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Editorial Board

Contact:
Maharajgunj Nursing Campus
TU, IOM
Phone No. 4720423, 4721266
E-mail: nsgcampus@iom.edu.np
Website: mnc.edu.np

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It is a matter of great pleasure to bring out this 11th volume journal JONEN which was started to publish from the year of 1998 and continued to publish periodically. It is a peer reviewed journal with articles not only from Nepal but also accepted from abroad.

I would like to take this opportunity to acknowledge the managing editor, editorial board members, library team for their ongoing hard work and commitment to the standards to which the journal aspires. I hope editorial board will maintain the standards for further improvement and quality of the journal output in the coming days.

The journal promotes ethical reflection and conduct in scientific research and nursing practice. It features articles on health care relevant to health care professionals, health care receivers, researchers and policy makers.

I look forward to work with all of you as we continue to make it success and your submissions, as well as feedback as authors, readers, and reviewers of the journal are welcome.

Prof. Sulochana Shrestha
Chief Editor

JONEN

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Original Article

Awareness and Practice Regarding Prevention of Water Borne Disease Among Earthquake Victims at Sindhupalchowk District

Sah Bimala Kr.[1]
Giri Jelina[2]
1. Lecturer, Maharajgunj Nursing Campus
2. RN, Australia

Abstract

This study was conducted in Sindhupalchok district which was severely affected by two high magnitude earthquakes and victims were living in a tent. They were at risk from outbreak of water, sanitation and hygiene related diseases due to reduced access to safe water and sanitation system. The objective of this study was to assess the awareness and practiceon prevention of water borne disease among earthquake victims.

A descriptive cross-sectional study was conducted among 68 earthquake victims by using non-probability purposive sampling technique. A pretested structured questionnaire was used to collect the data by interviewing. Data was analyzed using descriptive analysis with Statistical Package for Social Science version 16.

The findings revealed that mean age of respondents was 35.82 ±11.63 years. The majority of them (52.9%) were female; 57.35% were literate; and 51.5% were housewives and involved in agriculture. Regarding awareness and practice, the majority (82.4%) were adequately aware and 17.6% were moderately aware about waterborne diseases. This study also showed that 94.1% had good practice and 5.9% had moderate practice for prevention of waterborne diseases.

In conclusion, though most of the respondents was aware and had good practice on prevention of waterborne diseases, most of them drank water without purification. So local health facilities need to initiate awareness program on prevention of water borne diseases especially on purification of water.

Key words: Awareness, Earthquake victims, Practice, Prevention, Water borne disease.

Introduction

Nepal is highly vulnerable to various types of disasters, e.g. floods, landslides, earthquake, fire, and climate change. According to the disaster vulnerability and risk assessment study report, globally Nepal ranks 11th among countries most vulnerable to earthquakes (WHO, 2015).

Major disasters results in displacement of large number of population which gives rise to risk of outbreaks. The underlying risk factors are unavailability of clean drinking water and overcrowding, poor sanitation, primary health issues of the residents, and available services of healthcare (Watson, Gayer, & Connolly, 2007).

The cholera epidemic that followed the 2010 Haiti earthquake made more than 170,000 people sick and more than 3,600 died. In Asia after the 2011 Great Eastern Japan Earthquake and Tsunami, outbreaks of acute respiratory infection (ARI) and acute gastroenteritis occurred in evacuation shelters (Kawano, Hasegawa, Watase, Morita, & Yamamura, 2014).

Disruption of usual water sources and contamination of water by open defecation, sub-optimal latrines and/or damaged sewage infrastructure may result

in unsafe drinking water, increasing the risk of exposure. Sindhupalchowk District had experienced the highest number of earthquake related deaths i.e. 3440 deaths, 1571 injured and 63885 houses were completely damaged (Health Emergency Operation Centre, 2015).

After earthquake, displacement of population, environmental changes, unplanned and overcrowded shelters, poor water supply and sanitation conditions, poor nutritional status or inadequate personal hygiene, all lead to develop the risk of water borne diseases. There were often urgent need to run health camp, assess the health status of the displaced populations, educate the victims and provide materials for water purification process to prevent any outbreaks of waterborne diseases. There are no research papers published related to water borne diseases before the beginning of the study so this study was an attempt to research on the awareness and practice regarding prevention of water borne diseases among earthquake victims at Sindhupalchowk District.

Methodology

A descriptive cross-sectional study design was adopted to assess the awareness and practice on prevention of water borne diseases among the earthquake victims in Sindhupalchowk, Nepal. The study period was from July 2015 to February 2016. Non- probabilitypurposive sampling technique was used for data collection. Total sample were 68 respondents of Irkhu Village Development Committee (VDC), Sindhupalchowk. Before proceeding to data collection, the formal permission was taken from Research Committee of Nepalese Army Institute of Health Sciences, from concerned authority of respective VDC and verbal informed consent was also taken from each respondent prior interviewing. Confidentiality was maintained throughout the study.

Interview questionnaire was prepared in English and translated into Nepali version. Data was analyzed using descriptive analysis with SPSS (version 16). Interpretation of the data was done on the basis of analyzed data and the findings were presented on the relevant tables. Adequate level of awareness and practice was analyzed according to the response given by the respondents. One mark was given for each correct answer and 0 was given for each wrong answer.

During analysis, respondents' score was categorized as adequate awareness and good practice if respondent answered >75% questions correctly, moderate awareness and moderate practice if answered 50-75% questions and unaware and weak practice if answered <50% of the questions (Kaur et al., 2015).

Results

Table 1 : Socio-demographic Characteristics of Respondents

n= 68

Variables	Number	Percent
Classification of age 20-29	29	42.6
30-39	14	20.6
40-49	12	17.6
50-59	13	19.1
Gender		
Male	32	47.1
Female	36	52.9
Literacy Status		
Illiterate	2	2.9
Informal education	27	39.7
Primary	10	14.7
Secondary	19	27.9
Intermediate	7	10.3
Bachelor & above	3	4.4
Occupational Status		
Housewife	2	2.9
Agriculture	8	11.8
Housewife + Agri-culture	35	51.5
Student	4	5.9
Service	19	27.9
Monthly income		
3000-5000	13	19.1
>5000	55	80.9
Number of people living in a tent 5	40	58.8
>5	28	41.2

Table 1 shows that the majority of the respondents (42.6%) were from the age group 20- 29 years, while the least (17.6%) were from 40-49 years, mean (SD) age was 35.82(±11.63). Majority (52.9%) were female. Similarly, the majority (57.35%) were literate and 51.5% were housewives and involved in agriculture. The 41.2% of respondents lived with more than 5 members in a tent.

Table 2 :Awareness on Different Types of Waterborne Diseases

n= 68

Variables	Number	Percent
***Heard about waterborne disease**		
Diarrhea	68	100
Dysentery	57	83.8
Cholera	61	89.7
Jaundice	32	47.1
Typhoid	51	75.0
Worm infestation	50	73.5

* *Multiple Response*

Table 2 shows that respondent gave diverse responses on different waterborne diseases. Respondent heard about water borne diseases as diarrhea (100%) and jaundice (47.1%). Similarly, The majority (89.7%) heard as cholera and 83.8% of respondents as dysentery respectively.

Table 3 : Awareness on the Causes, Signs and Symptoms, and Prevention of Waterborne Diseases

n=68

Variables	Number	Percent
***Causes of waterborne diseases**		
Contaminated drinking water	57	83.8
No hand washing	68	100
Open defecation near water sources	54	79.4
Symptoms of waterborne diseases		
Loose stool	66	97.1
Abdominal pain	66	97.1
Vomiting	43	63.2
Fever	57	83.8
***Preventive measures of waterborne diseases**		
Good sanitation	63	92.6
Hand washing	68	100
Prevent from flies	48	70.6
Clean water	68	100
Water Purification	65	95.6

* *Multiple Response*

Table 3 shows that all respondents replied that waterborne diseases were caused by no hand washing (100%). Other causes include; consumption of contaminated drinking water (83.8%) and open defecation near water sources (79.4%). Similarly, respondents believed that loose stool (97.1%) and abdominal pain (97.1%) are the symptoms of waterborne diseases followed by fever (83.8%) and vomiting (63.2%). Regarding preventive measures, all respondents stated that consumption of clean water (100%) and hand washing (100%) are the most important measures for the prevention of water borne diseases. Other preventive measures reported by respondents were water purification (95.6%), good sanitation (92.6%) and prevention of contamination of food from flies (70.6%).

Table 4 :Practice on Prevention of Waterborne Disease

n= 68

Variable	Number	Percentage
Sources of drinking water		
Public Tap	68	100
Purification of drinking water		
Yes (boiling method)	4	5.9
No	64	94.1
Store drinking water		
Cover it with lid	68	100
Latrine Facility (septic tank)	68	100
Dispose liquid waste safely	68	100
Open space	4	5.9
Kitchen garden	64	94.1
Dispose Solid Waste Safely		
Yes (by burning and burying method	68	100
Wash Hands After Defecation		
Yes(using soap water)	68	100

Table 4 shows that public tap is the source of drinking water for all respondents (100%) and the majority of respondents (94.1%) did not purify drinking water. All respondents covered stored drinking water with lid. It also showed that entire (100%) respondents had latrine facility with septic tank and also disposed solid waste safely by burning and burying methods. Likewise 94.1% respondents disposed liquid waste safely in the kitchen garden while (5.1%) threw in open space away from their household. It also showed that entire 100% respondents washed their hands with soap and water.

Table 5 : Level of Awareness and Practice on Prevention of Water borne Disease

n=68

Variables	Number	Percent
Level of Awareness		
Adequate (>75%)	56	82.4
Moderate (50 to 75%)	12	17.6
Level of Practice		
Good Practice (>75%)	64	94.1
Moderate Practice (50-75%)	4	5.9

Table 5 shows that the majority (82.4%) of the respondents had adequate awareness on prevention of waterborne diseases. Similarly, majority of them (94.1%) had good practice on prevention of waterborne diseases.

Discussion

In this study, the majority of the respondents was from age group 20-29 years, {mean (SD) was 35.82(±11.63) years}. The majority of them were female (52.9%) and literate (57.35%). 41.2% of respondents lived with more than 5 members in a tent.

Regarding awareness, the majority of respondents had heard about the various types of waterborne diseases; diarrhea (100%), dysentery (83.8%), cholera (89.7%), jaundice (52.9%), typhoid (75%) and worm infestations (75%). These findings are different from the similar study conducted in North West Cameroon which showed that respondents heard about diarrhea (20%),typhoid (60%) cholera (25%) and dysentery(8%) are the water borne diseases (Fonyuy& Innocent, 2014).

Similarly, the respondents stated that cause of waterborne disease was by drinking contaminated water (83.8%), similar to research conducted in North West Cameroon also concluded that contaminated drinking water (85%) was the most common cause of waterborne disease (Fonyuy& Innocent, 2014).

Regarding sign and symptoms of water borne disease, fever (83.8%) and diarrhea (93.1%)were the main signs and symptoms and it is slightly different than the findings of study conducted in Iran that showed fever (81.91%) and diarrhea(63.76%) as the main sign and symptoms of waterborne disease respectively (Cheragi et al., 2014).

This study showed that the majority (82.4%) had adequate knowledge and (17.6%) had moderate knowledge on prevention of waterborne disease similar findings of research conducted in Bangalore which showed that the majority (91.67%) of respondents had adequate knowledge and (8.33%) had moderate knowledge on prevention of waterborne disease (Kaur et al., 2015).Awareness about types of waterborne disease, its causes, sign and symptoms, and its prevention was adequate which may be due to community already had an outbreak and there were also many national and international disaster relief agencies launched an awareness campaign as it was one of the highly earthquake affected District.

With regards to practice, it showed that 100% respondents consumed water from the public tap and 94.1% did not purify drinking water as they believedthat natural resources of water are the pure water for drinking. In contrast to the study done in West Cameroon as only 33% did not purify their drinking water (Fonyuy& Innocent, 2014). Similarly 100% of respondents covered the drinking water with lid which was similar with the findings of study conducted in Haryana as (96.8%) respondent covered drinking water (Bharti et al., 2013).

This study also showed that 100% respondents had latrine facility and with septic tank. This might be due to the fact that many organizations like UN Habitat with the assistance of UNICEF helped earthquake victims in building sanitary toilets. In contrast to the findings of study conducted in Jhapa district as (53.2%) had no latrine facility. Furthermore, this present study also showed that most of the respondents had knowledge of safe water and sanitation, used soap and water for hand washing after defecation (100%) which is almost similar with the findings the study conducted in Jhapa district as (76.92%) used soap and water (Sah

et al., 2013).

Furthermore, the majority (94.1%) had good practice and (5.9%) have moderate practice on prevention of waterborne disease.

Conclusion

Based on study findings, it can be concluded that the majority of respondents had heard about the various types of waterborne diseases like diarrhea, dysentery, cholera, jaundice, typhoid and worm infestations. Regarding causes, sign and symptoms, and prevention, adequate level of awareness was found which might be due to many national and international disaster relief agencies launched an awareness campaign in this community as it was one of the highly earthquake affected district. With regards to practice, all respondents consumed water from the public tap and most of them did not purify drinking water. Most of the respondents covered the drinking water with lid, had latrine facility with septic tank, used soap and water for hand washing after defecation. Though most of the respondents were aware and had good practice on prevention of waterborne diseases, therewas still lack of practice especially on purification of drinking water so local health facilities need to initiate awareness program on prevention of water borne disease especially on purification of drinking water to maintain good practice.

References

Bharti et al. (2013). Knowledge, attitude and practices regarding water handling and water quality assessment in a rural block of Haryana. *International Journal of Basic and Applied Medical Sciences, 3*(2), 243-247.

Cheraghi et al. (2014). Knowledge, attitude and practice regarding food and waterborne outbreak after massive diarrhea outbreak in Yazd Province, Iran. *International Scholarly Research Notices, 1*(2), 1-6. doi: 10.1155/2014/403058

Fonyuy, B. E., & Innocent, M. L. (2014). Prevention practices from waterborne diseases within households in the Bamendankwe Municipality-North West Cameroon. *Global Journal of Medical Research, 14*(5), 24-35.

Health Emergency Operation Centre. (2015). *Health sector response (*Situation update report as of 2nd June) Kathmandu: Ministry of health and population. http://heoc.mohp.gov.np/attachments/article/73/02_June_2015_sit_update_HEOC.pdf

Kaur, K., Kumari, R., & Kaur, G. (2015). A study to assess the level of knowledge regarding water borne diseases and its prevention among mothers of under five children in selected rural community area Bangalore. *International Journal of Pediatric Nursing, 1*(1), 8-13.nursing.journalspub.info/index.php/IJPN/article/download/14/15

Kawano, T., Hasewaga, K., Watase, H., Morita, H., &Yamamura, O. (2014). Infectious disease frequency among evacuees at shelters after the Great Eastern Japan earthquake. *Disaster Medicine and Public Health Preparedness, 0,* doi: 10.1017/dmp.2014.15

Sah, R.B., Baral, D.D., Ghimire, A., Pokharel, P.K. (2013). Study on knowledge and practice of water and sanitation application in Chandragadhi VDC of Jhapa District. Health Renaissance, 11(3), 241-245.

Watson, J. T., Gayer, M., & Connolly, M. A. (2007). Epidemics after natural disasters. *Emerging Infectious Diseases, 13*(1), 1-5. doi:10.3201/eid1301.060779

World Health Organization. (2015). *Humanitarian crisis after Nepal earthquakes 2015: Public health risk assessment and interventions (May 2015).* Nepal: World Health Organization. http://www.searo.who.int/entity/emergencies/phra_nepal_may2015.pdf

Original Article

Awareness of Preconceptional Folic Acid Supplemenation Among Pregnant Woment at a Referal Hospital in Kathmandu

Shrestha Luitel Binita[1]
Koirala Manisa[2]
1. T U, Teaching Hospital, Maharajgunj
2. Lecturer, Maharajgunj Nursing Campus,

Abstract

Folic acid deficiency can lead to Neural Tube Defects (NTDs). Preconceptional folic acid supplementation, 1 month prior to 12 weeks after the conception has shown to decrease both the occurrence and recurrence of NTDs among the children. The objective of this study was to find out the awareness and practice regarding preconceptional folic acid supplementation among pregnant women at a referral level hospital in Kathmandu.

The descriptive, cross sectional study design was adopted among 95 pregnant women visiting at Antenatal/Gynae outpatient department (OPD) of Tribhuvan University Teaching Hospital (TUTH), Kathmandu, Nepal. Non probability purposive sampling technique was used for data collection with interview method by using a semi structured interview schedule. Data was analyzed using descriptive and inferential statistics.

The majority (82.1%) of respondents were of the age group of 20 to 30 years, 75% had secondary level of education & above, majority (85.3%) of women were from middle socioeconomic status, 33.7% women had adequate level of awareness about health benefit of folic acid consumption, 46.3% thought that folic acid has beneficial for the growth of fetus and 17.9% answered the correct period of supplementation is prior to conception. Higher level of awareness was found among women with 20-30 years, middle socioeconomic status and primigravida women.

The level of awareness on preconceptional folic acid consumption found to be low among pregnant women. More than half of the participants were taking folic acid as soon as pregnancy was detected. An awareness program regarding preconceptional counseling and folic acid supplement incorporation is needed in formal secondary level curriculum. This information should be incorporate to sensitize the girls. An emphasis on strategies to improve the level of folic acid supplementation among the reproductive age women is recommended to the policy makers.

Key words: Awareness, Folic acid, Neural Tube Defects, Pregnancy

Introduction: Globally, approximately 300,000 babies are born each year with Neural Tube Defects (NTDs) resulting in approximately 88,000 deaths and 8.6 million disability-adjusted life years (DALYs). In low income countries, NTDs may account for 29% of neonatal deaths due to observable birth defects (Zaganzor, Sekkaire, Tsang & Williams, 2016).

Worldwide incidence of NTDs ranged 1.4 -2 per 1000 births, this figure fourfold higher in low income setting. Anencephaly is not compatible with life & treatment, but 80 - 90% of infants with spina bifida survive with varying degrees of disability (Nawapun & Phupong, 2007). Among the delivered babies, congenital neural tube birth defects found 37% at Maternity hospital Kathmandu (Malla, 2007).

NTDs are serious birth defects of the brain & spine, major cause of death & lifelong disability worldwide. The relationship of folic acid deficiency

during pregnancy and neural tube defect (NTDs) is well established; encephalocele, anencephaly and spina bifida, result from failure of neural tube closure during first month of embryogenesis. The efficacy of adequate amounts of supplementary folic acid periconceptionally, before and during in early stages of pregnancy, has been shown to be highly effective around 70% in preventing both occurrence and recurrence of these congenital anomalies (Czeizel & Dudas, 1992). The periconceptional use of daily supplementation of 0.4 mg folic acid has been shown to prevent 40–80% of cases of spinabifida and anencephaly (Berry et al., 1999). Neural tube defects has an elevated risk of a subsequent NTD-affected pregnancy so high dose (4 mg/day) of folic acid taken around the time of conception prevents most recurrences of NTDs (Grosse& Collins, 2007).

Most of the women in developing country are unaware of the correct time of folic acid supplementations compared to developed nations. Even though 70% American & 95% Canadian women and 40 % Nepalese childbearing aged women of Kathmandu (Poudel, 2011) had heard about folic acid, very few reproductive aged women knew that folic acid prevents birth defects 28% American & 25% Canadian women (Canfield, 2006), 8.7% of women from United Arab Emirates (Abdulrazzaq, 2003), 20.3% Arabian Qatari women (Bener, Maadid, Al-Bast & Al-Marri, 2006). Similarly 16.3% Nepalese childbearing aged women of Kathmandu knew that folic acid affected fetal health & 5% knew that it should be taken before pregnancy (Poudel, 2011).

Women from different country, had different degree of awareness, 5.5% among Israeli women (Ringel, 1999), 46.4% women of United Arab Emirates (Abdulrazzaq, 2003), 53.7% Arabian Qatari women (Bener, Maadid, Al-Bast & Al-Marri, 2006), 76.1% Thai women (Nawapun & Phupong, 2007). Only 24.4% Thai women knew about important of folate (Nawapun & Phupong, 2007) and 72% Croatian women aware about benefit of it (Gjergja, Stipoljev, Hafner, Tezak, &Stiffler, 2006). Though taking folic acid during preconceptional period found very low even in developed world, 9.7% Thai women (Nawapun & Phupong, 2007), 25% childbearing aged American women (Canfield, 2006), 2.8% Israeli women (Ringel, 1999), 14.41% in unplanned & 75.53% in planned pregnancies of Croatian women (Gjergja, Stipoljev, Hafner, Tezak, & Stiffler, 2006), 45.5% United Arab Emirates took the folic acid during pregnancy.

Only one-fourth of women had good knowledge of folate-rich foods (Canfield, 2006). Well educated, upper middle class, child bearing aged married women of India indicated a poor knowledge of potential benefits of preconceptional folic acid supplementation (Gupta & Gupta, 2000). The poor level of awareness as evidenced by different studies, demands the need of the dissemination of information regarding benefit of folic acid supplementation. Education is the strongest significant predictors of rising awareness of daily folic acid supplementation during preconception period and is crucial to reduce the burden of NTDs.

Methods

Descriptive cross sectional study was conducted in April, 2017 at Antenatal/Gynae outpatient department of Tribhuvan University Teaching Hospital, Kathmandu, Nepal. Ninety five pregnant women were selected with non-probability purposive sampling technique, who visited the hospital for antenatal follow up and met the eligible criteria for the study. A pretested semi structured interview schedule was used for data collection. Collected data was analyzed by using SPSS version 16 and interpreted on the basis of research objectives by using descriptive and inferential statistics. The ethical approval was obtained from Institutional Review Board (IRB) of Institute of Medicine, Tribhuvan University.

Results

Table 1: Socio-demographic Information

(n=95)

Socio-Demographic Information	No.	Percent
Age (in completed year)		
Less than 20 years	5	5.3
21-30 years	78	82.1
31-40 years	12	12.6
Ethnic group		
Brahmin/Chhetri	62	65.3
Others (Janajati + Dalit +Madhesi)	33	34.7
Religion		
Hinduism	83	87.4
Buddhism	6	6.3
Christianity	6	6.3
Educational status		
Illiterate	2	2.1
Up to Secondary level	41	43.2
Higher Secondary& Above	52	54.7
Occupation		
House maker	56	58.9
Others (Business + Service)	39	41.1
Economic status		
Sufficient for 6 -12 months expenditure	81	85.3
Sufficient for 12 months expenditure& surplus	14	14.7

Regarding the socio-demographic information, the majority (82.1%) of the participants were from age group 20-30 years, 65.3% belonged to Brahmin & Chhetri ethnicity, 87.4% believed in Hinduism, education wise 54.7% participants passed higher secondary & above level education. Similarly 85.3% said that their income was sufficient for 6 -12 months expenditure and 58.9% were involved only in household activities.

