement and References

**View Point:** Your view/thought/analysis about the public health issue with significance /implication in public health development.

Title, Abstract with keywords, Introduction, Headings, sub headings and caption, Conclusion, Acknowledgement and References

**Letter to the Editor:** Should be short, decisive observation. They should not be preliminary

### Manuscript Submission

Manuscripts must be submitted in clear, concise in British English language. The manuscript submission contain mandatory softcopy (One hard copy would be appreciative) in by online version or CD/DVD along with forwarding letter, Authorship and declaration form by duly signed by author and co-authors, manuscript, Copy of ethical clearance certificate or approval letter if applicable, informed consent with two page resume of first author. All authors must give signed consent to publication in a letter sent with the manuscript. Authors should send their manuscripts to:

### The Editor in Chief

Journal of Nepal Public Health Association (JNEPHA)

Nepal Public Health Association

Central Office

### Manuscript Preparation

The manuscript

- Must be typed 1.5 spaced on A4 size white paper with Times New Roman Font, size of 12 points. Margins should be 1.25 at left and 1 inch in all other side.
- Number each page at top bottom right eg (Page 1 of 10, Page 2 of 10).

procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional or national -NHRC) and with the Helsinki Declaration of 1975, as revised in 2000 (available at [http://www.wma.net/e/policy/17-c\\_e.html](http://www.wma.net/e/policy/17-c_e.html)).

Do not use patients' names, initials, or hospital numbers, especially in illustrative material. When reporting experiments on animals, indicate whether the institutions or a national research council's guide for, or any national law on the care and use of laboratory animals was followed.

Evidence of approval or ethical clearance (for both human as well as animal studies) must be provided the authors on demand. Animal experimental procedures should be as humane as possible and the details procedure (including regime or other any) used should be clearly stated. The ethical standards of experiments must be in accordance with the guidelines provided by the CPCSEA (animal) and ICMR (human)-NHRC. The journal will not consider to any manuscript, which is ethically unacceptable. ***A statement on ethics committee permission and ethical practices must be included in all research articles under the 'Materials and Methods' section.***

#### 4.3 Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Avoid relying solely on statistical hypothesis testing, such as P values, which fail to convey important information about effect size. References for the design of the study and statistical methods should be to standard works when possible (with pages stated). Define statistical terms, abbreviations, and most symbols. Specify the computer software used.

### 5. Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. The finding must spell out about the objectives of study.

Do not repeat all the data in the tables or illustrations in the text;

The data presented in table or in figure not need to elaborate in text

Emphasize or summarize only the most important observations.

When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them. Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables. Avoid nontechnical uses of technical terms in statistics, such as "random" (which

implies a randomizing device), "normal," "significant," "correlations," and "sample."

### 6. Discussion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other information given in the Introduction or the Results section. For experimental studies, it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been completed.

### 7. Referencing

References should be numbered consecutively in the order in which they are first mentioned in the text (not in alphabetic order). Identify references in text, tables, and legends by Arabic numerals in superscript with square bracket after the punctuation marks. Eg Meta analysis.<sup>(6)</sup> or <sup>(1,6,29)</sup> in case of multiple citation. For sequences of consecutive numbers, give the first and last number of the sequence separated by a hyphen, for example, [22-25]. Please note, if your references are not cited in order your article will be returned to you before acceptance for correct ordering.

References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. The referencing based on the Vancouver style and examples according to below. Use complete name of the journal for non-indexed journals. Avoid using abstracts as references. Information from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source. Avoid citing a "personal communication" unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. Include the last names and initials of the authors, title of article, name of publications, year published, volume number, and inclusive pages. The style and punctuation of the references should conform to the following examples.

Authors are responsible for the accuracy of cited references: these should be checked against the original documents before the paper is submitted. It is vital that the references are styled correctly so that they may be hyperlinked.

by the abbreviation in parenthesis should be used on first mention unless the abbreviation is a standard unit of measurement.

### Copyright Transfer and Author Agreement

Submission of the manuscript means that the authors agree to assign exclusive copyright to JNEPHA. All authors must sign a Copyright Transfer and Author Agreement form upon submission of the manuscript to the Journal. The work shall not be published elsewhere in any language without the written consent of JNEPHA. The articles published in this journal are protected by copyright which covers translation rights and the exclusive rights to reproduce and distribute all of the articles printed in the journal.