Table 2: Awareness on Folic acid Supplementation

(n=95)

Descriptions	No.	Percent
Meaning of folic acid		
Vitamin	72	75.8
Protein & Mineral	15	15.8
Don't know	8	8.4
Sources of information		
Health personal	70	73.6
Family and relatives	14	14.7
Mass Media	11	11.7
Folic acid necessary for		
Development of brain & Spinal cord	48	50.5
Development of Heart, Lungs & Kidney	40	42.1
Don't Know	7	7.4
Effects of folic acid deficiency		
Fetus	44	46.3
Both	33	34.7
Mother	11	11.6
No idea	7	7.4
Timing of folic acid supplementation		
As soon as pregnancy is detected	64	67.4
Prior to Conception	31	32.6
Timing of folic acid supplementation		
Till first trimester	56	58.9
Till third trimester	22	23.2
Till second trimester	4	4.2
No idea	13	13.7

Majority (75.8%) of the participants told that folic acid was vitamin and 73.6% stated the health person as main source of information. Similarly half of the participants told that folic acid was necessary for development of brain & spinal cord of the fetus. 46.3% participants believed that its deficiency affected the fetus. Only 32.6% were aware about that folic acid supplementation be started prior to conception and 58.9% said it needed to be continue till the first trimester.

Table 3: Practice on Folic Acid Intake

n=95

Descriptions	No.	Percent
Visited for preconceptional counseling	6	6.3
Not visited for preconceptional counseling	89	93.7
Folic acid intake before pregnancy		
Taken	7	7.4
Not taken	88	92.6
Taken for good health of baby	7	7.4
Not Taken due to lack of awareness	88	92.6
Timing of folic acid intake		
As soon as pregnancy is detected	52	54.7
Didn't take	36	37.9
1 month prior to pregnancy	6	6.3
3 month prior to pregnancy	1	1.1

Regarding the practice of folic acid use among pregnant women, only 6.3% participants visited preconceptional counseling. Similarly only 7.4% women had taken folic acid for good health for baby before pregnancy. Just more than half (54.7%) of participants took folic acid as soon as pregnancy was detected while only 1.1% took 3 month prior to pregnancy.

Table 4: Level of Awareness on Folic Acid Supplementation

n=95

Level of Awareness	Number	Percent
Inadequate Awareness (Less than mean)	63	66.3
Adequate Awareness (More than mean)	32	33.7

Regarding the level of awareness, the total score of awareness related questionnaire was 20 and mean score was 10, who got more than mean interpreted as adequate level of awareness that was 33.7% and 66.3% of the participants had inadequate level of awareness mean achieved the score less than mean regarding preconceptional folic acid supplementation.

Table 5 : Association between Level of Awareness and Socio Demographic Characteristics

n=95

Characteristics	Level of Awareness		P Value
	Inadequate	Adequate	
Age (in completed year)			
Less than 20 years	2(40)	3 (60)	0.37**
20-30 years	52(67)	26 (33)	
31-40 years	9(75)	3(25)	
Economic Status			
Sufficient for 6 -12 months expenditure	52(54.73)	29(30.52)	0.29*
Sufficient for 12 months expenditure & surplus	11(11.57)	3(3.15)	

*Chi-square test **Fisher's Exact test

Regarding the association between level of awareness of folic acid supplementation and age & economic status, no significant association was found.

Discussion

The preconceptional folic acid supplementation is very essential concept for prevention of congenital neural tube defects. In this study 64.2% of the pregnant women had heard about the folic acid. In a similar study conducted by Canfield (2006), 78% women of Texas and 95% of Canadian women had heard about folic acid. In this study 33 % pregnant mother of 20-30 years of age had adequate level of awareness; the study done by Bener (2006) in Qatarin women had highest (30.5%) awareness and another study by Amitai et al., (2008) found highest level of awareness (90%) among 20-30 years age group pregnant mother.

Regarding the education, this study showed that women with at least Bachelor level of education had more (47.3%) than primary level 33%. In a similar study by Bener (2006) in Qatar showed that 41.3% women had university level education, similarly another study by Canfield (2006) in Texas found higher level (45.6%) of awareness among college graduate. This study showed that primigravida were more (37.8%) aware than multigravida women 28.5% about the necessity of the folic acid supplementation, similar results by Alozie (2003) found that primigravida were more (71.6%) aware than multigravida 66.6%. Regarding the source of information majority, 73.6 % received the information from health personnel and 11.7% from mass media. Studies conducted in China by Aiguo (2006) found 33.7%, in Croatia by Romana (2006) 38.24% and in Thailand, by Nawapun (2007)48.6% women learned through mass media.

Regarding the sources of folic acid the majority (54.7%) of participants identified green vegetables as a source of folic acid. The study conducted by Bener (2006) in Qatar 40.6% aware about the green leafy vegetables as source of folic acid. About the timing for folic acid use one third of (32.6%) participants said that folic acid should be started prior to conception and two third (67.4%) were thought it should used as soon as pregnancy detected. A study done in UK by Brough (2009) showed 12% women took folic acid before pregnancy, 76% in first trimester. Another study conducted in Ireland by McNulty (2011) found 19% took folic acid before pregnancy and 84% in first trimester.

Conclusion

On the basis of this study, only one third of women had adequate awareness of preconceptional folic acid supplementation and nearly half of the participants were aware about its beneficial effect to the fetus. However, very few women mentioned correct time period of supplementation and visited for preconceptional counseling. Less than half of the participants thought that folic acid deficiency affects the development of nervous system. Similarly the level of awareness was higher among women of age group 20-30 years, women with higher level of education and primigravida women.The major source of information was health personnel. In practice very few pregnant women take folic acid prior to pregnancy and more than half of the participants taken as soon as pregnancy detected

Recommendation

Mass advocacy or health education about the importance of preconceptional folic acid supplementation especially reproductive age women and their belongings should be done.

Incorporate this issue in the reproductive health section of secondary level education to increase awareness among girls is highly recommended.

Encouraging women to visit preconceptional counseling is a most essential to minimize neural tube defect burden.

References

Amitai,Y., Fisher, N., Meiraz, H., Baram, N., Tounis, M. & Leventhal, A. (2008). *Preconceptional Folic acid Utilization in Israel*: Five years after the guidelines Preventive Medicine. February; Volume 46, Issue 2, , Pages 166-169

Abdulrazzaq, Y. M., Al-Gazali, L. I., Bener, A., Hossein, M., Verghese, M., Dawodu,

A., & Padmanabhan, R. (2003). *Folic acid awareness and intake survey in the United Arab Emirates*,171-176.

ACOG Committee on Practice Bulletins, (2003). *Clinical management guidelines for obstetrician gynecologists.Obstet. Gynecol.* July; 102(1): 203–213. 203-213.

AlozieArole, C. N., Puder, K. S., Reznar, M., Eby, E., & Zhu, B.P.(2003). *Folic acid*

Awareness in Michigan, 1996-1999.

Bakker, M. K., Cornel, Meiraz, H., E E., Baram, N., Tounis, M., & Leventhal, A. (2008). *Preconceptional folic acid utilization in Isarael: five years after the guidelines,* 166-169.

Bener, A., Al-Maadid, M. G., Al-Bast, D.A., & Al-Marri, S. (2006), *Maternal knowledge, attitude and practice on folic acid intake among Arabian Qatari women*, 21-25.

Canfield, M. A., Anderson, J. L., Waller, D. K., Palmer, S. E., & Kaye, C. I. (2002),

Folic acid awareness and use among women with a history of a neural tube defect pregnancy—Texas, 2000-2001,16-19.

Canfield, M. A., Przybyla, S. M., A.P., Ramadhani, T., Suarez, L., & Dyer, J.(2006). Folic

Folic acid awareness and supplementation among Texas women of childbearing age,27-30.

Cherian, A., Seena, S., Bullock, R. K., & Antony, A. C. (2005*), Incidence of neural tube*

defects in the least- developed area of India: a population- based study.

Czeizel, A. E.,(1993), *Prevention of congenital abnormalities by preconceptional Multivitamin supplementation, Clinical Trial Randomized Controlled Trial*, 1645-1648.

Czeizel, A. E., &Dudas, I. (1992), *Prevention of the first occurrence of neural-yube*

defects by preconceptional vitamin supplementation, 1832-1835.

De-Regil, LM.,Fernández-Gaxiola, AC., Dowswell, T. & Peña-Rosas, JP. (2010). *Effects and safety of periconceptional folate supplementation for preventing birth defects. Cochrane Database Syst Rev*. *Oct* 6; (10): CD007950. doi: 10.1002/14651858. CD007950.

French, M.R., Barr, S. I., & Levy- Milne, R. (2003). *Folate Intakes and Awareness of*

Folate to Prevent Neural Tube Defects: a Survey of Women Living in Vancouver, Canada.

Grosse, SD & Collins, JS. (2007). *Folic acid supplementation and neural tube defect recurrence prevention. Birth Defects Research Part A*: Clinical and Molecular Teratology;79 (11):737-742.

Gupta, p., & Gupta, A.(2000), *Awareness regarding use of folic acid for prevention of*

CongenitalNeural Tube Defects: Natl Med J India, 2000 Mar-Apr.

Malla, B. (2007). *One Year Review Study of Congenital Anatomical Malformation at Birth in Maternity Hospital*, Kathmandu University Medical Journal 5; 557-560.

M. I. (2007), *Trends in Demographic and Reproductive Health Indicators in Nepal*, M. I. Inc(Ed), Calverton,Maryland, USA.

Nawapun, K. Phupong, V. (2007). *Awareness of the benefits of folic acid and prevalence of the use of folic acid supplements to prevent neural tube defects among Thai women*. Arch Gynecol Obstet; 276(1):53-7.

Paudel, P., Wing, K., Silpakar, SK. (2012). *Awareness of Periconceptional Folic Acid Supplementation among the Nepalese Women of Child Bearing Age.*

Original Article

Awareness Regarding Growth Monitoring Among Mothers Attending a Health Post in Kathmandu

Uprety Kamala
Associate Prof. Maharajgunj Nursing Campus

Abstract

Malnutrition among children in developing countries is a major public health concern. Growth monitoring of under five children has been one of the major strategies for the prevention and control of malnutrition. Growth monitoring is an activity focuses on systematic measuring of a child weight, height according to age over a period of time, recording, plotting and interpretation as normal and abnormal in comparisons with WHO growth Z-scores to promote growth of children.

A descriptive cross sectional research design was used to find out the awareness regarding growth monitoring among mothers attending health post with under five children.

The study was conducted in Health Post, situated in Mahangkal, Kathmandu from October 2016 to December 2016. One hundred eleven mothers having 6 to 36 months old child attending in the health post with their child were selected by using non probability purposive sampling method. Data was collected through face to face interview by using structured questionnaire. Data was analysed by using descriptive statistics.

This study finding revealed that the majority of respondents (85.5%) were aware regarding the meaning of growth monitoring. However, fewer number respondents were aware on time interval of growth monitoring according to age of child. More than two third of the respondents had good awareness regarding growth chart including its purpose and components. The main source of information regarding growth monitoring was health personnel's. So, it could be recommended that health personnel should provide education and information covering all the aspects of growth monitoring to mothers attending health care facilities.

Key Words: Awareness, Growth Chart Card, Growth Monitoring

Introduction

Growth monitoring is the process of following the growth rate of a child in comparison to a standard by periodic anthropometric measurements in order to assess growth adequacy and identify faltering at early stages. Assessing growth allows capturing growth faltering before the child reaches the status of under-nutrition (UNICEF, 2007).

Growth monitoring refers to the assessment of the nutritional status of the children with the help of Road to Health Card. It is an operational strategy to promote health and serves as practical guidance to ensure regular growth (Jaikumar, 2008). It is a process of sequential measurement for the assessment of physical growth and development of children in the community with the purpose of promoting the child's health, development and quality of life (Morley & Elmore, 2012)

Growth monitoring of children is done to help

mothers know the nutritional status of their children. Many malnourished children look normal, both to their parents and to bystanders, until their size is compared with that of an expected child of the same age and sex (UNICEF, 2007). According to Ashworth, Shrimpton & Jamil(2008), the advantages of growth monitoring in developing countries include; reduction in under nutrition, morbidity and mortality among young children. Similarly, growth monitoring of under five children has been one of the major strategies for prevention and control of protein energy malnutrition. It is recognized as an effective means of detecting growth faltering early, providing a critical opportunity for making the preventive or curative actions needed. The growth monitoring coverage of under five children was 40% (NDHS, 2011/2012).

A study conducted in Amritsar district of India among the mothers having 12 to 23 months old child on awareness regarding growth chart reported that only (38.17%) had knowledge on growth monitoring chart (Upadhyay, 2014).Similar result was reported in study conducted in Bangladesh among mothers attending Integrated Management of Childhood Illness Clinic where 36% mothers were aware about growth monitoring chart (Adhikary, 2012).

Growth monitoring programms serve to promote child growth through measuring and interpreting growth, facilitating communication and interaction with caregiver and generating adequate action to promote child growth through: Increase caregiver's awareness about child growth improved caring practices and increased demand for other services, as needed (UNICEF, 2007).

The availability of growth chart does not automatically translate to its use. Knowledge of its meaning, usefulness and its acceptance by the mothers who are directly in charge of child care is necessary. Wide use of growth charts suggests that mothers accept full responsibility for their children's care (Upadhyay, Bisht & Singh, 2012). It means mother's awareness has a vital role in growth monitoring of their children.

Since, it is observed that many studies were conducted on the nutritional status of under five by weight and height assessment but only few studies are available on the knowledge and practices of the mothers on growth monitoring of under five children. Hence this study was conducted to assess the awareness of mothers regarding growth monitoring in a Nepalese context.

Methodology

A descriptive cross-sectional research design was used to find out awareness regarding growth monitoring among mothers attending health post with their under five children.

The study was conducted in Mahangkal Health Post, Mahangkal Kathmandu. The study population were the mothers having 6 to -36 months old child attending health post for immunization, health check-up of their baby, breast feeding and family planning counselling. All together 111 mothers were selected by using non probability purposive sampling technique who were willing to participate. The study was conducted from October 2016 to December 2016. Before data collection, approval was obtained from health post in-charge and respondents. Data was collected through face to face interview by using structured questionnaire. The questionnaire covered demographics and awareness regarding growth monitoring (Meaning, Purpose and source of information of growth monitoring including growth chart card) of children. The data was analysed by using descriptive statistics and presented in tables.

Results

Table1: Socio-demographic Characteristics of Mothers: Age, Education and Occupation

n= 111

Variables	Number	Percent
Age in Completed years		
15- 20	10	9.0
21- 25	35	31.5
26- 30	46	41.44
31-35	20	18.01
Education		
Can read and write only	6	5.4
Primary level	7	6.3
Lower secondary	9	8.1
Secondary level	31	27.9
Higher secondary level	27	24.3
Bachelor level	27	24.3
Master level	4	3.6
Occupation		
Agriculture	2	1.8
Business	33	30.6
Service	21	19.81
Home- Maker	55	49.5

Table 1 reveals that out of 111 respondents, 41.4% were between 26-30 years of age and only 9% were between 15- 20 years of age. Regarding education, 27.9% respondents had secondary level of education and only 3.6% had master level of education. In response to occupation, 49.3% respondents were home makers and 1.8% were involved in agriculture.

Table 2: Awareness on Meaning of Growth Monitoring

n=111

Items*	Number	Percent
Regular measurement of child's weight, height according to age , immunization status and documents it in growth card	95	85.5
Know about the child's health status	77	69.4
Assess the nutritional status of the child	35	31.5
Provide information about immunization, breast feeding, nutrition and diseases prevention	36	32.4

** Multiple Responses*

Table 2 shows that out of 111 respondents, majority (85.5%) expressed that regular measurement of child's weight, height according to age including immunization status and documents it in growth card followed by 69.36% who know about the child's health status, 31.5% assess the nutritional status of the child and 32.4% to provide information about immunization, breast feeding, nutrition and disease prevention respectively.

Table 3: Awareness regarding Growth Monitoring Interval According to Age of Child

n=111

Variable	Number	Percent
Age Less than 6 Months		
Monthly #	85	76.5
Two monthly	2	1.8
Three monthly	2	1.8
Whenever child is brought for immunization or illness	22	19.8
Age 6-12 Months		
Monthly	11	9.9
Two months interval #	32	28.8
Three months interval	3	2.7
Whenever child is brought for immunization or illness	65	58.5
Age 1-2 Years		
Two months interval	11	9.9
Three months interval #	25	22.5
Six months interval	14	12.6
Whenever child is brought for immunization or illness	61	54.9
Age 2-3 Years		
Two months interval	4	3.6
Three months interval	16	14.4
Six months interval #	22	19.8
Whenever child become sick	69	62.1

 # Correct Response

Table 3 reveals that out of 111 respondents, more than 2/3rd (76.5%) answered correctly about the time interval of growth monitoring of child up to 6 months of age. Similarly, 28.8% respondents responded correctly the time interval of growth monitoring of child age between 6-12 months, 22.5% answered correctly the time interval of growth monitoring for the child age between 1-2 years and only 19.5% given correct answer about time interval of growth

monitoring of child age between 2-3 years. It means respondents awareness was decreased with increased age of child for growth monitoring.

Table 4: Awareness about Growth Chart Card

Variables	Number	Percent
Heard about Growth Chart Card(111)		
Yes	85	76.57
No	26	23.42
Purpose of Growth Chart Card(85) *		
To know the age, weight , height of child according to age	65	76.4
To detection the deviation from normal pattern of growth	69	81.17
To assess the nutritional status of child	65	76.4
To know about the immunization status	66	77.6
To provide information on immunization, breast feeding, nutrition and spacing	55	64.7
Components of Growth Chart Card(85) *		
Age of the child	75	88.2
Weight of the child	75	88.2
Immunization Status	65	76.4
Information on breast feeding & Nutrition	45	52.9
	25	29.4

** Multiple Responses*

Table 4 reveals awareness regarding growth chart card .Out of 111, 85 respondents were aware about growth card of which 2/3rd mentioned the purpose of growth chart card and more than 2/3rd were aware on different components of growth chart card. Respondents had good awareness about growth chart card.

Table 5: Source of Information regarding Growth Monitoring

n=111

Variable	Number	Percent
Health Personnel	90	81.08
Mass media	25	22.5
Family members	30	27.02
Friends	15	13.5
Previous knowledge	35	31.5

** Multiple Responses*

The above table presents that the majority (81.0%) of the respondents mentioned that health personnel as main source of information regarding growth monitoring followed by 31.5% previous knowledge, 27% mentioned family members as a source of information, 22.5% mentioned mass media and only 13.5% expressed that friends as source of information respectively.

Discussion

This study shows that majority (85%) respondents were expressed that the meaning of growth monitoring means regular measurement and documents of child's weight, height, and immunization in growth card. Nearly similar result was reported by Debuo et al. (2017) where about 70.3% respondents expressed the meaning of growth monitoring means weighing, immunization and treatment of child.

In relation to time interval of growth monitoring, 76.5% respondents answered correctly about the time interval of growth monitoring of child up to 6 months of age. Likewise, 28.8% respondents responded correctly the time interval of growth monitoring for child age between 6-12 months, 22.5% responded correctly the time interval of growth monitoring of child age between 1-2 years and only 19.5% given correct answer about time interval

of growth monitoring for 2-3 years of age .It means respondents awareness decreased with increased age of child for growth monitoring interval and time. But more than 50% of respondents answered that child will be taken to the health post when he/she get sick irrespective of scheduled of periodic growth monitoring interval. But in contrast, Debuo et al. (2017) reported that 95.3% of the respondents expressed that the child's growth to be monitored once a month irrespective of their age.

In relation to the purpose of growth chart card, this study found that more than 2/3rd respondents mentioned the different purpose of growth chart card. Regarding awareness on component of growth card, this study found that the majority (76.4%) of the respondents mentioned immunization, followed by 52.2% information on breast feeding and 29.4% nutrition as components of growth monitoring card respectively. Nearly similar result was reported by Nene (2014) where 77.25% respondents mentioned immunization, 64.4% information on breast feeding as components of growth card respectively.

In response to source of information regarding awareness on growth monitoring, this study result found that the majority of the respondents expressed that health personnel as main source of information regarding growth monitoring and growth chart. Similar result was found in a study conducted by (Upadhyay, Bisht, Deepti and Singh, 2014) where majority of mothers reported that peripheral health functionaries i.e. Axillary Nurse Midwives were found as main source of information.

Conclusion

It can be concluded that more than two third of respondents are aware of the meaning of growth monitoring, growth chart card, its purposes and components. Only few mothers' are aware about time interval of growth monitoring of children. Study also reported that the main source of information was health personnel. So, it would be recommended that health personnel should provide education and information covering all the aspects of growth monitoring to mothers attending the health facilities.

References

Adhikary, M. (2012). Maternal Knowledge on Growth Monitoring Charts of their Children. *Journal of Dhaka Med. Coll. 20(2), 134-140.*

Ashworth,A., Shrimpton, R.,& Jamil, K.(2008). Growth monitoring and promotion: review ofevidence of impact.Maternal and Child Nutrition,4,86-117.

Jaikumar, M. (2008). *Pocket Manual of Community Health Nursing .New Delhi: Jaypee Brothers*

Morley, D., & Elmore, M.(2012).Growth Monitoring: A forgotten subject.http://www.fao.org.

Nepal Demographic and Health Survey (2011/2012*). Ministry of health and population KathmanduNepal.*

Novmeet (2016).Growth Monitoring: Journal of Health and Medicine.

Nene, G.(2014). *Assessment of knowledge of Growth Monitoring Chart of Mothers/Caregivers of under five children attending underfive clinicat Gwamna Awan General Hospital Kakuri, Kaduna . Ahmadu Bello University. Nigeria: Author*

Upadhya,D., Bisht, M., Deepti, S.S., & Singh,T. (2014). *A study regarding awareness among mothers of children from 12 months to 23 months about growth charting and its determinants in rural area of Amritsar district. International Journal of Interdisciplinary and Multidisciplinary Studies, Vol 1 (7), 105-112.*

UNICEF (2007). *Maternal and Child Health. http://www.unicef.org/Nigeria/children1926.html*

UNICEF (2007). *Revisiting Growth Monitoring and its Evolution to Promoting Growth as a Strategic Program Approach: Building Consensus for Future Program Guidance Report of a Technical Consultation UNICEF Headquarters New York, USA.*

Original Article

Compliance on Therapeutic Regimen among Heart Failure Patients attending in Cardiac Center, Kathmandu

Saru Deoki[1]
Adhikari Raj Devi[2]
1. Sister Incharge, SGNHC
2. Associate Professor, Maharajgunj Nursing Campus

Abstract

Heart failure is a chronic, progressive condition in which heart muscle is unable to pump enough blood. The incidence and prevalence of heart failure is increasing gradually to a high. Quality of life of heart failure patient is based on compliance to therapeutic regimen. So this study was done to assess the status of compliance on therapeutic regimen among heart failure patients attending Shahid Gangalal National Heart Center (SGNHC), Kathmandu.

The descriptive cross-sectional study design was used for the study. Two hundred fifty patients who were clinically diagnosed with heart failure and under treatment for more than three months attending the outpatient department of SGNHC were selected by non-probability purposive sampling technique for data collection. Patients' compliance status was assessed by using semi – structured interview question and modified Evangelist's Heart Failure Compliance Questionnaire. Data was analyzed by using the descriptive and inferential statistics.

This study revealed that 58.8% of heart failure patients had received compliance counseling from the health care professionals; 98% of patients had compliance on medicine, 94% on follow up, 79.2% on diet, 46.8% on fluid restriction, 26.4% on exercise and only 8% on weight measurement. Overall compliance on therapeutic regimen of heart failure patients was 57.6%. Ethnicity (p=0.000) and religion (p=0.005) were statistically significant with overall compliance among heart failure patients.

This study showed that the majority of heart failure patients had compliance to follow-up, medicine and diet, only a minority of them had compliance to weight measurement, fluid restriction and exercise. Only, more than half of the heart failure patients had compliance on overall therapeutic regimen. Thus, all heart failure patients need to receive compliance counseling from the time of first diagnosis of heart failure in health care setting for their compliance on all aspects.

Key words: Compliance, Heart failure patients, Therapeutic regime

Introduction

Heart failure is a chronic condition that demands patients remain to be fully compliant to a lifelong therapeutic regimen to achieve optimal outcomes. Multiple medications are required in heart failure to reduce the morbidity and mortality. The longer the patient survives the less the compliance. The most common cause of heart failure exacerbation and frequent hospital admission is believed to be noncompliance with the medication (Wu, Moser, Chung & Lennie, 2008).

In developing countries, around 2% of adults suffer from heart failure, but in people over the age of 65 years, this rate increases to 6-10%. Study done on self-care status in heart failure patients found that 43% of them were unaware

of potentially harmful effects of salt during the treatment, more than 40% of participants did not takes their weight (Baghianimoghadam et al., 2013). Similarly, the study on compliance in heart failure patients done on Netherlands showed that overall compliance was 72%. Highest compliance was noted on medication and appointment keeping (>90%). Compliance with diet was 83%, fluid restriction 73%, exercise 39% and lowest was 35% on weight measures (Martje, Tiny, Veegar & Drik, 2005). Besides these, another study done in Iran on a relationship between awareness of disease and adherence to therapeutic regimen among cardiac patients showed that medication adherence was noted in 79%, diet adherence in 60% and physical activity adherence in 61% (Heydari, Ziaee & Gazrani, 2014). Based on the scientific evidence, compliance with therapeutic regimen on medicine, follow up, diet, exercise, fluid restriction and weight measurement helps to maintain the good quality of life in heart failure patients. So, it is necessary for the health professionals to be aware of the need of patients' compliance to therapeutic regimen.

Methodology

This study used quantitative, descriptive cross-sectional study design. The study was carried out at Shahid Gangalal National Heart Center (SGNHC). The population of the study was heart failure patients who were diagnosed for more than 3 months, under treatment and came for follow up. The sample size was calculated by using the Cochran's formula by taking the prevalence of compliance of heart failure on therapeutic regimen, p=47.2%=0.47 (Sreeja & George, 2016) and finite population of SGNHC (as SGNHC OPD in average has a flow of 720 cases/ month). Non- probability purposive sampling method was used to select 250 heart failure patients. The researcher developed the semi-structured interview questionnaire to collect the information regarding sociodemographic and disease related variables and used modified version of Evangelista's heart failure compliance questionnaire for assessing compliance on therapeutic regimen. Validity of the instrument was established by consulting with expert cardiologists Dr. Chandramani Adhikari, Dr. Sujeeb Rajbhandari and Matron Krishna Kumari Subedi of SGNHC. Pretesting of the instrument was done among 25 patients receiving heart failure treatment who attended the medical outpatient department of SGNHC and they were excluded in the final study. Some necessary changes were done in questionnaire after the pretesting. Research approval was taken from Research Committee of Maharjgunj Nursing Campus, Maharajgunj. Ethical clearance was obtained from Institutional Review Board of Tribhuvan University, Institute of Medicine and Institutional Review Committee of SGNHC. After getting formal permission from the SGNHC, the objective of the study was explained to each respondent. Both verbal and written consent was obtained from each respondent before data collection. Data was collected from 8th September to 6th October, 2016. Face to face interview was done. The average time required to complete the interview was about 20-30 minutes. Privacy was maintained by taking interview in a separate room. Confidentiality was maintained by using code number in each form and also assured that the information obtained was used for study purpose only. The collected data was checked daily and organized for completeness and accuracy. Data was then edited, classified, coded, entered and analyzed by using SPSS version 16. Data was analyzed by using descriptive statistics (frequency, percentage, mean, and standard deviation). Chi square and Fisher Exact test were used to determine the association between compliance on therapeutic regimen and the selected variables.

Results

Table 1 : Socio-demographic Characteristics of Respondents

n=60

Characteristics	Frequency	Percent
Age (in Years)		
>60	113	45.2
≥61	137	54.8
Mean ± SD =59.7± 13.619		
Sex		
Male	148	59.2
Female	102	40.8
Marital Status		
Married	197	78.8
Single	53	21.2
Level of Education		
Literate	149	59.6
Illiterate	101	40.4
Type of Family		
Nuclear	113	45.2
Joint	137	54.8
Ethnicity		
Brahmin/Chhetri	113	45.2
Adibasi/Janajati	105	42
Madhesi	16	6.4
Dalit	14	5.6
Muslim	2	0.8
Religion		
Hinduism	226	84.6
Buddhism	26	10.4
Christianity	6	2.4
Islam	2	0.8
Family Income		
Sufficient for less than 1 year	161	64.1
Sufficient for 1 year and surplus	89	35.6
Duration of Heart Failure		
Less than 5 year	188	75.2
More than 5 year	62	24.8
Received Compliance Counseling		
Yes	147	58.8
No	103	41.2

Table 1 shows that 54.8% of the respondents were above the age of 61 years with the mean age of 59.7, SD ± 13.619. Among them, 59.2% were male, 78.8% were married, 59.6% were literate and 54.8% were from joint

family. Similarly, 45.2% of them were from Brahmin and Chhetri and 42% were Adibasi and Janjati. Among them, 86.4% were Hindu and 0.8% were Muslim. Regarding family income, nearly two third (64.1%) of the respondents had sufficient income for less than one year. Similarly, the majority (75.2%) of them had less than 5 years of history of diagnosis of heart failure and only 58.8% of them received compliance counseling from health professional.

Table 2: Respondents' Compliance on Therapeutic Regimen

n=250

Variables	Compliance		Non-compliance	
	Frequency	Percentage	Frequency	Percent
Medicine	245	98	5	2
Follow-up	235	94	15	6
Diet	198	79.2	52	20.8
Fluid Restriction	117	46.8	133	53.2
Exercise	66	26.4	184	73.6
Measuring Weight	20	8	230	92
Overall Compliance*	144	57.6*	106	42.2

** Compliance on follow up, medicine and any other two items*

Table 2 shows that 98% of respondents had compliance on medicine, 94% on follow-up, 79.2% on diet, 46.8% on fluid restriction, 26.4% on exercise and only 8% on weight measurement. Similarly, only 57.6% had overall compliance on therapeutic regimen among heart failure patients.

Table 3 : Association of Overall Compliance on Therapeutic Regimen of Respondents and Selected Variables

n=250

Selected Variables	Total	Compliance	Noncompliance	Chi-square	P- value
Age (Years)					
< 60	113	63	50`	0.288	0.591
≤ 61	137	81	56		
Sex					
Male	148	83	65	0.343	0.558
Female	102	61		41	
Marital Status					
Married	242	139	103	-	0.538+
Single Status	8	5	3		
Education					
Literate	149	92	57	0.595	2.107
Illiterate	101	52	49		

Selected Variables	Total	Compliance	Noncompliance	Chi-square	P- value
Type of Family					
Nuclear	113	69	44	0.012	1.314
Joint	137	75	62		
Ethnicity					
Brahmin/Chhetri	113	79	34	12.798	0.000
Others	137	65	72		
Religion					
Hindu	216	132	84	8.017	0.005
Non-Hindu	34	12	22		
Economic status					
Sufficient for <1 year	161	86	75	3.241	0.072
Sufficient for > 1year	89	58		31	
Duration of Heart Failure					
< 5 year	188	108	80	0.007	0.932
> 5 year	62	36	26		
Received Compliance Counseling					
Yes	147	91	56	2.707	0.100
No	103	53	50		

Level of significance < 0.05 ***+Fisher exact test***

Table 3 shows that there was no association between overall compliance on therapeutic regimen of heart failure patients and age (p=0.591), sex (p=0.558), marital status (p=0.538), education (p= 2.107), type of family (p=1.314) and economic status (p=0.072). Similarly, there was no association between their overall compliance on therapeutic regimen and duration of heart failure (p=0.932) and whether receiving compliance counseling or not (p=0.100). There was association between the respondents overall compliance on therapeutic regimen with their ethnicity (p=0.000) and religion (p=0.005).

Discussion

Socio-demographic Characteristics

Demographic findings of the study revealed that 59.2% of patients were males and 40.8% females whose mean age was 59.7±13.619. The findings of this study showed that 78.8% of them were married, 59.6% were literate. Regarding the economic status, 64.1% of the respondents' had household income sufficient for less than 1 year and 35.6% had household income sufficient for 1 year and surplus. Similarly, 54.8% of patients belong to a joint family and 45.2% were from a nuclear family. Regarding ethnicity, 45.2% of the respondents were from Brahmin and Chhetri followed by Adibasi/Janjati (42%). Among them, 86.4% of the respondents were from Hindu religion.

The study showed that 75.2% were diagnosed with heart failure for less than 5 years and 24.8% were more than 5 years. This finding is supported by the study conducted by the (Al-khadher & Fadl-elmula, 2015), who showed that among 132 patients, 38.63% were diagnosed for less than 1year, 50% were diagnosed as 1-3 years and 11.37% were diagnosed as more than 4 years. The findings of this study showed that 58.8% of the respondents had received compliance counseling from the health care professionals and 41.2% did not receive any counseling.

Present study showed that 98% of heart failure patients had compliance on medicine, 94% had compliance on follow-up, 79.2% on diet, 46.8% on restriction of daily fluid intake, 26.4% on performing exercise and 8% on measuring weight. This finding is supported by the study conducted by (Al-khadher & Fadl-elmula, 2015), which showed that among 132 patients, medications compliance was 88.6%, follow-up appointment keeping was 81.8%, daily weighing was 16.6%, performing exercise was 12.12% and restriction of daily fluid intake was 10.6%. This study finding showed that only 57.6% of patients had overall good compliance on therapeutic regimen. However, in the study conducted by Van Der Wal et al.,(2006), the overall good compliance on therapeutic regimen was 72% among 501 heart failure patients.

The findings of this study showed significant association between overall compliance on therapeutic regimen and ethnicity (p=0.000) and religion (p=0.005). The findings of this study showed that there was no association between overall compliance on therapeutic regimen and marital status (p=0.538), education (p=2.107), source of income (p=1.277), types of family (p=1.314), economic status (p=0.072), duration of heart failure (p=0.932), received compliance counseling (p=0.100) and overall compliance on therapeutic regimen. Due to different cultural aspects, ethnicity and religion has significant association between overall compliance on therapeutic regimen and may be due to unaware of disease condition other factors has no association.

Conclusion

Our study showed that the majority of patients with heart failure had good compliance with follow-up, medicine and diet. Only a minority of them has compliance with weight measurement, fluid restriction and exercise. Similarly, only more than half of the respondents has overall good compliance on therapeutic regimen. This study also showed that there is significant association between compliance on therapeutic regimen and ethnicity and religion. It is necessary to educate all the heart failure patients about the compliance to therapeutic regimen from the beginning of the diagnosis to improve the quality of life.

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References

Alakhali, K., Daniel, P., Noohu, A., & Sirajudeen, S. (2013). Patient Medication Adherence and Physician Prescribing among Congestive Heart Failure Patients of Yemen. *Indian Journal of Pharmaceutical Sciences*, *75*(5), 557–562.Retrived from https:// www. ncbi.nlm.nih.gov/pmc/articles/ PMC3877517/

Al-khadher, M., & Fadl-elmula, I. (2015). Factors Affecting Treatment Compliance of Heart Failure Patients in Sudan. *Public Health and Preventive Medicine*,*1*(3), 120–124.Retrived from http:// www. aiscience.org/ journal/ phpm

Albert, N.M. (2012). Fluid Management Strategies in Heart Failue. *Critical Care Review*, 32 (2), 20-52. doi:10-4037/ccn 2012877

Barbour, K. A., & Miller, N. H. (2008). Adherence to exercise training in heart failure: A review. *Heart Failure Reviews*. http://doi.org/10.1007/s10741-007-9054-x

Baghianimoghadam, M. H., Shogafard, G., Sanati, H. R., Baghianimoghadam, B., Mazloomy, S. S., & Askarshahi, M. (2013). Application of the health belief model in promotion of self-care in heart failure patients. *Acta Medica Iranica*, *51*(1), 52–58.

Conboy, T., Al Roumi, A., Conboy, R., & Al Khateeb, M. (2012). Effect of a nurse specialist coordinated heart failure clinic in our Medical City on patient adherence to medication. *European Journal of*

Heart Failure, Supplement, *11*, S64.

Cline, C. M. J., Björck-Linné, A. K., Israelsson, B. Y. A., Willenheimer, R. B., & Erhardt, L. R. (1999). Non-compliance and knowledge of prescribed medication in elderly patients with heart failure. *European Journal of Heart Failure*, *1*(2), 145–149.

Dubey, L., Sharma, S. K., & Chaurasia, A. K. (2012). Clinical profile of patients hospitalized with heart failure in Bharatpur, Nepal. *Journal of Cardiovascular and Thoracic Research*, *4*(4), 103–105.

Heydari, A., Ziaee, E. S., & Gazrani, A. (2015). Relationship between Awareness of Disease and Adherence to Therapeutic Regimen among Cardiac Patients. *International Journal of Community Based Nursing and Midwifery*, *3*(1), 23–30. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4280554&tool=pmcentrez&rendertype

Howland, R. H. M. D. (2007). Medication Adherence. *Journal of Psychosocial Nursing & Mental Health Services*, *45*(9), 15–19.

Manmohan cardiothoracic Vascular and transplant Center, Annual Report: Year 2015.

Rosneck, J. S., Newman, D., Waechter, D., Newman, I., Thorndike, A., Rigotti, N., … Swartz, S. (2004). Special Topics 417A Interactive Education: The Audience Response Method Symptoms and Early Relapse to Smoking, 2016.

Shahid Gangalal National Heart Centre, Annual Report: Year 2015

Van Der Wal, M. H. L., Jaarsma, T., & Van Veldhuisen, D. J. (2005). Non-compliance in patients with heart failure; How can we manage it? *European Journal of Heart Failure*, *7*(1), 5–17.

Wu, J. R., Moser, D. K., Chung, M. L., & Lennie, T. A. (2008). Predictors of Medication Adherence Using a Multidimensional Adherence Model in Patients With Heart Failure. *Journal of Cardiac Failure*, *14*(7), 603–614.

Original Article

Compliance to Treatment Regimen among Patients with Diabetes attending out Patient Department of a Referral Hospital in Kathmandu

Dhital Nirmala[1]
K. C. Takma[2]
Mukhia Suzanna[3]

1. Nursing Officer, Tribhuvan University Teaching Hospital
2. Professor Department of Adult Health Nursing, Maharajgunj Nursing Campus
3. Asso. Prof. Department of Midwifery, Maharajgunj Nursing Campus

Abstract

Diabetes is a chronic metabolic disorder which causes significant morbidity and mortality throughout the world. Control and prevention of complications is mainly based on patients' compliance to treatment regimen which includes life-style modification. This study was aimed to assess the level of compliance and its association with selected variables. A descriptive cross-sectional design was adopted to conduct the study among 203 diabetic patients in Tribhuvan University Teaching Hospital in specific areas: Medication, Exercise, Follow up and Diet. Data were collected using purposive sampling technique through semi-structured interview schedule and were analyzed by using the descriptive statistic (frequency, percentage, mean and standard deviation) and inferential statistic (chi-square).

This study revealed that the medicine compliance levels for good, fair and poor compliance were 62.1%, 31.5% and 6.4% respectively. Similarly the exercise compliance levels were 31.5%, 39.4% and 29.1%and the follow-up compliance were 65.5%, 5.9% and 28.6%. The dietary compliance levels were 77.3%, 21.7% and 1.0% for good, fair and poor respectively. Compliance to medicine was associated with educational status (p=0.040) and the area of residence (p=0.023). Compliance to follow up was associated with diabetic counseling (p=0.028%). Dietary compliance was associated with family income (p=0.035) and dietary counseling (p=0.001).

The study concluded that the respondents who had enough monthly income and received dietary counseling had good compliance in diet. Those who received diabetic counseling also had good compliance in follow up. The findings suggest that blood sugar can be controlled by enhancing compliance in diabetic treatment regimen. Thus it is strongly recommended that the need of proper counseling regarding diet, medicine, exercise and follow up in all health care setting for patients with diabetes.

Key words: Compliance, Diabetes, Treatment Regimen.

Introduction

Diabetes is a condition primarily defined by the level of hyperglycaemia giving rise to risk of microvascular damage (retinopathy, nephropathy and neuropathy). It is associated with reduced life expectancy, significant morbidity due to specific diabetes related microvascular complications, increased risk of macrovascular complications (ischaemic heart disease, stroke and peripheral vascular disease), and diminished quality of life (Abebe, Berhane, & Worku, 2014).

According to the World Health Organization, the global prevalence of diabetes was estimated to be 9% among adults above 18 years. In 2012, an estimated 1.5 million deaths were directly linked to diabetes. More than 80% of diabetes deaths occur in low- and middle-income countries. WHO projects that diabetes will rise as 7th leading cause of death in 2030(World Health Organization, 2014).

The prevalence of diabetes mellitus is growing rapidly worldwide and is reaching epidemic proportions. It is estimated that there are currently 285 million people with diabetes worldwide and this number is set to increase to 438 million by the year 2030 (Anjana et al., 2011).

In the world 387 million people have diabetes and 75 million people in the South East Asian Region; by 2035 this will rise to 123 million. There were 700,000 cases of diabetes in Nepal in 2014 (International Diabetes Federation, 2014).

In Nepal, the incidence of diabetes and impaired fasting glycemia was found to be 14.6% and 9.1%, respectively, in people aged <20 years, in urban 2.5% and 1.3% in rural areas(Singh & Bhattarai, 2003).

Adherence is a primary determinant of the effectiveness of treatment because poor adherence attenuates optimum clinical benefit and paves the way for complications (Rao, Kamath, Shetty, & Kamath, 2014).

The low compliance is reflected in high prevalence of obesity, DM complications, and high blood sugar levels. Therefore, patient compliance needs to be improved through patient teaching program especially targeting vulnerable diabetic patients and their families. Additionally, the barriers perceived by these patients need to be addressed, especially the costs of investigations, and the physical barriers related to diet and exercise (Taha, EL-Azeaz, & EL-Razik, 2011).

Various studies had shown compliance rates for long-term medication therapies was between 40% and 50% while compliance for short-term therapy was much higher at between 70% and 80%, and the compliance with lifestyle changes was the lowest at 20%–30% ((Banu, Prasanth, & Anjana, 2014).

So many scientific evidence exists that lifestyle change prevent or delays the occurrence of complications which includes dietary pattern, regular physical exercise, administration of medication and regular follow-up. So it is necessary for the health professional to be aware of patients' compliance to the treatment regimen which will help them to take measures for further improvement in this area. So the researcher is interested to carry out the study to assess the compliance to treatment regimen among patients with type 2 diabetes.

Research Methodology

The cross-sectional descriptive study design was used to find out Compliance to Diabetic Treatment Regimen.

Diabetic out Patient Department (OPD) of TUTH, Maharajgunj Kathmandu was the study area. The study population was the patients under the treatment of type2 DM.

Data was collected after getting approval from Institutional Review Board of Institute of Medicine. Formal permission was obtained from Authority of TU Teaching Hospital, Maharajgunj, and Kathmandu by submitting written request letter. Data collection was done within the period of 4 weeks (From 5th September, 2014 to 4th October, 2014)

Informed written consent was obtained from the subjects prior to data collection. The respondents were assured voluntary participation and also assured that the individual identity would not be disclosed in the report and the information would be used for study purpose.

Data were analyzed on the basis of research objectives and research questions. The collected data were checked and organized for the completeness and consistency. The collected data were edited, organized, coded and entered in Statistical Package for Social Science (SPSS) version 16.

Since non probability purposive random sampling was adopted to collect the data using structured interview schedule. Total number of sample were calculated on the basis of prevalence of dietary compliance (76%). Non-parametric test (frequency, percentage, mean, standard deviation and inferential statistics namely Pearson Chi square and Linear by Linear association) were used for data analysis)

Results

The results are displayed in various tables. Regarding socio demographic characteristics, average age of the respondents was 55.75±12.25. Nearly one third (32.5%) of the respondents lie in the age group 50-60. More than half (50.2%) of the respondents were female and majority (91.1%) were married. More than half (65.5%) of the respondents belonged to upper caste groups. More than one fourth (27.1%) of the respondents had secondary level education whereas only 15.3% of the respondents had only primary education.(Table1)

According to study finding's more than half (62.1%) of the respondents had good Medicine compliance, nearly one third (31.5%) had good Exercise compliance. Nearly two third (65.5%) had good follow up compliance and more than three fourth (77.3%) of the respondents had good Dietary compliance (Table2)

Study findings shows Illiterate respondents (75.8%) had good compliance which was statistically significant (p=0.040). Regarding the area of residence and medicine compliance, respondents from municipality (68.1%) had good compliance. which was statistically significant (p=0.023) (Table3).