**Authorship:** All persons designated as authors should qualify for authorship. Authorship credit should be based only on significant contribution. The first author named must accept the responsibility for ensuring that both versions of the paper submitted and the corrected proofs have the approval of all co-authors. Submission of a manuscript will also be taken to imply that all authors have obtained permission from their employers or institution to publish, if they are obliged to do so and that relevant ethical approval has been obtained for clinical studies. However, authorship credit should be based only on significant contribution to (a) conception and design, or analysis and interpretation of data, to (b) drafting the article or revising it critically for important intellectual content and on (c) final approval of the version to be published. Authors may include explanation of each author's contribution separately.

**Dual publication:** If material in a submitted article has been published previously or is to appear in part or whole in another publication, the Chief Editor must be informed. If the same paper appears simultaneously elsewhere or has previously been published or appears in a future publication, then the author will be black-listed for the JNEPHA and future articles of the author will be rejected automatically.

**Forwarding letter:** The covering letter accompanying the article should contain the name and complete postal address of one author as correspondent and must be signed by all authors. The correspondent author should notify change of address, if any, on time.

**Declaration:** A declaration should be submitted stating that the manuscript represents valid work and that neither this manuscript nor one with substantially similar content under the present authorship has been published or is being considered for publication elsewhere and the authorship of this article will not be contested by anyone whose name(s) is/are not listed here, and that the order of authorship as placed in the manuscript is final and accepted by the co-authors. Declarations should be signed by all the authors in the order in which they are mentioned in the original manuscript.

### Electronic version of manuscripts

Do not use 'oh' (O) for 'zero' (0), 'el' (l) for one (1). Do not use space bar for indentation. Do not break words at the end of lines. Do not insert a tab, indent, or extra spaces before beginning of a paragraph. Do not use software's facility of automatic referencing, footnotes, headers, footers, etc.

### Sending a revised manuscript

While submitting a revised manuscript, contributors are requested to include, along with single copy of the final revised manuscript, a photocopy of the revised manuscript with the changes underlined in red and with the point to point clarification to each comment. The manuscript number should be written on each of these documents.

If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors. Within two weeks from submission. Hard copies of the images, for articles submitted online, should be sent to the journal office at the time of submission of a revised manuscript.

### Check List

While submitting your manuscript to JNEPHA please make sure you have submitted following documents:

1. Forwarding letter
2. Cover Page (Title, name of the author and co-authors, place of study and address of correspondence)
3. Author declaration from duly signed by author and co-authors
4. Manuscript
5. Copy of ethical clearance certificate whenever applicable or approval letter
6. Informed Consent

### Forwarding letter

- Signed by all contributors
- Previous publication / presentations mentioned
- Source of funding mentioned
- Conflicts of interest disclosed

### Authors

- Complete author information
- Author for correspondence, with e-mail and telephone numbers
- Identity not revealed in paper except title page (e.g. name of the institute in material and methods, citing previous study as 'our study', names on figure labels, name of institute in photographs, etc.)

### Presentation and format

- Manuscript with one and double spacing
- Margins 1.25 inch from all four sides
- Title page contains all the desired information
- Running title provided (not more than 50 characters)

- Abstract page contains the full title of the manuscript
  - Abstract provided (not more than 150 words for case reports and 250 words for original articles)
  - Structured abstract provided for an original article
  - Key words provided (three or more)
  - Introduction of 75-100 words
  - Headings in title case (not ALL CAPITALS, not underlined)
  - References cited in superscript in the text without brackets
  - References according to the journal's instructions.

#### Grammar

- Use correct grammar, punctuation and word synthesis
- Abbreviations spelt out in full for the first time
- Spell out - single-digit numbers (1-9) except when beginning a sentence and use numerals for all others
- Numerals at the beginning of the sentence spelt out

#### Tables and figures

- Number within specified limits.
- No repetition of data in tables/graphs and in text
- Actual numbers from which graphs drawn, provided
- Figures necessary and of good quality (colour)
- Table and figure numbers in Arabic letters (not Roman)
- Labels pasted on back of the photographs (no names written)
- Figure legends provided (not more than 40 words)
- Patients' privacy maintained (if not, written permission enclosed)
- Credit note for borrowed figures/tables provided
- Manuscript provided on a CD/DVD

***Authors do not have to pay for submission, processing or publication of articles in JNEPHA.***

**How to take this information:** Editorial Board, 117, Jeet Jung Marg, Thapathali height, Kathmandu-11, District, Journal of Nepal Public Health Association, |JNEPHA 2013; 5 –1(5):

**Source of Support:** [www.jnepha.org.no](http://www.jnepha.org.no) OR [www.nepha.org.np](http://www.nepha.org.np)