Those respondents who received diabetic counseling had good follow up compliance (72.0%), which was statistically significant (p=0.028). There was no significant association of duration of diagnosis and family history of diabetes with Follow up compliance. (Table 4)

Shows association of socio-demographic characteristics with dietary compliance. The respondent who had family income more than enough for monthly expenditure had Good dietary compliance (90.2%) which was statistically significant (p=0.035). (Table5) regarding association of personal and service related factors with diet compliance, respondents who received dietary counseling had good compliance to diet (86.7 which was statistically significant (p=0.001). There was no significant association of duration of diagnosis, family history of diabetes and diabetic counseling with diet compliance. (Table6)

Table1: Socio Demographic Information (Age, Sex, Marital Status, Ethnicity, Educational Level) of the Respondents

n=203

Socio Demographic Characteristics	Number	Percent
Age (Years)		
≤40 years	25	12.3
41 to 50	42	20.7
51 to 60	66	32.5
61 to 70	41	20.2
>70	29	14.3
Mean±SD: 55.75±12.25		
Sex		
Male	101	49.8
Female	102	50.2
Marital status		
Unmarried	1	0.5
Married	185	91.1
Widow/Widower	17	8.4
Ethnicity		
Dalit	4	2.0
Disadvantaged Janajatis	27	13.3
Disadvantaged Non Dalit Terai caste group	3	1.5
Religious Minorities	3	1.5
Relatively Advantaged Janajatis	33	16.3
Upper caste groups	133	65.5
Education		
Illiterate	33	16.3
Able to read and write	51	25.1
Primary Education	31	15.3
Service	38	18.7
Retired	28	13.8
Others (Agriculture, Student)	20	9.9
Monthly family income		
Not enough for monthly expenditure	22	10.8
Enough for monthly expen-diture	120	59.1
More than enough for monthly expenditure	61	30.0
Area of residence		
Municipality	138	68.0
VDC	65	32.0

Table 2 : Level of Compliance on Treatment Regimen of the Respondents

n= 203

	Level of Compliance		
	Good Compliance	**Fair Compliance**	**Poor Compliance**
Medicine Compliance	126 (62.1%)	64 (31.5%)	13 (6.4%)
Exercise Compliance	64 (31.5%)	80 (39.4%)	59 (29.1%)
Follow up Compliance	133 (65.5%)	12 (5.9%)	58 (28.6%)
Dietary Compliance	157 (77.3%)	44 (21.7%)	2 (1.0%)

Table 3 : Association of Socio Demographic Characteristics with Medicine Compliance

n= 203

	Level of Compliance			Total	χ^2 Value	*P* Value
	Good Compliance	**Fair Compliance**	**Poor Compliance**			
Age						
≤40years	16 (64.0%)	7 (28.0%)	2 (8.0%)	25		
41 to 60 years	59 (54.6%)	39 (36.1%)	10 (9.3%)	108	3.744	0.053[b]
61 years and above	51 (72.9%)	18 (25.7%)	1 (1.4%)	70		
Sex						
Male	57 (56.4%)	37 (36.6%)	7 (6.9%)	101	2.777	0.249 [a]
Female	69 (67.6%)	27 (26.5%)	6 (5.9%)	102		
Education						
Illiterate	25 (75.8%)	8 (24.2%)	-	33	4.223	0.040*[b]
Literate	101 (59.4%)	56 (32.9%)	13 (7.6%)	170		
Area of residence						
Municipality	94 (68.1%)	38 (27.5%)	6 (4.3%)	138	7.561	0.023*[a]
VDC	32 (49.2%)	26 (40.0%)	7 (10.8%)	65		
Family Income						
Not enough for monthly expenditure	9 (40.9%)	11 (50.0%)	2 (9.1%)	22		
Enough for monthly expenditure	74 (61.7%)	39 (32.5%)	7 (5.8%)	120	3.723	0.054[b]
More than enough for monthly expenditure	43 (70.5%)	14 (23.0%)	4 (6.6%)	61		

a: Pearson's Chi square test b: Linear by linear Association

*: *p*value significant at ≤0.0

Table 4 : Association of Personal and Service related Factors with Follow up Compliance

n= 203

	Level of Follow up Compliance			Total	χ^2 value	*P* value
	Good Compliance	Fair Compliance	Poor Complance			
Duration of Diagnosis						
<6 years	63(61.8%)	5(4.9%)	34(33.3%)	102	2.421	0.298
≥6 years	70(69.3%)	7(6.9%)	24(23.8%)	101		
Family History of diabetes						
Yes	56(65.9%)	7(8.2%)	22(25.9%)	85	1.709	0.425
No	77(65.3%)	5(4.2%)	36(30.5%)	118		
Diabetic Counseling						
Yes	95(72.0%)	7(5.3%)	30(22.7%)	132	7.146	0.028*
No	38(53.5%)	5(7.0%)	28(39.4%)	71		

Test Statistics: Pearson's Chi square test*: *p*value significant at ≤0.05

Table 5 : Association of Socio Demographic Characteristics with Dietary Compliance

n= 203

	Level of Diet Compliance			Total	χ^2 value	*p* value
	Good Compliance	Fair Compliance	Poor Compliance			
Age						
Up to 40 years	18 (72%)	7 (28%)	0 (0%)	25	0.775	0.379
41 to 60 years	82 (75.9%)	25 (23.1%)	1 (0.9%)	108		
61 years and above	57 (81.4%)	44 (21.7%)	2 (1%)	70		
Sex						
Male	78(77.2%)	22(21.8%)	1(1.0%)	101	0.001	0.097
Female	79(77.5%)	22(21.6%)	1(1.0%)	102		
Education						
Illiterate	25(75.8%)	8(24.2%)	-	33	0.007	0.933
Literate	132(77.6%)	36(21.2%)	2(1.0%)	170		
Area of residence						
Municipality	110(79.7%)	27(19.6%)	1(0.7%)	138	1.482	0.22
VDC	47(72.6%)	17(26.2%)	1(1.5%)	65		
Family Income						
Not enough for monthly expenditure	18(81.8%)	3(13.6%)	1(4.5%)	22	4.449	0.035*
Enough for monthly expenditure	84(70.0%)	35(29.2%)	1(0.8%)	120		
More than enough for monthly expenditure	55(90.2%)	6(9.8%)	-	61		

Test Statistics: Linear by linear Association *: *p*value significant at ≤0.05

Table 6: Association of Personal and Service related Factors with Diet Compliance

n= 203

	Level of Diet Compliance			Total	$\chi 2$ value	*p* value
	Good Compliance	Fair Compliance	Poor Compliance			
Duration of Diagnosis						
<6 years	83(81.4%)	18(17.6%)	1(1.0%)	102	1.661	0.198
≥6 years	74(73.3%)	26(25.7%)	1(1.0%)	101		
Family History of diabetes						
Yes	72(84.7%)	12(14.1%)	1(1.2%)	85	3.741	0.053
No	85(72.0%)	32(27.1%)	1(0.8%)	118		
Diabetic Counseling						
Yes	104(78.8%)	26(19.7%)	2(1.5%)	132	0.158	0.691
No	53(74.6%)	18(25.4)	-	71		
Dietary Counseling						
Yes	85(86.7%)	13(13.3%)	-	98	10.144	0.001*
No	72(68.6%)	31(29.5%)	2(1.9%)	105		

Test Statistics: Linear by linear Association*: *p*value significant at ≤0.05

Discussion

Medicine Compliance

Present study showed62.1% of the respondents had good medicine compliance while 31.5% had fair and 6.4% had poor compliance t. Similarly, the study of India revealed that 40.95% had good adherence with prescribed medications, whereas 37.14% had medium adherence and 21.90 % had low adherence which is consistent with this study(Sajith, Pankaj, Pawar, Modi, & Sumariya, 2014).

In this study female respondents (67.6%) had good compliance than male which is consistent with the study conducted in Nepalgunj revealed better compliance in female respondents (54.4%) this could bean increased awareness of the illness and better modulation to comply with treatment, besides this female patients have not busy schedule so they are more comply than male (Thapa et al., 2013).

In this study, almost 73% of the elderly had good compliance. This finding is supported by the studies conducted in India and Egypt, which showed that46.8% and 68.0% of elderly had good compliance to medicine respectively.(Sajith et al., 2014; SanderBorgsteede et al., 2011).

In another study, good adherence was found in young aged group with (51.0%) and low adherence was found in elderly and middle age group which is contradictory to current study. This could be the reason of busy working schedule of younger aged group and may be the different setting and different instrument was used to measure compliance(Shams & Barakat, 2010).

The present study reflects that (75.8%) illiterate respondent had good compliance which is statistically significant. This result is consistent with other study conducted in Malaysia had also higher compliance (57.4%) in illiterate respondent. This result is contradictory to the study which is done in Egypt and BPKIHS which revels 43.9% 68.3% had good compliance with higher education level respectively(Shams & Barakat, 2010; Thapa et al., 2013). This may be the reason of different setting and different instrument used to measure the compliance.

Present study revealed that 68.1% respondent of municipality had good medicine compliance compare to VDC (49.2%), which is consistent with the study conducted in Egypt where good adherence was 41.9% in urban and 34.4% in rural area . Similar study conducted by Sajith et al. (2014)revealed that 42.86% respondents of rural area had shown higher rate of adherence compared to respondents of urban area 37.14%, which is contradictory to the present study. The higher prevalence to medicine compliance in patients of municipality in the present study may be due to easy access, literate, impact of media and good economic status.

Exercise Compliance

The present study showed that the respondents (39.4%) had fair exercise compliance followed by 31.5% with good exercise compliance and 29.1% respondents with poor compliance to exercise. A similar study conducted among Nepalese type 2 diabetes patients by Parajuli et al. (2014) showed that the respondent (42.1%) had non-compliance to exercise, while 36.6% had poor exercise compliance, and 21% had good compliance to exercise which is contradictory to current study. Good exercise adherence was found to be 32.29% which is consistent with present study(Sajith et al., 2014).

Exercise adherence level was higher in the respondents with positive family history of diabetes (65.9%) as com-pared to those with no family history which is consistent with the study conducted by Parajuli et al. (2014).

Follow up Compliance

Inthisstudynearlytwothird(65.5%)oftherespondents had good compliance with follow up, where as 5.9% had fair and 28.6% had poor compliance. Males and females compliance ratio are almost similar which is 64.4% and 66.7% respectively. The study of Iraq revealed that 36.7% had good compliance with follow up, where as 24.7% had medium and 38.7 % had poor compliance. Males had relatively better compliance with follow up than females, which is contradictory to this study(Lafta et al., 2009). In respect to the compliance with follow up, security and cultural belief of Iraqi people led to restriction of female patients' movement, this may explain the low percentage of respondents with good compliance to follow up in female respondents.

Dietary compliance

The present study revealed that more than three fourth (77.3%) of the respondents had good dietary compliance, 21.7% had fair compliance and 1.0% had poor compliance. While a study conducted in Iraq showed that 36% respondents had good compliance and 50% and 14% had medium and poor compliance respectively(Lafta et al., 2009). In a similar study conducted in Nepalgunj showed, good adherence in diet was 0% while poor adherence 12.5% and non-adherence 87.5% among the Nepalese type 2 diabetes patients (Parajuli et al., 2014). The findings of these two studies are contradictory to the present study. The inconsistency in the findings may be due to the dissimilarity in the life style of the respondents, knowledge about diabetic diet, dietary counseling and different setting.

Females and males had relatively similar levels of compliance with diet (37.7%) and(34.0%) respectively. Regarding the age, more compliance was seen in the age group 40-49 years (38.2%) than the respondents with age group 30-39 year. No significant statistical association was found with sex and age (Laftaet al., 2009).These findings are consistent with the present study findings which showed that males and females had similar level of compliance 77.2% and 77.5% respectively. sex and age.

In the present study good dietary compliance was found more (81.4%) in the respondents those who had short duration of diagnosis (<6 years) than the respondents having duration of diagnosis ≥ 6 years (73.3%). This finding is similar with the finding of Parajuli et al. (2014)which reported that, with increasing duration of disease degree of adherence was decreasing..

Respondents with family income more than

enough for monthly expenditure had Good dietary compliance (90.2%) which is statistically significant (p=0.035). Similarly respondents receiving dietary counseling had good compliance to diet (86.7%) which is statistically significant (p=0.001). There was no supportive literature found to compare these findings.

5.2 Conclusion

Based on study findings it can be concluded that in diabetic treatment regimen compliance on diet was good in comparison with other aspects. Enough family income, having dietary counseling had good diet compliance.. So dietary counseling in all health care setting and clients with low family income need to focus to enhance the dietary compliance. Those who received diabetic counseling had more good compliance in followup. So it is recommended that diabetic counseling including diet counseling is more important to treatment compliance for the patients with type 2 diabetes. Thus proper counseling in all health care setting is needed for diabetic patients

References

Abebe, S. M., Berhane, Y., & Worku, A. (2014). Barriers to diabetes medication adherence inNorth West Ethiopia. *SpringerPlus, 3*(195). doi:10.1186/2193-1801-3-195

American Diabetes Association. (2014). Diagnosing Diabetes and Learning About Prediabetes. Retrieved from http://www.diabetes.org/

Anjana, R. M., Ali, M. K., Pradeepa, R., Deepa, M., Datta, M., Unnikrishnan, R., . . . Mohan, V. (2011).The need for obtaining accurate nationwide estimates of diabetes prevalence in India - rationale for a national study on diabetes. *Indian Journal of Medical Research, 133*, 369-380. Retrieved from http://www.icmr.nic.in/

Banu, S., Prasanth, Y., & Anjana, K. (2014). Adherence to treatment among type 2 diabetes mellitus patients visiting a tertiary care hospital in Mangalore. *International Journal of Biomedical Research, 5*(4), 254-256. doi: 10.7439/ijbr

Borgsteede, S., Westerman, J. M., Kok, L. I., Meeuse, C. J., P., T., Vries, G. M. d., . . . Hugtenburg. (2011). Factors related to high and low levels of drug adherence according to patients with type 2 diabetes. *International Journal of Clinical Pharmacy, 33*, 779-787. doi: 10.1007/s11096-011-9534-x

Abebe, S. M., Berhane, Y., & Worku, A. (2014). Barriers to diabetes medication adherence in North West Ethiopia. *Springer Plus, 3*(195). doi:10.1186/2193-1801-3-195

American Diabetes Association. (2014). Diagnosing Diabetes and Learning About Prediabetes. Retrieved from http://www.diabetes.org/

Anjana, R. M., Ali, M. K., Pradeepa, R., Deepa, M., Datta, M., Unnikrishnan, R., . . . Mohan, V. (2011).The need for obtaining accurate nationwide estimates of diabetes prevalence in India - rationale for a national study on diabetes. *Indian Journal of Medical Research, 133*, 369-380. Retrieved from http://www.icmr.nic.in/

Banu, S., Prasanth, Y., & Anjana, K. (2014). Adherence to treatment among type 2 diabetes mellitus patients visiting a tertiary care hospital in Mangalore. *International Journal of Biomedical Research, 5*(4), 254-256. doi: 10.7439/ijbr

Borgsteede, S., Westerman, J. M., Kok, L. I., Meeuse, C. J., P., T., Vries, G. M. d., . . . Hugtenburg. (2011). Factors related to high and low levels of drug adherence according to patients with type 2 diabetes. *International Journal of Clinical Pharmacy, 33*, 779-787. doi: 10.1007/s11096-011-9534-x

International Diabetes Federation. (2014). Nepal. Retrieved from https://www.idf.org/membership/sea/nepal

Lafta, R. K., Faiq, U., & AlKaseer, A. H. (2009). Compliance of Diabetic patients. *Mustansiriya Medical Journal, 8*, 17-22. sRetrieved from http://www.iasj.net/iasj?func=fulltext&aId=25443

Parajuli, J., Saleh, F., Thapa, N., & Ali, L.(2014).

Factors associated with nonadherence to diet and physical activity among nepalese type 2 diabetes patients; a cross sectional study. *Bio Med Central research notes, 7*(1), 758. Retrieved from http://www.biomedcentral.com/

Rao, C. R., Kamath, V. G., Shetty, A., & Kamath, A. (2014). Treatment compliance among patients with hypertension and type 2 diabetes mellitus in a coastal population of southern India. *International Journal of Preventive Medicine, 5*(8), 992. Retrieved from http://ijpm.mui.ac.ir/

Sajith, M., Pankaj, M., Pawar, A., Modi, A., & Sumariya, R. (2014). Medication adherence to antidiabetic therapy in patients with type 2 diabetes mellitus. *Young, 18*(40), 7. Retrieved from http:/www.ijppsjournal.com/

Shams, M. E., & Barakat, E. A. (2010). Measuring the rate of therapeutic adherence among outpatients with T2DM in Egypt. *Saudi Pharmaceutical Journal, 18*(4), 225-232. doi: 10.1016/j.jsps.2010.07.004

Shrestha, S., Shakya, R., Karmacharya, B., & Thapa, P. (2013). Medication Adherence to Oral Hypoglycemic Agents Among Type II Diabetic Patients and Their Clinical Outcomes with Special Reference to Fasting Blood Glucose and Glycosylated Hemoglobin Levels. *Kathmandu University Medical Journal, 43*(3), 226-232. Retrieved from http://www.kumj.com.np/

Singh, D., & Bhattarai, M. (2003). High prevalence of diabetes and impaired fasting glycaemia in urban Nepal. *Diabetic Medicine, 20*(2), 170-171. doi: 10.1046/j.1464-5491.2003.00829_4.x

Taha, N. M., EL-Azeaz, M. A., & EL-Razik, B. G. A. (2011). Factors affecting compliance of diabetic patients toward therapeutic management. *The Medical Journal of Cairo University, 79*(2). Retrieved from http://medicaljournalofcairouniversity.net/

Thapa, B., Pokharel, P., Jha, N., Paudel, I., Sharma, S., Shyangwa, P., . . . Sharma, A. (2011). Alcohol consuming habits and its effects on adherence and blood glucose level in type-2 diabetes mellitus in a town population in eastern region of Nepal. *Health Renaissance, 9*(2), 95-101. Retrieved from http://www.nepjol.info/

Thapa, B., Pokharel, P. K., Poudel, I. S., Sharma, S. K., Shyangwa, P. M., Sangraula,H., & Sharma, A. (2013). Factors affecting on Adherence to the Prescribed Drugs in Diabetic Patients Visiting a Tertiary Care Centre. *Journal of Nobel Medical College, 2*(2), 11-17. Retrieved from www.nepjol.info/

Original Article

Effectiveness of Educational Intervention on Mental Health Literacy among School Teachers of Selected Schools of Dharan Municipality

Bhattarai Tilarupa[1]
Lama Sami[2]
1. Lecturer, Maharajgunj Nursing Campus
2. Professor, Department of Psychiatric Nursing, BPKIHS, Dharan

Mental Health Literacy (MHL) includes knowledge and beliefs about mental health and its disorders to help in their recognition, management and prevention. The school teachers are required to have adequate knowledge in these aspects of health and illnesses to make them aware of it and to help those who are in need. The aim of study was to assess the change in knowledge and attitude after educational intervention among school teachers regarding MHL. One group pre-test post-test research design was used in 4 schools of Dharan with randomly selected 56 teachers. Data was collected in two phases using self-administered semi structured questionnaire before and after the educational intervention. The data was analyzed with descriptive and inferential statistics. The study findings revealed that median MHL score increased from 111 to 128 after the intervention which was statistically significant (P=<0.001) indicating the effectiveness of educational intervention. Based on this study, awareness program on mental health literacy can be carried out periodically for the teachers.

Key Words: Mental Health Literacy, School Teacher, Effectiveness, Educational Intervention

Introduction:

Mental health literacy (MHL) may be defined as 'knowledge and beliefs about mental disorders which aid their recognition, management or prevention'. It includes knowledge of signs and symptoms of specific disorders, ways of seeking mental health information, risk factors, self-treatments and professional help available; and positive attitudes towards mental illness (Fransis, Pirkis & Dunt, 2010).

Five out of ten leading illnesses, associated with disease burden are psychiatric disorders. World Health Organization (WHO) estimates that in 2020, major depression will become the second most leading cause of disease burden. As a consequence, MHL has gained increased attention within the last few years (Lauber, Adjacic, Fritschi, Stulz & Rossler, 2005).

Mental and emotional problems are common among school students and need to be addressed like any other physical health problems. The school teachers are in the suitable position to present fundamental information about mental health and illness to the students (Poulakka, Konu, Kikkaka & Paavilainen, 2014). This will help the students to apply the knowledge which they received from their teachers while encountering new situations and making decisions about lives.

There are a total 141000 school teachers and 27940 schools in Nepal; the teacher student ratio ranges from 20-45 in private to 80-100 in government schools (Shiwakoti, 2005). Less than 0.02% of primary and secondary schools have either a part-time or full-time mental health professional in Nepal (Shiwakoti, 2005). Few (1%-20%) primary and secondary schools have school-based activities to promote mental health and prevent mental disorders (Ministry of Health & Population, 2006). The objective of this study was to assess the effectiveness of an educational intervention developed by researcher to optimize the mental health literacy of school teachers.

Methodology

One group pre-test post-test, pre-experimental research design was used to identify the effectiveness of developed educational package. The study was conducted in Public Higher Secondary School (HSS), Shree Sharada Balika Namuna HSS, Bishnu Memorial HSS and Depot HSS of Dharan Municipality. The study areas were selected purposively, total 59 teachers (15 from three schools and 14 from one school) were selected using lottery method. A semi-structured questionnaire was developed by researchers consisting of three parts: demographic factors consisting 11 items; 19 items related to knowledge on different aspects of mental health and lastly a five point Likert Scale, having 11 items, consisting of five positively and six negatively phrased items. The same questionnaire was used to assess the MHL of respondents before and after the educational intervention. At the same time, educational package on MHL was developed in Nepali language. Data was collected after obtaining permission from the research committee and concerned authorities. All the participants were requested for voluntary participation, and an informed consent was obtained before collecting data. After pre-test, a two hour long structured educational session was implemented and post test data was collected after two weeks of educational intervention. The total duration of data collection was 8 weeks including pre-testing, educational intervention and post-test. The data was analyzed with descriptive and inferential statistics (Wilcoxon Signed Rank and Chi Square Test) at 0.05 level of significance.

Results

The majority of teachers were male (62.71%) and married (83.05%). Based on ethnicity, 45.76% were Janjaties and 42.37% were Brahmin-Chhetri. Their median age was 34 years with median work experience of 12 years. More than one third (39.98%) had completed the Bachelor level and nearly half (45.76%) of them were teaching for secondary level students. Among 59 teachers, 3 failed to attend the intervention program, they were considered as sample mortality (5.0%) and excluded from the study. The sample size became 56. All respondents (100%) had already gained some information about mental health from various sources before the educational intervention.

Table 1 : Effectiveness of Intervention on Mental Health Literacy

n=56

Domain	Median Score (Inter QuartileRange)		P* Value
	Pre-test	Post-test	
Total	111(95-18)	128(119-35)	<0.001
General concepts of Mental health/illness	7(6-8)	11(8-13)	<0.001
Causes of Mental illness	6(5-8)	8(7- 9)	0.001
Signs and Symptoms of Mental Illness	15(12-18)	22(17-24)	<0.001
Mental Health Services-Use & Availability	15(14-16)	15(14-17)	0.120
Treatment of Mental Illness and Misconception	14(12-15)	17(15-18)	<0.001
Prevention of Mental Illness and Mental Health Promotion	9(8-10)	11(10-11)	<0.001
Role of Teacher in Mental Health Promotion	10(8-11)	10 (9-11)	0.145
Attitude towards Mental Illness	34(30-39)	37(30-40)	0.350

* Wilcox on Signed Rank Test, Maximum Obtainable Score in Total =166, Significant P value = <0.05

Table 1 shows the median MHL score before and after intervention. The result indicates that in total, the increase in median value of score before and after educational intervention was statistically significant. The changes in median scores of five areas of MHL i.e. general concept, causes, signs and symptoms, treatment and misconception and mental health promotion were statistically significant after educational intervention.

Table 2 : Association of Attitude of Respondents towards Mental Illness with Selected Socio-demographic Variables

n= 56

Socio-demographic Characteristics		Median Score (Inter Quartile Range)		P Value
		Pre-test	Post-test	
Age	< 35	35(30-39)	35(30-40)	0.440
	≥ 35	37(18-39)	37(33-37)	0.525
Sex	Male	32(27-39)	36(30-41)	0.131
	Female	36(32-36)	37(30-37)	0.600
Education Level	SLC	30(25-39)	31(25-41)	0.500
	PCL	33(31-39)	36(27-42)	0.776
	Bachelor	36(30-39	37(32-40)	0.6 72
	Master and Above	33(29-40)	35(33-39)	0.593
Work Experience in years	≤ 10	35(30-39)	37(31-41)	0.056
	> 10	33(28-39)	36(29-40	0.869
Teaching Group	Primary	34(31-39)	33(28-38)	0.879
	Secondary	33(28-39)	37(33-41)	0.242

Maximum obtainable score- 55, * Wilcoxon Signed Rank Test, Significant P value = <0.05

Table 2 indicates that there was no significant change (P= >0.05) in the attitude level of respondents before and after the intervention in relation to socio-demographic variables.

Discussion

More than two third of respondents (76.3%) could correctly state the meaning of mental illness in pre-test and was increased to 91.0% in post-test, but nearly 2% believed supernatural power as the cause of mental illness after educational intervention also. Knowledge about abnormality of brain structure as the cause of mental illness was rather decreased from 83.0% to 82.1%. Similar finding was noted in a study done among Japanese and Taiwan teachers where teachers emphasized in psychosocial factor rather than biological as the cause of mental illness (Kurumatani et.al, 2004).

The teachers were aware about prominent psychotic and depressive symptoms than somatic and anxiety related symptoms in the pretest. Drug and alcohol use were perceived as a problem by very few (10.2% and 22.0%) of respondents in the pre-test, which increased to 62.5% and 58.9% respectively in the post-test. Contrary to present study, Nizami has highlighted the least improvement in issues related with addiction as condition of mental illness in post-test (Nizami, Aslam, Minhas, Raza, Genel & Tetik, 2007).

In present study, the majority (73.21 %) of respondents could state specific symptom of depression in the pre-test, which was increased by 12% only in the post-test. Similar finding was reported by a study from Jorm et al. who concluded that recognition of depression was high at pre-test and was not affected by the training (Jorm, Kitchener, Sawyer, Scales & Cvetkocski, 2010).

Few (11.9%) teachers considered marriage as one of the treatment modality for mentally ill patients in pre-test, which was decreased only to 8.9%. Similar finding was mentioned in a study done in Pakistan which stated that vast majority of teacher continued to believe marriage as a treatment option for mentally ill patient even after intervention (Nizami et.al, 2007). In need of modern investigations, there was a persistent low (44.0%-50.0%) response after intervention. Similar study from Pakistan has reported the high index of false response even post intervention (Nizami et.al, 2007).

In pre-test, 30.5% of respondents considered no suicidal risk among people who talk about suicide which decreased to 12.5% after intervention. A similar study done in Australia concluded that a number of personal stigma items showed improvement in response to training (P= 0.013) (Jorm, Kitchener, Sawyer, Scales & Cvetkocski, 2010). More than 90% of respondents were aware of other measures of mental health promotion even before the educational intervention, but in response to retirement planning (33.9% to 78.6%) and taking iodized salt during pregnancy (67.8%-92.8%) the correct responses increased after educational intervention.

Nearly all teachers considered positive class room environment, optimum academic contents, positive reinforcement, counseling as helpful classroom behaviours to a student. There was an increase in correct response to limit setting and discipline 78.0% to 89.3%), referring the child with probable problem to a psychiatrist (from 78.0% to 96.4%), suspecting frequent failure as a sign of mental illness (from 49.2% to 60.7%) as a consequence of educational intervention.

Regarding attitude towards mental illness, in the statement of possibility of treatment of all type of mental illness, the respondents who agreed strongly increased from 25.4% to 42.8% in the post-tests. In response to 'marital relationship of family member with a mentally ill under treatment' total percent in 'agreed' side was increased from 45.8% to 62.5%. In a similar study similar findings were noted with increasing willingness to establish marital relationship with mentally ill patient in post-test (P = 0.01) (O'Reilly, Bell, Patrik & Chen, 2011). There was no significant change in the attitude after the intervention, but for the teachers with job experience < 10 years, intervention was borderline significant (P = 0.056). The possible reason might be that attitude of newer employee may change easily than older employee.

Conclusion

Educational intervention is effective to increase the mental health literacy of school teachers in five domains i.e. general concept, causes, signs and symptoms, treatment and misconception and promotion of mental health. For mental health services-use & availability, role of teacher including attitude, the educational intervention can potentially improve the awareness of school teachers. On the basis of this, similar kind of educational program can be suggested to be organized for the school teachers so that they would be in better position to help the students in need.

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References

Adelma, H. S. & Taylor, L. (2006). Mental Health in Schools and Public Health. *Public Health Report*. 121(3):294-298 doi10.1177/003335490612100312

Bapat, S., Jorm, A. & Lawrence, K. (2009). Evaluation of a mental health literacy training

program for junior sporting clubs. *Australasian Psychiatry*, 17(6): 475 – 9

Daniszewski, T & Roger, S (2013). Teachers' Mental Health Literacy and Capacity towards Students' Mental Health. *Electronic Thesis and Repository*. 1165. Retireved from http://ir.lib.uwo.ca/etd/1165.

Javed, Z., Naeem, F., Kingdon, D., Irfan, M., Izhar, N. & Ayub, M. (2006). Attitude of the university students and teachers towards mentally ill, in Lahore, Pakistan. *J Ayub Med Coll Abbottabad*, 18(3):55-8

Jorm, AF., Kitchener, BA., Sawyer, MG., Scales, H. & Cvetkovski, S. (2010). Mental Health First Aid Training for High School Teachers: A Cluster Randomized Trial. *BMC Psychiatry*, 10:51

Kapoor, M. (2005). Department of Welfare of the disabled Karnataka and National Institute of Mental Health and Neuroscience Banglore. *Child Mental Health Atlas*.

Ministry of Health and Population Nepal. (2006). *WHO-AIMS Report on Mental Health System in Nepal*. Kathmandu Nepal, WHO and Ministry of Health and Population.

Nizami, A., Aslam, F., Minhas, FA., Raza, S. & Genel, S., Tetik, B. (2007), Mental health education intervention for training teachers in areas affected by earthquake Short Communication Article. *Journal of Pakistan Psychiatry society*, 4 (1): 60

O'Reilly, CL., Bell, JS., Patrik, KJ. & Chen, TF. (2011). Impact of Mental Health First Aid Training on Pharmacy Students Knowledge, attitudes and self-reported behavior: a controlled trial. *Aust Journal of Psychiatry*, 45:549-57.

Poulakka, K., Konu, A. & Paavilainen, E. (2014). Mental Health Promotion in School: School Children's and Families' Viewpoint. *Nursing Research and Practice*. Vol 2014, Article ID 395286

Pinfold, V., Stuart, H., Thornicroft, G. & Arboleda-Florez, J. (2005). Working with Young People: the impact of Mental Health Programmes in Schools in the UK and Canada. *World Psychiatry*, 4:51.

Schachter, HM., Girardi, A., Mylan, LY., Lacroix, D., Lumb, AB. & JV. et al. (2008). Effects of school-based interventions on mental health stigmatization: a systematic review. *Child Adolesc Psychiatry Ment Health*, 2: 18.

Siwakoti, S. (2005) Status of School Library Development in Nepal. *Srilanka Journal of Librarianship and Information Management,* 1(1), 13-19. Retrieved from http://www.cmb.ac.lk/ academic/institutes/nilis/ reports/Nepal.pdf.

Stephan, SH., Weist, M., Kataoka, S., Adelsheim, S. & Mills, A. (2007). Transformation of Children's Mental Health Services: The Role of School Mental Health. *Psychiatr Serv. October*, 58:1330-8.

Wood, AL. & Wahl, OF. (2006). Evaluating the effectiveness of a consumer-provided mental health recovery education presentation. *Psychiatr Rehabil J*, 30(1):46-53

Original Article

Factors Influencing Brain Drain among Nurses of Nepal

Paudel Radha[1]
Pandey Apsara[2]
1. Associate Professor, NAIHS-CON
2. Lecturer, Maharajgunj Nursing Campus

Abstract

Many talented and educated people like doctors, nurses and engineers are migrating from Nepal to other developed countries. The mostly migrated countries include Australia, the USA, Canada and UK. The objective of this study was to explore the factors influencing brain drain among nurses. This study was carried out among 100 nurses from different educational consultancies of Kathmandu and Lalitpur districts where the nurses had been processing to go abroad. Descriptive cross-sectional study design was used for study. Non-probability convenience sampling technique was applied to select the sample. Semi- structured self- administered questionnaire was used for data collection. Data was collected from 17th September to October 16th, 2014. Objective of the study was explained to different private consultancies and informed written consent was taken from participants before data collection. Data was analyzed by using descriptive statistics.

Study showed that40% of the participants were quite young 20-25 years of age. Similarly 58% of the participants had been working under private institutions and 51% of the participants had got 10,000 -20,000 (86.20$ -172.40$) Nepalese rupees salary per month in Nepal at present. Canada (29%), UK (27%), USA (24%) and Australia (20%) were the preferred destination country of brain drain. Prime push factors for brain drain were perceived lack of higher education and training (43%), lack of support and encouragement from higher authorities (42%) and increased work load (40%) respectively. Prime pull factors for brain drain were high salary (74%), better career opportunity (39%) and better education for children (28%).

The study concluded that financial incentives, career development and management issues are core factors for motivating of nurses for brain drain. So, it would be recommended that the government of Nepal must recognize the contribution of nurses to the health care system and offer them standard salaries, benefits and career opportunities to prevent further migration of nurses from Nepal in coming days.

Key words: Brain, Career, Influencing Factors, Nurses

Introduction

Brain drain also called "The human capital flight" has become the most concerning problem in Nepal in all sectors. There is a huge mass emigration of technically skilled people from Nepal to other country. Un-employment, instability of nation, unstable political system are the main reason for migration of skilled human resources of Nepal. Thus, brain drain is a great loss to Nepal (Neupane, 2011).

Motivations to nurse migration were linked to financial, professional, political, social and personal factors. Although economic factors were the most commonly reported, they were not the only reason for migration. This was especially evident among nurses migrating between developed countries

(Dywili& Bonner, 2011).

According to Ministry of Health and Population (2013), Nepal currently has 0.50 nurses per 1,000/ population and 0.17 doctors per 1,000/ population while the total number of doctors and specialists (4,401) and nursing professionals and nursing associates groups (13,323) across the public and private. This represents a total ratio of 0.67 doctors and nurses per 1,000/ population, which is significantly less than the WHO recommendation of 2013 showed that 2.3 doctors, nurses and midwives per 1,000/ population and is low compared to other countries in South Asia (TamrakarSayami, 2016).

International migration of Nepalese nurses started mainly after the new millennium, and by 2010, it is estimated that there are between four to five thousand Nepali nurses who have migrated to western countries, particularly the UK, the USA and Australia (Adhikari, 2011).

Ninety percent of all migrating nurses were moving to just five countries: Australia, Canada, Germany, UK and USA for economic improvement. Young, well-educated, healthy individuals are most likely to migrate, especially in pursuit of higher education and career development was identified in 85% of the respondents. Among them 80% of the nurses were in abroad due to inadequate resource in their working areas and they stated that their supervisor's management and leadership skills were inadequate and this led to de-motivation of them to retain own countries. Seventy percent of the nurses told that recognition and/or appreciation, either from managers, colleagues, or the community was a theme found in this study (Shattuck et al., 2008).

Statistics from the Nursing Council of Kenya indicate that more than 800 Kenyan nurses leave the country every year to seek employment abroad especially in the United States of America. Most of them are women aged between 30 to 46 years working in the public health sector and are highly qualified. Countries of destination are the USA accounting for 59% of applications and the UK with 27%. A number of push and pull factors, have been cited as influencing the decisions of health professionals to leave their countries of origin. Push factors include low remuneration, poor working conditions, low job satisfaction, lack of professional development and career opportunities and political and ethnic problems including civil strife and poor security. Pull factors are include attractive remuneration, new career and personal development (Joan & Victor, 2013).

According to the records of Nepal Nursing Council, 2010, a total number of 3461 nurses migrated abroad between 2002 and 2011. The number further increased to 4155 from 2011 to 2013. This data showed that average 26 nurses migrate each month from Nepal and their favorite destinations were UK, Australia and the US. It is estimated that in 2008, Nepal ranked fifth in the hierarchy of source of countries of nurses drain to go in the UK for work (Gurung & Fachhini, 2011).

Study on reasons behind chooses to study nursing by Subedi, 2012 in Nepal among 200 nursing students. Result revealed that an over whelming number of student nurses (82%) mentioned that "they want to go abroad". Thus aspiration and dream to go abroad is the fundamental catalytic factor for students to choose nursing education.

Methodology

This study was carried out among 100 nurses from different consultancy of Kathmandu and Lalitpur district where the nurses were processing for abroad. Data was collected from the Euro American Educare, New Baneshwor, Pacific Education consultancy point, Kumaripati, Nibson International Info Centere, New Baneshwor and CHERUB education, New Baneshwor, Kathmandu, Nepal.

The Descriptive cross-sectional study design was used for the study. Non- probability convenience sampling technique was used to select the sample. Semi- structured self- administered questionnaire was used for data collection. Data was collected from 17th September to October 16th, 2014. Firstly, we found out the most popular consultancies purposively. The objective of the study was explained to different private consultancies and approval was obtained. Participants' address, phone number and

e-mail were taken from those consultancies and the participantswere contacted at their convenient place. Informed written consent was taken from participants before data collection. The data were analyzed by using descriptive statistics.

Results

Table 1: Background Information of the Participants

n=100

Characteristics	Number
Age in Years	
20-25 years	40
26-31 years	33
32-36 years	21
> 36 years	6
Education Level	
PCL	24
BN/B.Sc.	53
MN/M.Sc.	23
Experience in Nursing	
< 1 year	16
1 - 5 years	45
6 - 10 years	28
11 - 15 years	6
> 15 years	5
Positions	
Staff nurse	28
Nurse in-charge	35
Nurse supervisor	10
Nurse researcher	5
Nurse teacher	22
Present Employer	
Government	18
Private	58
NGO/INGO	24
Monthly Income in Nepal	
< 10,000	9
10,000 - 20,000	51
20,000 - 30,000	21
>30,000	19

Background information of the participantsshows in table one. Maximum 40 (40%) of the participants were of 20-25 years and as expected all the participants were female. Like as 53% of the participants have done BN/B.Sc. nursing and 23% have done MN/M.Sc.Forty five percentof the participants had 1 to 5 years of experience in nursing and 52% of the participants had taken their last degree from Tribhuvan University, 35% of them had been working as a nursing in-charge.At present, 58% had been working under private institutions and51% of the participants had earnedNRs. 10,000-20,000 (86.20$ -172.40$) salary per month.

Table 2: Destination Countriesand Expected Monthly Income

n=100

Characteristics	Number
Country chosen to migrate	
USA	24
UK	27
Australia	20
Canada	29
Expected Monthly Income in Abroad	
1-3 Lakhs Nepalese Rupees	5
4-6 Lakhs Nepalese Rupees	56
> 6 Lakhs Nepalese Rupees	39

As shown in table two that the favorite destination country of majority (29%) of the participants was Canada, (27%) to the UK, (24%) to the USA and 20% to the Australia. Similarly, (56%) of themassumed that their wage abroad would be 400-600 thousands Nepalese Rupees per month.

Table 3 : Influencing Factors for Brain Drain

n=100

Variables	Frequency	Percent
***Push Factors for Brain Drain**		
over work load	40	40
Lack of promotions and upgrading system	22	22
Lack of higher education and further Training	43	43
Lack of attractive incentives	21	21
Lack of support and encouragement from higher authorizes	42	42
***Pull Factors for Brain Drain**		
Better life	67	67
Better education for children	28	28
Political Stability	12	12
Better career opportunity	39	39
High salary	74	74
Luring western life	2	2

**Multiple responses*

Table 3 reveals thatalmost(95%) of the participantswere dissatisfied with their present job. The majority (43%) of them were unsatisfied with their job because they had lack of higher education and further Training, 42% of the participants were unsatisfied with their job because there was lack of support and encouragement from higher authorizes. Likewise, 4o% was unsatisfied with their job because of increased work load.The majority (74%) of the participants agreed that high salary of foreign country was the real influence for the brain drain. 67% of the participants agreed that better life of foreign country was a prime factor of brain drain, 39% of the participants agreed that better career opportunity offoreign country and 28% agreed that better education for children was the influence factorsfor brain drain.

Table 4: Participants' opinion towards Brain Drain

Variables	Frequency
Feeling about Brain Drain (n=100)	
Sad	68
Sympathetic	21
Guilt	11
Plan to return Nepal (n=100)	
Yes	69
No	31
If Yes (n=69)	
Forever	3
To meet family only	44
Only at old age	22
Need to control Brain Drain (n=100)	
Yes	22
No	78
***Ways to control Brain Drain(n=100)**	
Provide better opportunity for study	17
Provide better opportunity for job	30
Political stability	16
Increased economic condition	32
Job satisfaction	36
Better career opportunity	27

**Multiple responses*

Table 4 depicts that the majority (68%) were sad and (21%) of the participantssympathetic about country's loss of skilled human resources. Similarly, 69% of them said that they wanted to come back to their birth place. Among them 63.7% of the participants wanted to come back Nepal to meet their family. Although, 78% of the participants were against the viewon the need of the control brain drain. The majority (36%) of the participants told that it should be controlled by providing job satisfaction towards nurses.

Discussion

The findings of the study revealed that 29% of the participantsprocessing go to Canada, 27% of the participants applied to the UK, 24%of the participants applied to the USA and 20% of the participants applied for Australia. This finding is consistent with the study report of Shattuck et al., (2008) where close to (90%) of all migrating nurses were moving to just five developed countries: Australia, Canada, Germany, UK and USA for economic improvement. Similarly this finding is consistent with the study of Gurung & Fachhini(2011) whoshowed that a total number of 3,461 nurses migrated abroad between 2002 and 2011 (average 26 nurses migrate each months) and their favorite destination were UK, Australia and the US. It is estimated that in 2008, Nepal ranked fifth in the hierarchy of source of countries of brain drain of nurses to the UK.

Almost (95%) of the participants were dissatisfied with present job of nursing. Among them, (43%) were dissatisfied with their job because they had lack of higher education and training, (42%) were disappointed because there was lack of support and encouragement from higher authorizes, (40%) of the participants were displeased because of over work load.All the above factors were considered as push factors of brain drain. This finding is inconsistent with the findings of Shattuck et al., (2008).That study showed that nurses are most likely to migrate, especially in pursuit of higher education and career development was identified in 85% of the participants, (80%) of the nurses were in aboard due to inadequate resource in their working areas and they stated that their supervisor's management and leadership skills were inadequate.

Seventy four percent of the participants were agreed that high salary of foreign country was an influencing for brain drain. This finding is inconsistentwith the study of Lofters

et al., (2014) where the study illustrated that 51% of the participants choosing to emigrate from their home country because of socioeconomic situations in their home countries.

The study showed that (39%) of the participants agreed that better career opportunity of foreign country was the real influencing factors for brain drain. This finding is different with the study ofLofterset al., (2014) because that study revealed that 23% of nurses were choosing to emigratefrom their home country to get opportunities for professional advancement.

The study showed that 36% of the respondents agreed that brain drain should be controlled by providing job satisfaction towards nurses. Likewise, 30% of the respondents agreed that it should be controlled by providing better opportunity for job and 27% agreed that it should be controlled by establishing better career opportunity towards nurses.This study is similar with the study of Joan & Victor (2013). That study revealed that despite efforts to retain health workers through increased salaries, improved working conditions, health reform and decentralization, there is a continued loss of qualified health professionals to other occupations and internal migration, as well as migration abroad.

Conclusion

On the basis of our finding it is concluded that the Canada,UK, USA and Australia are preferred as the favoritedestination countries of brain drain of Nepalese nurses. The majority of the nurses are dissatisfied with their present job in Nepal due to lack of higher education and training, lack of support and encouragement from higher authorityandwork load. All these factorswere considered as a main push factor of brain drain on the basis of respondents' priority. High salary, better career opportunity and

better education for children in foreign countries were considered as a main pull factor of brain drain on the basis of their priority.

High quality nursing care cannotbe provided unless issues of de-motivation will be addressed. So, financial incentives, career development and management issues are core factors for affecting motivation of nurses for brain drain. Measures to control brain drain should be designed in accordance with the push and pull factors existing in the country by the Government of Nepal.

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References

Adhikari, R. (2011*). Train to Export: Nurses Education in Nepal and Increased Opportunities for international Migration of Nepali Nurses*, School of Health in Social Science, UK. Accessed on January 12th, 2014

fromhttp://ceslam.org/index.
php?Name=eventsDetail&nid=2115

Dywili, S., & Bonner, A. (2011).*Journal of Nursing Management Why do Nurses migrate?-a review of recent literature*, doi:/10.1111/j.1365.Accessed on December 5th, 2013 from https://www.ucu.org.uk/media/pdf/3/4/thebraindrain.pdf

Gurung, G., &Fachhini, E. (2011).The Nurses Dilemma.*The Kathmandu Post,* 6. Accessed on January 15th, 2014 from http://www.ekantipur.com/the-kathmandu-post/2011/12/21/oped/the-nurses dilemma/229556.html

Joan, M., & Victor, K. (2013). Brain Drain among Health Professionals in Kenya: A Case of Poor Working Conditions? - A Critical Review of the Causes and Effects. Prime Journal of Business Administration and Management (BAM) *3*(6), 1047. Accessed on December 5th, 2014 from www.primejournal.org/BAM,

Lofters, A., Slater, M., Fumakia, N., &Thulien, N. (2014). Brain Drain and Brain Waste:

Experiences of International Medical Graduates in Ontario.Published online Risk ManageHealth Policy. 2014; 7*:* 81–89, doi: 10.2147/RMHP.S60708. Accessed on January 12th, 2015

Ministry of Health and Population. (2013). Human Resources for Health in Nepal Country

Profile.Government of Nepal. Accessed on October 3rd, 2018 from

file:///C:/Users/Radha/Desktop/HRH_Nepal_profile_august2013.pdf

Neupane, B. (2011). Brain Drain: The Burning Problem of Nepal.

Accessed on January 12th, 2014 fromhttp://www.ramsansar.com/?p=857

Shattuck, M., Bidwell, P., Thomas, S., Wyness, L., Blaauw, D., & Ditlopo, P. (2008). Motivation and Retention of Health Workers in Developing Countries: a SystematicReview, *BMC Health Services Research;* 8:247, doi: 10.1186/1472-6963-8-247 brain drain. Accessed on January 2nd, 2015

Subedi, D. B. (2012). Growth of Nursing Education Sector and Its Effects on

Professionalization of Nurses in Nepal.*IOSR Journal of Nursing and Health Science; 3(4)*:34-39. Accessed on January12th, 2015 from www.iosrjournals.org

TamrakarSayami, J. (2016). Employment Status of Nurses and Future Scope in Nepal

Journal of Institute of Medicine, 2016, 38:2-3, Accessed on 17th September, 2018 Fromhttps://www.google.com.np/search?q=nurse+and+population+ratio+in+nepal&oq=nurse+population+ratio+in+nepal&aqs=chrome.69i57.14186j0j7&sourceid=chrome&ie=UTF-8

Original Article

Utilization of Alternative Medicines among Patients Attending Alternative Hospitals

Pandey Laxmi[1]
Rai Lalita[2]
1. Community Nursing Officer Mid Western Regional Health training Center, Surkhet
2. Associate Professor, Maharajgunj Nursing Campus

Abstract

Use of Alternative Medicine (AM) is increasing equally in both developed and developing countries. Alternative medicine is a popular method of treatment because it is perceived as natural, safe, and a holistic approach of healing that promotes wellness rather than just a treatment.

A descriptive cross-sectional study was conducted to find out utilization of alternative medicine among patients attending hospitals providing AM in Kathmandu. The sample size was 210 and purposive sampling technique was used for data collection. Data was collected by interview method from \29th February to \29th March7, 2016. Ethical permission was obtained from the Institution Review Board of Institute of Medicine, alternative service providing hospitals and respondents prior to data collection. The mean age of respondents was 45.36± 15.49 years. Respondents with chronic health problem (74.76%), married (85.2%), female (63.3%), from urban areas (75.2%), with higher education (31.6%) and patient with neuromuscular problem (40.5%) were more likely to utilize alternative medicine. More than half (51.3 %) of respondents utilized the treatment because of family tradition. Among them (who used prescribed medicine), 39.4% were using alternative medicine at first and 75.2% of the respondents were satisfied with Alternative Medicine. There was a statistical significance between age of patients (p=0.004), back pain (p= 0.003), digestive problems (p=0.006), life style modification (p=0.007), skin problems (p=0.034), and paralysis (p=0.046) with utilization of alternative medicine.

In conclusion, respondents used to practice alternative medicine due to family tradition for a long time. They have strong belief that the action of alternative medicine is slow.

Key Word: Adult Patients, Alternative Hospitals, Alternative Medicine, Utilization

Introduction

Complementary and alternative medicine (CAM) is defined as a group of diverse medical and health care system, practices and products that are not presently considered to be the part of conventional medicine {National Center for Complementary and Alternative Medicine. (NCCAM). 2006}. The terms complementary/alternative/non-conventional medicine are used interchangeably with traditional medicine in some countries {World Health Organization (WHO). 2007}.

CAM is a growing area of health care within developed and developing countries and is increasingly popular with consumers and professionals (Onyiapat et al. 2011).

CAM is an approach of holistic health. It is actually an approach to life rather than focusing on illness or specific parts of the body. This ancient approach to health considers the whole person and how he or she interacts with his or her environment. It emphasizes the connection of mind, body, and spirit. With 'holistic health' people accept responsibility for

their own level of well-being, and everyday choices are used to take charge of one's own health (Colling. 2009).

In Nepal, Ayurveda, Homeopathy and Unani fall under national medical system (Shankar et al. 2002). In Nepal, more than 75 percent of the population is estimated to use traditional medicine. Ayurveda is the oldest and most popular traditional health care system in Nepal (Kharel. 2009). So it is important to assess utilization of alternative medicine among patients to achieve maximum well-being.

Methodology

Descriptive cross-sectional research design was used to find out the utilization of alternative medicine (AM) among adult patients. The study was carried out in three different alternative hospitals in Kathmandu Valley: Ayurved Chikitshalaya, Nardevi, Pashupti Homeopathic Hospital, Harihar Bhawan and Spark Health Home Hospital, Kalimati. The population for study was the adult patients (>18 years) attending the out-patient department of selected hospitals. The sample size of the study was estimated on the basis of the prevalence method at 95% confident limit and 5% allowable error.

Sample size was 210. Stratified, non-probability quota sampling technique was used to calculate sample from each hospital. Systemic random sampling technique and semi-structured interview schedule was used for data collection. Ethical permission was obtained from Institutional Review Board TUIOM, related organizations and respondents. Data was collected by interview method from 29th February to \29th March7, 2016 by using semi structured questionnaire. Data was analyzed and interpreted according to the objectives of the study. Descriptive statistics such as frequency, percentage, mean and standard deviation were used for numerical data.

Results

The mean age of respondents was 45.36 years (±15.49 years). Nearly one fourth (23.80%) respondent's were 35-44 years. Among them the majority were from municipality (75.2%), female (63.3%), and joint family (53.8%) and nearly half (48.1%) were Brahmin/Chhetri. Majority of the respondent were married (85.2%) and literate (81.4%). Nearly one third (31.6%) of the respondents' educational level was graduate and above. Nearly half (48.1%) respondents belonged to medium class family and occupation was homemakers (36.2%). Majority (82.9%) of the respondents received information about alternative medicine from family members/ friends followed by own interest (21.4%) and rest of them from mass media.

Table 1 : Respondents Health Problems and Duration of Illness

n=210

Characteristics	Number	Percent
Duration of Illness		
Acute illness	53	25.23
Chronic illness	157	74.76
Health Problems *		
Back/ Neuromuscular pain	85	40.5
Digestive problems	59	28.1
Life style disease (HTN, DM)	37	17.6
Skin problems	34	16.2
Joint pain /Arthritis	23	11
Paralysis	15	7.1
Respiratory problems	14	6.7
Thyroid disorder	11	5.3
Gynecological problems	11	5.2
Kidney stone	7	3.3
Mental problems	5	2.4
Headache	5	2.4

**Multiple Responses*

Table 1 shows that the majority of the respondent with chronic illness (74.76%) used alternative therapy. Among them 40.5 % of the respondents had back/neuromuscular pain.

Table 2 : Priority Treatment (Use of Medicine) of the Respondents

Characteristics	Number	Percent
Priorities of Treatment (n=210)		
Prescribed medicines from physician	203	96.7
Non- prescribed medicine (self medication)	7	3.3
Non-prescribed (n=7)*		
Home remedie/ Self medication	7	100
Dhami/Jhankri	2	28.6
Jyotishi	1	14.3
Choice of Prescription at first (n=203)		
Alternative medicine	80	39.4
Modern medicine	123	60.6

** Multiple Responses*

Table 2 illustrates that the majority (96.7%) of the respondents were using prescribed medicine. Among non-prescribed medicine users (3.3%) all respondents' used home remedies or self medication. 60.6% of the respondents' first choice was allopathic medicine.

Table 3 : Respondents' Influencing Factors for Utilization of Alternative Medicine

Characteristics*	Number	Percent
Alternative medicine as the 1st priority (n=80)*		
Family tradition	40	51.3
Just to try	36	46.2
Avoidance of side effects	26	33.33
Easy access	19	24.4
Non-invasive procedure	23	18.4
Previous good experience	14	17.9
Fear of surgery	13	16.5
Free of cost (medicine/service)	31	14.8
Less costly	14	6.7
Alternative medicine as 2nd priority (n=123)*		
Dissatisfaction with modern medicine	74	59.2
Faith on holistic approach of healing	95	45.2
For complete cure of disease	52	41.6
As a last resort	46	36.8
Family advice	32	25.6

**Multiple Responses*

Table 3 demonstrates that more than half (51.3%) of the respondents used alternative medicine as 'family tradition' followed by 'just to try' (46.2%), and 'avoidance of side effect' (33.33%) respectively. Among the respondents who used alternative medicine after modern medicine, 59.2% of them used alternative medicine due to dissatisfaction with modern medicine.

Table 4 : Respondents Perception about Alternative Medicine

Variables	Number	Percent
Benefit (n=210)		
Yes	151	71.9
No	6	2.9
Do not know	53	25.2
If Yes, status of outcome (n=151)		
Complete cure of disease	12	7.9
Almost cure of disease	66	43.7
Only symptomatic relief	73	48.3
Side Effects (n=210)		
Yes	10	4.8
No	200	95.2
If Yes (n=10)		
Increased symptoms of disease	4	40
New symptoms develop	4	40
Allergy and skin reaction	2	20
Satisfaction (n=210)		
Yes	158	75.2
No	3	1.4
Do not know	49	23.3
Level of Satisfaction (n=158)		
Completely satisfied	15	9.5
Mostly satisfied	74	46.8
Somewhat satisfied	69	43.7

Table 4 depicts that the majority (71.9%) of the respondents perceived that they benefitted from the alternative medicine and among benefitted group 48.3% perceived symptomatic relief. 95% of the respondents experienced no side effects. 75.2% of the respondents were satisfied with alternative medicine and among them 46.8% reported that they were mostly satisfied.

Table 5 : Recommendation of Alternative Medicine by respondents to Other

Characteristics	Number	Percentage
Recommendation (n= 210)		
Yes	139	66.2
No	13	6.2
Undecided	58	27.6
Reason for Recommendation* (n=139)		
Slow but complete cure of disease if use for long time	114	82.0
Less costly	57	41.0
For health promotion and maintenance	51	36.7
Modern medicine is not always effective	40	28.8

**Multiple Responses*

Table 5 shows that the majority (66.2%) of the respondents reported that they would recommend to use alternative medicine because of slow but complete cure of disease (82.0%), if it is used continuously for long period .

Table 6 : Association between Socio-demographic Characteristics and Utilization of Alternative Medicine

n=210

Socio-demographic Characteristics	Utilization of AM		Total (n)	*P* Value	Unadjusted OR (95% CI)
	AM at First n (%)	AM at not First n (%)			
Age					
≤45	53(48.6)	56(51.4)	109	**0.004***	2.349 (1.310-4.210)
>45	27(28.7)	67(71.3)	94		Ref.
Sex					
Male	28(37.3)	47(62.7)	75	0.643.	0.871(0.485-1.564)
Female	52(40.6)	76(59.4)	128		Ref.
Marital Status					
Married	67(38.5)	107(61.5)	174	0.519	0.771(0.349-1.703)
Unmarried	13(44.8)	16(55.2)	29		Ref.
Education					
Up to school level	25(33.8)	49(66.2)	74	0.050	0.533(0.283-1.002)
Above school level	45(48.9)	47(51.1)	92		Ref.
Occupation					
Service holders	41(44.1)	52 (55.9)	93	0.210	1.435(0.815-2.528)
Others	39(35.5)	71(64.5)	110		Ref.
Family Income					
Not sufficient for 1 year	53(36.1)	94(63.9)	147	0.113	0.606(0.325-1.129)
Sufficient for 1 year	27(48.2)	29(51.8)	56		Ref.
Duration of Illness					
Acute	19(37.3)	32(62.7)	51	0.716	0.886(.461-1.703)
Chronic	61 (40.1)	91(59.9)	152		Ref.

Pearson Chi Square ($\chi 2$) Test, *: p value significant at < 0.05 level, Ref: Reference

Table 6 shows that the lower age group (≤45 years) was almost more than two times (OR:2.349; CI:1.310-4.210) more likely to utilize AM at first. The difference between two groups was statistically significant (p=0.004). Patients with education level up to SLC were less likely to use AM at first than the patients with education above SLC (OR**:** 0.533; CI: 0.283-1.002). The association between two educational class was nearly statistically significant (p=0.050).

Female patients (OR:0.871,CI:0.485-1.564) were more likely to use AM at first than male. Unmarried (OR: 0.771,CI:0.349-1.703) were more likely to use alternative medicine at first than married patients. Service holders (OR: 1.435, CI:0.815-2.528) were more likely to use AM at first. Patients who saved money for more than one years (OR:0.606,CI:0.325-1.129) were more likely to use AM at first. Patients with chronic illness (OR: 0.886, CI:0.461-1.703) were more likely to use AM as a first choice of medicine. But, there was no significant association of utilization of AM at first with sex, marital status, occupation, and duration of illness.

Discussion

Findings of the study reveals that respondent's age were between 35-44 years (23.80%), female (63.3%), from Municipality (75.2%), married (85.2%), higher educated (31.6%), and homemaker (36.2%) were more likely to use alternative medicine. This finding is supported by the findings of Gau, Yang, Huang, & Lou (2012); where 62.1 percent were female, 56.1 percent were married; and Jaiswal (2015) found that mean age was 45.24 years, 72 percent were reciding in urban areas, 76.0 percent were educated.

The main source of information was friends or family (82.9%) followed by self (21.4%) and media (8.6%). This finding is supported by a study conducted among Malaysian Cancer patient which showed that the main source of CAM was friends or family (75.5%) followed by own interest (17.9%) and mass media (12.5%) (Farooqui et al., 2015).

Regarding the health problems, common illness were back/ neuromuscular pain (40.5%), followed by digestive problems (28.1%). 74.76% of the respondents were suffering with chronic illness This finding is consistent with the finding of Hori, et al., (2008), where musculo-skeletal (38%), gastro-intestinal (32%), and cardiac problems (31%) used CME.

Similarly, more than half (51.3%) of the respondents had used alternative at first time for family tradition followed by just to try (46.2%), avoidance of side effects (33.33) respectively. Among the patients who had visited CAM after using modern medicine, 59.2% of the patients have used it due to dissatisfaction with modern medicine followed by faith on holistic approach of healing (45.2%), and for complete cure of disease (41.6%).. This finding is consistent with the study conducted by Naja et al., (2015) which showed that reason for CAM use was belief in the advantages of CAM products (76.3%), trying because of the suggestion (12.6%)", "feeling of having no alternative (8.3%), and disappointment with conventional medical therapy (7.4%).

Respondents with age less than 45 years (48.6%) were almost two times (OR:2.349, CI:1.310-4.210) more likely to use alternative medicine at first than those below 45 years. The difference was statistically significant (p=0.004). Regarding sex, females (40.60%) were more likely (OR:0.871, CI:0.485-1.564) to use alternative medicine. This finding is consistent with the study conducted by Chang et al (2011) which showed that Younger age (p = 0.004), female gender (37.6%) than male (15.6%) (p < 0.001), higher annual household income (p = 0.001), private health care insurance (p = 0.001), were found to be factors associated with more likely CAM use. In my opinion, Female and young4er may be perceived benefit from AM than allopathic medicine and further studies are need to explore the causes behind this.

The association between education level was nearly statistically significant (p=0.05) and there was no association between other variables with utilization of alternative medicine. This finding is consistent with a study which found that female ($p < 0.001$), younger age ($p = 0.004$), higher educational background ($p < 0.001$), higher annual household income ($p = 0.001$), private health care insurance ($p = 0.001$), non-Christian ($p < 0.001$) were found to be factors associated with more likely CAM usage (Mbada, et al., 2015). In my pinion, people with lower education and income levels are less likely to know about AM. So the lack of knowledge may be the reason associated with lower use of AM. Further research is necessary to explore the issue regarding these matters.

Patients with chronic illness (40.1%) preferred to utilize AM at first (OR: 0.886, CI:0. 461-1.703). This finding is consistent with the other studies carried out in Lebnan showed that CAM use was more frequent among subjects with a chronic disease (OR: 1.5, 95% CI: 1.14–1.91) (Naja, et al., 2015) and study conducted in Malaysia found out that respondents with duration of illness more than two years (71.6%) were more likely to utilize CAM (Alshagga, et al., 2011).

Conclusion

Patients with chronic health problem, younger age, married, female, urban residence, higher educated, employed rich are more likely to utilize AM at first. People with neuromuscular problem, digestive problem, HTN, diabetes, and skin problems are commonly using alternative medicine. Nearly half of the people choose alternative medicine at first due to family advice. Role of family members is a vital factor for utilization alternative medicine. Therefore, there is a need for integration of alternative medicine with conventional medicine. So it is necessary to integrate alternative medicine with national medical system for providing holistic health service under one roof of the health care system.

References

Alshagga, M. A., Al-Dubai, S. A., Faiq, S. S. M., & Yusuf, A. A. (2011). Use of complementary and alternative medicine among asthmatic patients in primary care clinics in Malaysia. A*nnals of Thorasic Medicine, 6*(3), 115–119. doi: 10.4103/1817-1737.82438

Chang, K. H., Brodie, R., Choong, M. A., Sweeney, K. J., & Kerin, M. J. (2011). Complementary and alternative medicine use in oncology: A questionnaire survey of patients and health care professionals. *BioMed Central Complementary and Alternative, 11*(196). doi: 10.1186/1471-2407-11-196

F. Naja, M. Alameddine, L. Itani, H. Shoaib, D. Hariri, & Talhouk, S. (2015). The use of Complementary and Alternative Medicine among Lebanese Adults: Results from a National Survey. *Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine*. volume (2015) doi: http://dx.doi.org/10.1155/2015/682397

Farah, N., Dana, M., Alameddine, M., Shoaib, H., Itani, L., & Mourad, Y. (2014). Prevalence and correlates of complementary and alternative medicine use among diabetic patients in Beirut, Lebanon: a cross-sectional studys. *BioMed Central Complementary and Alternative, 14*(185). doi: http://www.biomedcentral.com/1472-6882/14/185.

Farooqui, M., Hassali, M. A., Sharar, A. K. A., Farruqui, M. A., Sallem, F., Haq, N., & Chenoriahothman. (2015). Use of complementary and alternative medicines among Malaysian cancer patients: A descriptive study. *Journal of traditional and complimentary medicine*. March 18;6(4):doi: http://dx.doi.org/10.1016/j.jtcme.2014.12.008

Gau, B. S., Yang, H. L., Huang, S. J., & Lou, M. F. (2012). The use of complementary and alternative medicine for patients with traumatic brain injury in Taiwan. *BioMed Central complementary and alternative medicine*, *12*(1), 1. doi: 10.1186/1472-6882-12-211

Jaiswal, K., Bajait, C., Pimpalkhute, S., Sontakke, S., Dakhale, g., & Magdun , A. (2015). Knowledge, Attitide and Practice of Complementary and Alternative medicine: A patient' perspective. 5(1) doi: 10.4103/2230-8598.151243.

Kharel, P. (2009). Addressing barriers to the growth of traditional health services export of Nepal [A case study of Bhutan and Nepal]. South Asia network of Economic Research Institutes (SANEI)]. Retrived from

Mbada, C. E., Adeyemi, T. L., Adedoyin, R. A., Badmus, H. D., Awotidebe, T. O., Arije, O. O., & Omotosho, O. S. (2015). Prevalence and modes of complementary and alternative medicine use among peasant farmers with musculoskeletal pain in a rural community in South-Western Nigeria. *BioMed Central Complement Alternative Medicine, 15*(164). doi:10.1186/s12906-015-0695-3

National Institutes of Health. National Center for Complementary and Alternative Medicine (2006). Retrieved from http://nccam.nih.gov.

Onyiapat, J.-l. E., Okoronkwo, I. L., & Ogbonnaya, N. P. (2011). Complementary and alternative medicine use among adults in Enugu, Nigeria. *BioMed Central Complementary and Alternative medicine, 11*(19). doi:10.1186/1472-6882-11-19

Shankar, P., Partha, P., & Shenoy, N. (2002). Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a questionnaire-based study. *BioMed Central family practice, 3*(17). doi: 10.1186/1472-6882-10-36

World Health Organization. (2007). *WHO guidelines for assessing quality of herbal medicines with reference to contaminants and residues*. Geneva,Retrieved from http://apps.who.int/medicinedocs/documents/s14878e/s14878e.pdf.

Reveiw Article

Amniotic Fluid Embolism

Kapali Darshandhari Gayetri
Lecturer: Maharajgunj Nursing Campus

Abstract

Amniotic fluid embolism (AFE) is a devastating obstetric complication that requires early and aggressive intervention with optimal cardiopulmonary resuscitation, as it has high morbidity and mortality. Immediate recognition and diagnosis of AFE is essential to improve maternal and fetal outcomes. The true incidence of this entity is unclear because this syndrome is difficult to identify and the diagnosis remains one of exclusion, with possible under-reporting of nonfatal cases. AFE is caused by abnormal activation of immunologic mechanisms following entry of fetal antigens into maternal circulation. AFE classically presents as a sudden cardiovascular collapse associated with respiratory compromise, fetal distress and development of a coagulopathy. Treatment of AFE is supportive and directed at treating cardiovascular, pulmonary, and coagulation derangements.

Keywords : Amniotic Fluid, Embolism

Introduction

In 1926 amniotic fluid embolism (AFE) was first recognized and reported in Brazil. In 1941 Steiner and Lushbaugh defined AFE based on post mortem findings of fetal squamous cells in vasculature . Although AFE was first identified as a clinical entity in 1941, it remains an unpredictable condition and treatment is still largely supportive. AFE still accounts for 4.7% of direct maternal deaths in the UK, 13% in France, 30% in Singapore, and up to 10% in the USA and Australia (As cited in Dedhia & Mushambi, 2007).

Normally, amniotic fluid does not enter the maternal circulation because it is contained safely within the uterus, sealed off by the amniotic sac. AFE occurs when the barrier between amniotic fluid and maternal circulation is broken and, possibly under a pressure gradient, fluid abnormally enters the maternal venous system via the endocervical veins, the placental site (if placenta is separated), or a uterine trauma site.

In Nepal, a 10 year review of maternal mortality ratio in Paropakar Maternity and Women's Hospital (PMWH) Thapathali Kathmandu showed the leading cause of MMR was hemorrhage (30.30%) followed by eclampsia (24.24%). Sepsis, suspected cases of pulmonary embolism and amniotic fluid embolism each contributing 15.15%, 4.54% and 3.03% respectively (Upadhyaya, 2014).In developing countries little attention has been given to near miss obstetric events. The scenario is similar in Nepal. This probably is a result of persistently high level of maternal mortality that has overshadowed other severe obstetric complications.

Amniotic fluid embolism is an event that is as unpreventable as it is unpredictable (Singh, 2013) and is a catastrophic syndrome occurring during labor and delivery or immediately postpartum. This is a rare emergency in obstetrics with high mortality rate. AFE classically presents as a sudden cardiovascular collapse associated with respiratory compromise, fetal distress and the development of a coagulopathy. The AFE reported is; during labor-70% , after C/S – 19%, after vaginal delivery – 11% ,after membranes ruptured – 78% (Dedhia & Mushambi, 2007).

The etiology of AFE remains unclear. Initially AFE was thought to be secondary to the mechanical

obstruction of the maternal circulation by amniotic fluid. More recent theories suggest that AFE is an immune mediated response to the presence of amniotic fluid in the maternal circulation. Older age, Intrauterine fetal death, Multiparity, Physiologic intense uterine contractions, large fetal size, Medical induction of labor, Meconium staining of the amniotic fluid, Instrumental vaginal delivery, Placental abruption, Prolonged gestation, Eclampsia, Cesarean section, Fetal distress, Uterine rupture, Trauma to abdomen Polyhydramnios Surgical intervention High cervical tears, Premature placental separationas risk factors for AFE (Tan &McDonell, 2010).

There is no single laboratory finding by which AFE can be diagnosed. Ventilation perfusion scans aid in the diagnosis. ECG may show right ventricular strain while echocardiography confirms severe left ventricular failure. Various blood coagulation tests may be deranged.

Clinical management of AFE should focus on aggressive cardiovascular support, treatment of hypoxia, management of hemorrhage and coagulopathy, and delivery of the fetus. In the maternal cardiac arrest condition, basic and advanced life support should be undertaken which is essential to optimize maternal outcome. Following initial resuscitative measures, most patients will require continued monitoring and support in an ICU (Jeejeebhoy, Zilap & Lipman, 2015). Oxygen (100% face mask or bag mask) should be given to treat hypoxia and prevent further hypoxic injury. The goal should be to keep oxygen saturation greater than 90% Intubation and advance airway support are often required, to achieve this goal.

Electrocardiogram, pulseoxymetry and blood pressure should be immediately done.Large bore intravenous access should be obtained.An arterial line should be placed in hemodynamically unstable patients. Transthoracic or transesophageal echo-cardiography may be done for immediate evaluation of right and left ventricular function (McDonnell, Percival, & Paech, 2013).If the patient is unstable and hypotensive volume resuscitation, vasopressors and inotropic supports are used to optimize preload, contractility, and after-load. Vasoactive drug therapy must be tailored to the clinical situation. Fetus and placenta should be delivered as soon as feasible. The maternal mortality rate could be as high as 80 percent, with 50 percent dying within the first hour of the onset of symptoms. Survival is rare and those that do survive have increased chances of neurological impairment. The survival rate of newborn, is estimated to be about 70 percent (Singh, 2013).

Conclusion

AFE is a rare and often fatal complication of the peri-partum period. The severity of its consequences, rapid onset, and limited treatment options make recognition of this syndrome a vital importance for those caring for patients in the peripartum period. The most important goal of therapy is to prevent additional hypoxia and subsequent end-organ failure. The treatment is supportive and focuses on rapid maternal cardiopulmonary stabilization.

References

Dedhia&Mushambi,(2007). Amniotic fluid embolism.*Continuing Education in Anaesthesia Critical Care &Pai,* 7(5) 152–156 Retrieved from

Jeejeebhoy, F.M., Zelop, C.M., Lipman, S., Carvalho, B., Joglar, & J.,Mhyre, M.J.(2015). Cardiac arrest in pregnancy: a scientific statement from the American heart association. Circulation .*Circulation,* 132,1747–1773

McDonnell, N.J., Percival, V., &Paech, M.J. (2013). Amniotic fluid embolism: a leading cause of maternal death yet still a medical conundrum.*Int J ObstetAnesth,* 22(4), 329–336.

Singh, A (2013). A rare obstetrical emergency. Kathmandu post Retrieved from http://kathmandupost.ekantipur.com/news/2013-12-08/a-rare-obstetrical-emergency.html

Upadhyaya , I (2014).Maternal death review in tertiary care hospital. Journal of Nepal Medical association, 52(193), 713-8.Retrieved from

Uszyński1, W, &Uszyński, M. (2014)Amniotic Fluid Embolism (AFE): A Review of the Literature Orientated on Two Clinical Presentations— Typical and Atypical. *Open Journal of Obstetrics and Gynecology,* 4, 54-60.Retrieved from http://dx.doi.org/10.4236

Review Article

Benefits of Delayed Cord Clamping

Dhakal Kamala
Lecturer: Maharajgunj Nursing Campus

Abstract

Delayed cord clamping (DCC) leaves the cord alone after birth and avoids disrupting the normal birth process. While the cord is pulsating, placental transfusion is supplying the baby with oxygen, nutrients and an increased blood volume to support the transition to life outside the womb.

Delayed cord clamping confers many benefits to the newborn baby including higher number of red blood cells, stem cells and immune cells at birth. In premature or compromised babies, delayed cord clamping may provide essential life support, restore blood volume and protect against organ damage. It reduces the risk that the baby will have iron deficiency anemia without substantial side effects in baby.

Key Words: Benefits, Cord Clamping, Delayed,

Background

"Early" cord clamping is generally carried out in the first 60 seconds after birth (generally within the first 15–30 seconds), whereas "delayed" umbilical cord clamping is carried out more than 1 minute after the birth or when cord pulsation has ceased(Pan American Health Organization and World Health Organization Regional Office for the Americas, 2013).

Delaying umbilical cord clamping (CC) by 2 to 3 minutes after delivery allows fetal blood remaining in the placental circulation to be transfused to the newborn (Farrar , Airey , Law, Tuffnell & Cattle, 2011). This transfusion can expand the blood volume by 30% to 40% (25-30 mL/kg). After physiologic hemolysis, hemoglobin-bound iron is transferred into iron stores. Consequently, delayed CC is associated with improved iron status at 4 to 6 months of age (McDonald, Middleton, Dowswell & Morris, 2013).

In a meta-analysis of Delayed Cord Clamping in preterm infants was associated with less need for blood transfusion and reduced risk of intraventricular hemorrhage (IVH) and necrotizing enterocolitis (NEC). Randomized clinical trials have shown other benefits of DCC in preterm infants including improved cardiovascular stability(Meyer & Mildenhall , 2011) cerebral oxygenation, and lower risks for both severe IVH and late onset sepsis (LOS) (Mercer , Vohr , McGrath , Padbury , Wallach & Oh ,2006) .

Delayed cord clamping is a birth practice where the umbilical cord is not clamped or cut until after pulsations have ceased, or until after the placenta is delivered. Research has shown that when we delay cord clamping the neonate will receive up to 30% more of the fetal-placental blood volume than it would have with immediate cord clamping (Mathew, 2011).

Newborns with delayed clamping had higher hemoglobin levels 24 to 48 hours postpartum and were less likely to be iron-deficient three to six months after birth, compared with term babies who had early cord clamping. Birth weight also was significantly higher on average in the late clamping group, in part because babies received more blood

from their mothers. Delayed clamping did not increase the risk of severe postpartum hemorrhage, blood loss or reduced hemoglobin levels in mothers, the analysis found (Louis, 2013).

Early cord clamping is generally carried out in the first 60 seconds after birth, whereas delayed cord clamping is carried out more than one minute after the birth or when cord pulsation has ceased. Delaying cord clamping allows blood flow between the placenta and neonate to continue, which may improve iron status in the infant for up to six months after birth. This may be particularly relevant for infants living in low-resource settings with reduced access to iron-rich foods (Mathew, 2011)

Timing for cord clamping (recommended by WHO)

In newly born term or preterm babies who do not require positive-pressure ventilation, the cord should not be clamped earlier than 1 min after birth. When newly born term or preterm babies require positive-pressure ventilation, the cord should be clamped and cut to allow effective ventilation to be performed.

Newly born babies who do not breathe spontaneously after thorough drying should be stimulated by rubbing the back 2–3 times before clamping the cord and initiating positive-pressure ventilation.

Delayed cord clamping (performed approximately 1–3 min after birth) is recommended for all births, while initiating simultaneous essential neonatal care.

Early umbilical cord clamping (less than 1 min after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation.

The evidence base for recommendations on the optimal timing of umbilical cord clamping for the prevention of postpartum hemorrhage includes both vaginal and caesarean births.

Delayed cord clamping is recommended even among women living with HIV or women with unknown HIV status. HIV status should be ascertained at birth, if not already known, and HIV positive women and infants should receive the appropriate ARV drugs (WHO, 2014).

Benefits of Delayed Cord Clamping

For preterm/low-birth weight infants

Decreases risk of: intraventricular haemorrhage, necrotizing enterocolitis and late-onset sepsis

Decreases need for: blood transfusions for anaemia or low blood pressure, surfactant and mechanical ventilation

Increases: haematocrit, haemoglobin, blood pressure, cerebral oxygenation and red blood cell flow

Increases haemoglobin at 10 weeks of age and may be a benefit to neurodevelopmental outcomes in infants

For Full-term infants

Provides adequate blood volume and birth iron stores

Increases haematocrit and haemoglobin

Improves haematological status (haemoglobin and haematocrit) at 2–4 months of age and improves iron status up to 6 months of age

For mothers

No effect on maternal bleeding or length of the third stage of labour and indication from “cord drainage” trials that less blood-filled placenta shortens the third stage of labour and decreases the

incidence of retained placenta (Pan American Health Organization and World Health Organization Regional Office for the Americas, 2013).

Conclusion

Delayed cord clamping leaves the cord alone after birth and avoids disrupting the normal birth process. While the cord is pulsating, placental transfusion is supplying the baby with oxygen, nutrients and an increased blood volume to support the transition to life outside the womb.

Delayed cord clamping provides many benefits to the newborn baby including higher number of red blood cells, stem cells and immune cells at birth. In premature or compromised babies, delayed cord clamping may provide essential life support, restore blood volume and protect against organ damage. So it is highly recommended to practice the delayed cord clamping in all newborn babies for their health promotion.

References

Farrar, D., Airey, R., Law, G.R., Tuffnell, D., Cattle, B., & Duley, L. (2011). Measuring placental transfusion for term births: weighing babies with cord intact. *BJOG* ; 118(1):70-75.

Louis, C. S. (2013). Study Finds Benefits in Delaying Severing of Umbilical Cord .Retrieved from http://www.nytimes.com/2013/07/11/health/study-endorses-later-severing-of-umbilical-cord.html

McDonald, S.J. & Middleton, P. Dowswell, T.& Morris, P.S.(2013). Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. *Cochrane Database Syst Rev*.;7:CD004074.

Mathew, J.L. (2011). Timing of umbilical cord clamping in term and preterm deliveries and infant and maternal outcomes: a systematic review of randomized controlled trials. *Indian Pediatrics*; 48:123–129. Retrieved from http://www.who.int/elena/titles/cord_clamping/en/

Meyer, M.P. & Mildenhall, L. (2 011) . Delayed cord clamping and blood flow in the superior vena cava in preterm infants: an observational study. Archives of disease in childhood Fetal and neonatal edition. Epub 2011/05/19. pmid:21586482.

Mercer, J.S., Vohr, B.R., McGrath, M.M., Padbury, J.F., Wallach, M., & Oh, W.(2006). Delayed cord clamping in very preterm infants reduces the incidence of intraventricular hemorrhage and late-onset sepsis: a randomized, controlled trial. Pediatrics; 117(4):1235–42. pmid:16585320; PubMed Central PMCID: PMCPMC1564438.

Pan American Health Organization and World Health Organization Regional Office for the Americas (2013). Beyond survival: integrated delivery care practices for long-term maternal and infant nutrition, health and development, 2nd ed. Washington, DC: Pan American Health Organization; retrieved from http://www.who.int/nutrition/publications/infantfeeding/BeyondSurvival_2nd_edition_en.pdf?ua

United Nations Children's Fund, United Nations University, World Health Organization (2001). Iron deficiency anaemia assessment, prevention, and control. A guide for programme managers. Geneva: World Health Organization; 2001 (WHO/NHD/01.3; Retrieved from http://www.who.int/nutrition/publications/en/ida_assessment_prevention_control.pdf,

WHO (2014). Delayed umbilical cord clamping for improved maternal and infant health and nutrition outcomes. Retrieved from http://apps.who.int/iris/bitstream/10665/148793/1/9789241508209_eng.pdf

Review Article

Dundee Ready Educational Environment Measure (Dreem) ; An Effective Tool to Assess Educational Environment

Singh Ajanta
Lecturer, Maharajgunj Nursing Campus

Abstract

Quality of an educational environment is an indicative of the effectiveness of an educational programme on student's learning, motivation and learning outcome. The foundation for improving the health and safety of patients start with the competency of health care providers. The education of health professionals is fundamental to these health initiatives. In nursing programme the main objective is to produce nursing graduates who can provide comprehensive care and treatment to the community. The critical components include appropriate physical structures and services which reflects curriculum quality, teaching and learning as well as support for outcomes as practioners. Educational environment is one of the most important determinants of an effective curriculum. The educational atmosphere and the student's perceptions about the teaching pattern and their own opinion reflect their performance. An important component of academic strengthening and curriculum renewal is the evaluation of the quality and structuring of the programme. Consideration of climate in the medical school along the line of continuous quality improvement and innovation are likely to further the medical schools as a learning organization; to measure such an environment a standard tool named Dundee Ready Educational Environment Measure (DREEM) has been proven effective in different settings.

Key Words: Educational Environment, Learning Atmosphere, Perception of teacher, Social environment, Student's perception.

Introduction

Dundee Ready Educational Environment Measure (DREEM) is a generic instrument for measuring student's perception of undergraduate health profession's curriculum. Measurement of the educational environment is necessary in health professional education programme. Information gained from these investigations can be used to implement and measure changes in the curriculum, educational delivery and physical as well as social environment. In DREEM tool there are number of questionnaires to measure the educational environment (Vaughan et al., 2014)). Components of the educational environment include physical infrastructure such as rooms for lectures, tutorials and clinical activities, facilitating and constraining factors for learning, the atmosphere created by students and faculty members including teaching, clinical and administrative staffs. For an excellent discourse on the concepts and issues of educational environment, approach to study, understanding of practice and educational outcomes must be achieved. Understanding an educational programme environment can assist with quality assurance by identifying where a programme can be improved and subsequently evaluating changes that are implemented. There are currently few studies in developing countries that examine the educational environment of students in medical curriculum which investigate changes over the student's entire time within a programme of study.

Components of DREEM

The DREEM is a 50 item questionnaire developed by Roff et al., to measure the educational environment in health professional education programme. The questionnaire was developed through the use of Delphi approach involving a range of health professionals. Each item is measured using a five point likert scale where 0 is strongly disagree, 1 is disagree, 2 is neither agree or disagree, 3 is agree and 4 is strongly agree. Respondents are presented with a statement and asked to select a response. Items 4,8,9,17,25,35,39,48 and 50 are negatively worded and these require recoding prior to calculating the total and subscale scores. The 50 items are divided into five subscales based on the initial psychometric analysis. The five subscales are student's perceptions of learning, student's perception of teachers, student's academic self-perception, student's perception of atmosphere and student's social self-perception. The DREEM was published in 1997 as a tool to evaluate educational environment of medical schools and other health training settings and a recent review concluded that it is the most suitable such instrument. Other related studies that used the DREEM questionnaire were searched and were read thoroughly, critically reviewed, analyzed and conclusion was drawn.

Evidences related to DREEM

A cross sectional survey at Isra School of optometry Pakistan using the DREEM using non parametric tests found median score was 61.5% (123/200). The highest percent score was observed for student's perception of academic self (72%) and the lowest for student's perceptions of teachers (56.8%). There was a significant difference in the perceptions of students in different years of education (Raiz et al., 2016).

Using DREEM at Rafsanjan University Iran, students in the midwifery nursing, radiology, operating room nursing, laboratory sciences, medical emergency and anesthesia, the t test and analysis of variance statistical tests showed mean scores in the five domains as 113.5 out of 200(56.74%) which was more positive than negative. The total mean scores for perception of learning, teaching and atmosphere were 27.4/48(57.24%), 24.60/44(55.91%) and 26.8/48(55.89%) respectively. Academic and social self-perception were 20.5/32(64.11%) and 15.7/28(56.36%) respectively. The total DREEM score varied significantly between courses (p=0.01). First year students and female had significantly higher score (p=0.01). It is essential for faculty members and course managers to make efforts towards observing principles of instructional environment and to reduce deficits in order to provide a better learning environment with more facilities and supportive systems for the students (Bakhshialiabad et al., 2015).

The study using the DREEM questionnaire to assess the perception of educational environment, which includes two consecutive and cohorts were evaluated during the second year entering 2010 and 2011 for former and new curriculum respectively in a medical school of Santiago-Chile. Both group evaluated the educational environment positively. The total average scores of the perception of the educational environment by 2010 cohort was of 132 points and by 2011 cohort of 126 points a statistically significant difference. The good preparation the students are receiving for the profession and the relevance of the assignments they are learning were considered strength by the students from both groups. Before any changes are made to the curriculum, it is indispensable to take into accounts how the academic load might affect the students (Ceron et al., 2015)

A DREEM questionnaire used in Australian university among undergraduate students enrolled in the emergency health, midwifery, radiography and medical imaging, occupational therapy, pharmacy, nutrition and dietetics, physiotherapy and social work courses at Monash University showed scores across the sample fairly high (M=137.3,SD18.3) indicating an overall positive perception of learning environment among students. Total scores were significantly higher for females (M=138.8;SD=17.2) than males(M=132.3SD=20.7) and this trend was consistent across all aspects of perceived learning

environment. Students who enrolled in their course directly after completing high school yielded less positive ratings on some DREEM subscales than students who did not enroll immediately after completing high school (Brown etal., 2011).

The pilot study which was aimed to assess the reliability and validity of modified DREEM tool was used to evaluate the effects of different pedagogical approaches in clinical environment on nursing student's learning perceptions. This study demonstrated that model DREEM yields a high internal consistency. This tool evaluated nursing student's perceptions of their clinical learning environment on the basis of five subscales. Students learning perceptions, facilitators, academic self-perception, atmosphere, social self-perception and mentorship (Perry et al., 2016).

The third year nursing student's perception of educational learning environment in pediatric and maternity courses using DREEM Questionnaire in Egypt, showed total mean score for student's perception of their learning environment were 115.0+-23.02 and 110.3+-17.4 respectively. Student's beliefs in their gaining knowledge of environment were more positive than negative with a significant difference between both groups. All students agreed to positive approach regarding their learning moving in the right direction, positive academic self-perception, positive learning atmosphere and positive social self-perception. The result showed that 10% of both speciality students have mean score <=2, about half of the students have mean score 3.1-3.5 positive aspects while none of students scored >3.5 as excellent items. Perceptions of mastering learning environment were more positive than negative with a significant difference between pediatric and maternity students (Fawzia et al., 2015).

A study in Karachi that used DREEM questionnaire scored 121.07 out of 200; the student's perceptions of educational environment being more positive. They also considered the overall atmosphere of college comfortable and reported better than average social lives. The study showed that the students perceived a positive learning environment at the college. Although the students were experiencing a considerable amount of stress, their social life on the campus was satisfactory (Faiza et al., 2013).

The learning climate has been found to be significant in determining students' academic achievement and learning. The total DREEM score for female students were significantly higher than for males (p=0.01). The total scores of new entry students were significantly higher than the others (p=0.01). The total mean score was 114.3(SD20.6) out of 200 which was considered as more positive than negative. The subscale with highest mean score was student's perception of learning. The lowest mean score was for academic self-perception. The school's educational climate was generally perceived positively by students but specific areas identified by students as needing improvement (Bakhshi et al., 2013).

Qualitative analysis in association with the DREEM questionnaire was administered to undergraduate students together with an open question asking for suggested changes to current medical school. Practices highlighted were further defined through qualitative analysis using focus group email questionnaire and introduction of stressful incident reporting. Stress resulting from experiences on clinical placement was highlighted by some students. The qualitative data has substantially enhanced questionnaire interpretation and allowed action to address common causes for student dissatisfaction (Whittle et al., 2007).

The DREEM questionnaire administered to medical students to measured internal consistency of the instrument and its subscales with the method described by Cronbach and the result were expressed with alpha coefficient ranging from 0 to 1. Based on the responses DREEM was found highly reliable with an alpha coefficient of 0.91. The subscale with highest mean score was academic self-perceptions which indicate student's perceptions of their academic achievements. The lowest mean score was for the students perceptions on their social environment. The overall mean score was

127.5+20.9(63.8%). Scores observed in students in year 5 were significantly lower, including student's perceptions of learning, student's perceptions of teachers, student's perception of learning atmosphere and student's perceptions of the social environment. The schools educational climate was generally perceived positively (Riquelme et al., 2009).

The quality of the educational environment is a key determinant of student centered curriculum. Evaluation of the educational environment is an important component of programme appraisal. In order to conduct such evaluation, use of comprehensive valid and reliable instrument is essential. Using DREEM score in Ireland highlighted two concerns. Firstly the internal consistency of the 5 scales that appear low, secondly construct validity is not well supported (Hammond and et al., 2012).

Educational environment makes an important contribution to student learning. The DREEM questionnaire used alone has little value for identifying means of remediation of poor aspects of environment. DREEM questionnaire identified areas for changes to enhance student's experiences. Items for concern highlighted were further defined through qualitative analysis using focus groups, email questionnaire and introduction of stressful incident reporting. Stress resulting from experiences on clinical placement was highlighted by some students but on closer investigation found to be rare. The qualitative data have substantially enhanced questionnaire interpretation and allowed actions to address common causes for student satisfaction to be undertaken (Whittle et al., 2007)

Conclusion

The DREEM instrument has been used in several countries. It is applied to evaluate the perceptions of medical students and students of other allied health courses. It has been proved as a valid instrument for providing a profile of health institution's strengths and weaknesses. DREEM has been used in evaluating between different groups and comparison with ideal/expected scores. Users must be given an informed guideline on its reporting and statistical methodology is recommended to improve the educational environment and thus the overall quality of educational provision. It is essential for educationist to create an appropriate educational environment in order to provide and maintain high quality learning environment for students. Learning environment has a significant role in determining students' academic achievement and learning. Thus there is a need to carry out similar studies in our context in order to assess quality education.

References

Bakhshi, H., Abazari, F. & Bakhshialiabad, M. H. (2013). Nursing Students' Perceptions of their Educational Environment Based on DREEM Model in an Iranian University Malaysian *Journal of Medical Sciences;* MJMS. 2013; 20 (4):56-63.

Bakhshialiabad, H., Bakshi, M. & Hassanshahi, G., Students Perception of the Academic Learning Environment in Seven Medical Science Course Based on DREEM Advance Medical Education Practice 2015; (7) 23; 6:195-203. Doi 10.2147/AMEP.S60570.

Brown, T., Williams, B. & Lynch, M. (2011). Australian DREEM Evaluating Student Perceptions of Academic Learning Environments within Eight Health Science Courses. *International Journal of Medical Education* 2: 94-101 ISSN: 2042-6372 DOI:10.5116/ijme.4e66.1b37

Ceron, M.C., Garbarini, A. & Parro, J. (2015). Impact of curricular change on perception of educational environment by nursing students. Invest EducEnferm 2015; 33 (1):63-72.

Faiza, S., Anjum, R. & Saher, F.(2013). Perception of Student's Learning Environment Studying Integrated Medical Curriculum. *Journal of Surgery Pakistan International* 18 (2) April/June.

Fawzia, S., Abusaad, H., Sayed, M. & Abdel, H. G. (2015). *Journal of education and practice*www.iiste.org ISSN2222-1735(paper) ISSN2222-228X (online) volume 6 no.29 2015 26.

Miles, S., Swift, L. & Leinster, S. J. (2012). Medical teaching 2012; 34 (9):e620-34. Doi: 10.3109/0142159x.2012.668625. Epub April 3 DREEM review of its adoption & use.

Miles, S., Swift, L. & Sam J.(2012). The DREEM: A Review of Its Adoption and Use 620-e634published online on 3 April 2012 http://dx.doi.org/10.3109/01 42159x.2012.668625.

Perry, R. D., Madeline, M.P., Rohatinsky, N. & Monique, S.(2016). Open access by Chinese Nursing Association http://doi.org/10.1016/j. ijnss.2016.07.001.

Raiz, Q., Sadaf, S. & Hamed, A. (2016). Talpur Optometric education: volume 42 number 1 2016 http://dx.doi.org/10.2147/AMEP.S60570.

Riquelme, A., Oporto, J., Oporto, M., Mendez, J. I., Vivani, P., Salech, F., Chianale, J., Moreno, R. & Sanchez, I. (2009). Measuring student's perception of the educational climate of the new curriculum at the Pontificia Universidad Catholica de Chile: performance of the Spanish translation of the DREEM. Education health May; 22(1):112 Epub April 29.

Sean, M. H., Margaret, O. R., Martina, K., Deirdre B. & Siun, O. F. (2012). Psychometric appraisal DREEM BMC medical education 2012 12:2http:// doi.org/10.1186/1472-6920-12-2.

Sue, R., Sean, M.A., Ronald, M. H., Al-Qahtani, M., Ahmed, A. U., Deza, H., Groenen, G., & Primparyon, P. (2009) Development and Validation of the Dundee Ready Education Environment Measure (DREEM) Pages 295-299 | Published online: 03 Jul 2009 http://dx.doi.org/10.3109/01421599709034208.

The Dundee Ready Education Environment Measure (DREEM): review of its adoption and use: https://www.researchgate.net/ publication/223984461Areview of its adoption & use.

Vaughan, B., Carter, A., Macfarlane, C. & Morrison, T., (2014) BMC Medical Education 14:99 http://doi. org/10.1186/1472-6920-14-99.

Whittle S.R., Whelan, B. & Murdoch, E. (2007). Education Health (Abingdon) May; 20(1):7 Epub April 18 DREEM and beyond studies of the educational environment as a means for its enhancement.

Review Article

Hemolysis, Elevated Liver Enzyme, and Low Platelet Syndrome in Pregnancy

Panta Ganga
Lecturer: Maharajgunj Nursing Campus

Abstract

Hemolysis Elevated Liver Enzymes and Low Platelets (HELLP) syndrome is a life threatening disorder, associated with substantial maternal and perinatal morbidity and mortality. HELLP syndrome occurs in 0.5 to 0.9% of pregnancies and 70-80% of cases coexist with pre-eclampsia. It occurs in the later stage of pregnancy as a complication of severe preeclampsia or eclampsia. The syndrome itself is manifested by hemolytic anemia, increased liver enzymes, and decreasing platelet counts with neurological manifestations such as hemorrhagic stroke or subarachnoid hemorrhage. Almost one half of women with HELLP syndrome have activation of coagulation factors and platelets precipitates disseminated intravascular coagulation, which may cause multiorgan failure. Rapid clinical assessment of maternal and fetal condition, early diagnosis & management of the problems is needed to minimize adverse maternal and fetal outcomes.

Key words: DIC, HELLP Syndrome, Pregnancy

Introduction

Hemolysis Elevated Liver Enzymes and Low Platelets (HELLP) syndrome is a life threatening complication in pregnancy. It was first described by Weinstein in 1982, as a multisystem disorder usually seen in the third trimester and in the postpartum period within 48-72 hours following delivery (Mallesara et al., 2016 ; Güven et al., 2012). Hemolysis occurs as a result of the fragmentation and distortion of erythrocytes during passage through small damaged blood vessels. This may result in low red blood cell level or anemia, a condition in which the blood doesn't carry enough oxygen to the body (Missmolls, 2016; Moore, 2017; McKinney et al., 2013). Liver enzyme levels increase when hepatic blood flow is obstructed by fibrin deposits. Inflamed or injured liver cells leak high amounts of certain chemicals, including enzymes, into the blood. Hyperbilirubinemia and jaundice may occur as a result of liver impairment. Low platelets levels are caused by vascular damage resulting from vasospasm, platelets aggregation at sites of damage resulting systematic thrombocytopenia (McKinney et. al., 2013: Moore, 2017).

HELLP Syndrome develops in approximately 0.5 to 0.9% of all pregnancies and in 10–20% of women with severe preeclampsia. Among them, around 70% of the cases develop HELLP syndrome before delivery and the majority developed the syndrome between 27^{th} to 37^{th} weeks of gestation and remaining (30%) develops after delivery within 48 hours (Haram, Svendsen, & Abildgaard, 2009) elevated liver enzymes and low platelet count occurring in 0.5 to 0.9% of all pregnancies and in 10–20% of cases with severe preeclampsia. The present review highlights occurrence, diagnosis, complications, surveillance, corticosteroid treatment, mode of delivery and risk of recurrence.\n\nMethods\nClinical reports and reviews published between 2000 and 2008 were screened using Pub Med and Cochrane databases.\n\nResults and conclusion\nAbout 70% of the cases develop before delivery, the majority between the 27th and 37th gestational weeks; the remainder within 48 hours after delivery. The HELLP syndrome

may be complete or incomplete. In the Tennessee Classification System diagnostic criteria for HELLP are haemolysis with increased LDH (> 600 U/L. The prominent symptoms are pain in the right upper quadrant of abdomen, the lower chest or epigastric region due to liver distention. The other features are nausea, vomiting and severe edema (McKinney et. al., 2013).

The exact cause of HELLP syndrome is not yet identified. However both preeclampsia and HELLP syndrome have their origin in the placenta (Haram, Mortensen, & Nagy, 2014). Immunological maladaptation is the most probable cause while trophoblastic invasion during fetal development (Abildgaard & Heimdal, 2013). A previous HELLP syndrome in pregnancy is associated with an increased risk as well as pre-eclampsia in subsequent pregnancies (Rezai et al., 2017). Advanced maternal age (above 30), obesity, poor diet, history of pre-eclampsia and diabetes are considered as the risk factors of HELLP syndrome (Cunningham, 2014; Moore, 2017). The prognoses of HELLP syndrome in Infants and fetus have higher mortality (6-36%) than mothers (1-3%) (Moore, 2017)

Diagnostic Criteria & Classification of HELLP Syndrome
According to Mississippi & Tennessee Classification HELLP Syndrome

Mississippi classification	Tennessee classification
Class 1	**True or Complete**
• Platelets < 50,000/mm^3	• Platelets < 100,000/mm^3
• AST or ALT > 70 IU/L	• AST > 70 IU/L
• LDH >600 IU/L	• LDH >600 IU/L
Class 2	**Partial or Incomplete**
• Platelets =50,000-100,000 /mm^3	Severe preeclampsia with any one or two of above
• AST or ALT > 70 IU/L	
• LDH >600 IU/L	
Class 3	
• Platelets=100,000-150,000/mm^3	
• AST or ALT >40 IU/L	
• LDH >600 IU/L	

(AST: Aspartate Transaminase; ALT: Alanine Transaminase; LDH: Lactate Dehydrogenase)

(Haram et al., 2009; Rahaman, 2017; Satpathy et al., 2009)

Clinical Manifestations

Malaise, epigastric or right upper quadrant pain, nausea and vomiting and nonspecific viral flu like symptoms.

Hypertension and proteinuria may be absent or slightly increase.

Excessive weight gain and generalized edema precede the syndrome in more than 50% of the cases (Haram et al., 2009) elevated liver enzymes and low platelet count occurring in 0.5 to 0.9% of all pregnancies and in 10–20% of cases with severe preeclampsia. The present review highlights occurrence, diagnosis, complications, surveillance, corticosteroid treatment, mode of delivery and risk of recurrence.\n\nMethods\nClinical reports and reviews published between 2000 and 2008 were screened using Pub Med and Cochrane databases.\n\nResults and conclusion\nAbout 70% of the cases develop before delivery, the majority between the 27th and 37th gestational weeks; the remainder within 48 hours after delivery. The HELLP syndrome may be complete or incomplete. In the Tennessee Classification System diagnostic criteria for HELLP

are haemolysis with increased LDH (> 600 U/L.

Headache, visual changes, bleeding, ascitis, jaundice, shoulder and neck pain and pulmonary edema (Satpathy et al., 2009).

In the postpartum period the HELLP syndrome usually develops within the first 48 hours in women who have had proteinuria and hypertension (Satpathy et al., 2009).

Management

Because of progressive nature of disease, patient should be hospitalized with bed rest and care should be provided under close supervision to prevent deterioration of maternal and fetal condition (Haram, Mortensen, & Nagy, 2014). After assessment and stabilization of maternal status, the fetus is evaluated by fetal heart rate tracing, biophysical profile and doppler studies, which helps to determine when delivery is appropriate (Dusse et al., 2015). If mother and fetus both are stable and gestational age is less than 34 weeks it is better to delay delivery for 24-48 hours for corticosteroid administration. Immediate delivery is indicated if gestational age is above 34 weeks or earlier in nonreassuring fetal status or complication of HELLP syndrome (multiorgan dysfunction, DIC, abruptio placenta, renal failure, pulmonary edema, liver infarction or hemorrhage etc) are already present (Rahaman,2017).

If the fetus is < 24 weeks, expectant management is to extend period of gestation as much as possible. However, such prolongation of management may not improve perinatal outcome. In this condition following care should be provided to the women: bed rest, control of blood pressure, administration of magnesium sulphate, use of antithrombotic and steroid and plasma volume expanders (fresh frozen plasma, crystalloid, colloids, etc) (Mallesara, Kanta, & Shivappa, 2016).

Vaginal delivery is preferred if women is after 32 weeks of gestation and in active labour. Induction or augmentation of labour with oxytocin or prostaglandins is acceptable if needed. In the women of gestation less than 30weeks with unfavorable cervix and in the absence of active labour cesarean section (CS) is preferred for delivery. If there is fetal growth retardation or oligohydraminous elective CS is recommended (Haram et al., 2009).

Magnesium sulphate should be administered intrapartum and early postpartum for seizure prophylaxis regardless of blood pressure. Continuous monitoring of serum creatinine to identify compromised renal function is required. As in patients with severe preeclampsia, antihypertensive are used for systolic blood pressures above 160 mm Hg and or diastolic pressures of more than 105 mmHg to avoid intra cerebral bleeding (Rahaman, 2017).

Nursing Management

Careful assessment of mother should be done and arrangement of intensive care facilities should be made.

Antiseizure prophylaxis (magnesium sulfate) to the patient.

Control of the blood pressure of the patient (antihypertensive as needed).

Avoidance injuring of the liver by abdominal palpation. Sudden increase in the intrabdominal pressure could lead to the rupture, leading to maternal and fetal mortality.

Management of prescribed fluid replacement accurately to avoid worsening the woman's reduced intravascular tone. However, excessive fluid administration could lead to pulmonary edema or ascites.

Continuous fetal monitoring for early identification of fetal compromise

Continuous monitoring of maternal heart rhythm by ECG

Continuous monitor the oxygen level in blood by pulse oximetry

Transfusion of fresh-frozen plasma or platelets as ordered to improve the platelet count.

Provision of needed care when transporting the woman.

Psychosocial support.

Complications

Maternal: hepatic rupture, acute renal failure, pulmonary edema, ascites, pleural effusion, abruptio placenta, postpartum hemorrhage, disseminated intravascular coagulation, stroke and death.

Fetal and neonatal: perinatal death, IUGR, preterm delivery. neonatal thrombocytopenia & respiratory distress syndrome (RDS) (Abildgaard & Heimdal, 2013)elevated liver enzymes, and low platelet count.

Conclusion

Hemolysis Elevated Liver Enzymes and Low Platelets (HELLP) syndrome is a life-threatening obstetric complication considered as a severe form of preeclampsia involving haemolysis, thrombocytopenia and liver dysfunction. Both HELLP and pre-eclampsia occur during the later stages of pregnancy, and sometimes after childbirth. Perinatal mortality is associated with early gestational age and its complication. Early diagnosis by assessing symptoms and laboratory test and treatment by multidisciplinary team is crucial to prevent maternal and perinatal complications.

References

Abildgaard, U., & Heimdal, K. (2013). Pathogenesis of the syndrome of hemolysis, elevated liver enzymes, and low platelet count (HELLP). *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *166*(2), 117–123. https://doi.org/10.1016/j.ejogrb.2012.09.026

Cunningham, F. G., Leveno, K. J., Bloom, S. L., Spong, C. Y., Dashe, J. S., Hoffman, B. L. ,… Sheffield, J. S. (2014). Williams Obstetrics, New York, Mc Graw Hill Education

Dusse, L. M., Alpoim, P. N., Silva, J. T., Rios, D. R. A., Brandão, A. H., & Cabral, A. C. V. (2015). Revisiting HELLP syndrome. *Clinica Chimica Acta*, *451*, 117–120.https://doi. org/10.1016/j.cca.2015.10

Güven, D., Bakay, K., Koçak, İ., & Üstün, C. (2012). A review of HELLP syndrome, in 17 patients. *Open Journal of Obstetrics and Gynecology*, *2*(3), 318. https://doi.org/10.4236/ojog.2012.23066

Haram, K., Mortensen, J. H., & Nagy, B. (2014). Genetic aspects of preeclampsia and the HELLP syndrome. *Journal of Pregnancy*, *2014*, 910751. https://doi.org/10.1155/2014/910751

Haram, K., Svendsen, E., & Abildgaard, U. (2009). The HELLP syndrome: Clinical issues and management. A Review. *BMC Pregnancy and Childbirth*, *9*, 8. https://doi.org/10.1186/1471-2393-9-8

Mallesara, A., Kanta, S. R., & Shivappa, P. (2016). A clinical study of HELLP syndrome and its outcome in a tertiary health care system, *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 5(12). DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20164064

McKinney, E. S., James, S. R., Murry, S. S., Nelson, K. A., & Ashwill, J. W. (2013). Maternity- Child Nursing (4th ed.). St. Louis Missouri: Elsevier Saunders

Missmolls. (2016, February 7). What the HELLP!: Etiology/Pathophysiology. Retrieved on 23rd july 2017 from http: //moll ysmaternityblog. blogspot. com/2016/ 04/etiology patho physi ology.html

Moore, K. (2017, April 10). HELLP Syndrome. Retrieved September 10, 2017, from http://www.healthline.com/health/hellp-syndrome

Rahaman, H. (2017) Pinning Down HELLP: A Review. *Biomedical Journal of Scientific and Technical Research*, 1(3), DOI: 10.26717/BJSTR.2017.01.000267

Rezai, S., Faye, J., Hughes, A., Cheung, M.-L., Cohen, J. R., Kaia, J. A., … Henderson, C. E. (2017). Hemolysis, Elevated Liver Enzymes, and Low Platelets, Severe Fetal Growth Restriction, Postpartum Subarachnoid Hemorrhage, and Craniotomy: A Rare Case Report and Systematic Review. Retrieved September 15, 2017, from https://www.hindawi.com/journals/criog/2017/8481290/abs/

Satpathy, H. K., Satpathy, C., Donald, F. (2009). Review Article: Hellp Syndrome, *Journal of Obstetric and Gynecology*, 59 (1), 30-40. Retrieved July 3,2017 from http ://me dind .nic.in /jaq/t0 9/i1/jaqt09i1p30.pdf

Reveiw Article

HIV/AIDS and Nutrition: A Review of Current Evidence

K.C. Tulza
Lecturer: Maharajgunj Nursing Campus

Abstract

Human Immune Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) epidemic is increasingly driven by and contributes to factors that also create malnutrition. Nutrition plays a critical role in comprehensive care, support and treatment of HIV infected people. There are complex interactions between nutrition and HIV/AIDS. HIV progressively weakens the immune system and leads to malnutrition. Malnutrition worsens the effects of HIV and contributes to more rapid progression to AIDS. The association of malnutrition, micronutrient deficiencies, weight loss and muscle wasting with the increased morbidity and mortality is clearly present in patients living with HIV/ AIDS. The available evidence shows that nutritional education, counseling and supplementation improve nutritional status among people with HIV/AIDS. Thus to conclude, nutrition should be fully incorporated into care, support and treatment for HIV-infected people and affected families.

Key words: HIV/ AIDS**,** Malnutrition, Nutrition

Introduction

Globally, 36.7 million people were living with Human immune virus (HIV) at the end of 2016. An estimated 0.8% of adults aged 15–49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions. Sub-Saharan Africa remains the most severely affected (WHO, 2017). Among affected, 17.8 million are women of 15 years and older and 2.1 million are children under 15 years {United Nations Programme on HIV and AIDS (UNAIDS, 2017)}. In Nepal, 39 000 [34 000 - 46 000] people are currently living with HIV (UNAIDS, 2017). In many countries, food and nutrition insecurity and frank malnutrition combine to aggravate the HIV/AIDS pandemic, thereby intensifying and accelerating its negative impact (WHO, 2003).

Acquired immune deficiency syndrome (AIDS), is a disease caused by a retrovirus, the human immunodeficiency virus, which attacks and impairs body's natural defense system against disease and infection (Duggal, Chugh & Duggal, 2012). Adults with HIV have 10–30% higher energy requirements than a healthy adult without HIV, and for children with HIV, the requirement is 50–100% higher than normal. Food availability and good nutrition are thus essential for keeping people with HIV healthy so that they will be able to resist opportunistic infections such as tuberculosis for longer (UNAIDS, 2008).

Adequate intake of nutrients is required for the immune system to function efficiently. Lack of adequate macronutrients, or micronutrients, especially zinc, selenium, iron, and the antioxidant vitamins, can lead to clinically significant immune deficiency and infections (Oguntibeju, van den Heever & Van Schalkwyk, 2007; de Pee & Semba, 2010). In addition, micronutrient deficiency suppresses immune functions by affecting the innate T-cell-mediated immune response and adaptive antibody response, and leads to deregulation of the balanced host response. This increases the susceptibility to infections, with increased morbidity and mortality (Wintergerst, Maggini & Hornig, 2007). Furthermore, chronic under-nutrition and

micronutrient deficiency compromise cytokine response and affect immune cell trafficking leading to altered immune cell populations which further weakens the immune response (Cunningham-Rundles, McNeeley & Moon, 2005).

Healthy nutrition plays a central role in the management of HIV/AIDS, especially those symptoms (diarrhoea, anorexia, sore mouth, fever, and muscle wasting) directly associated with the disease. They help to ease the burden of the disease and to alleviate the overall impact of malnutrition (WHO, 2003). Food insecurity, unavailability of sufficient, safe and nutritious food to meet dietary needs (United Nations, 2010), is associated with nutrient inadequacy, poor self-reported health, increased HIV transmission, high-risk behaviors, decreased anti retroviral therapy (ART) adherence, reduced baseline cluster of differentiation 4 (CD4) cell count, and decreased survival (Anema, Vogenthaler, Frongillo, Kadiyala, & Weiser, 2009; Maluccio, Palermo, Kadiyala, & Rawat, 2015; Anema et al., 2013). Consequently, improving food security and nutrition is recognized as fundamental across the four pillars—prevention, care, treatment, and mitigation—of a holistic response to the AIDS epidemic (Maluccio et al., 2015).

Since many people living with HIV/AIDS are already burdened with a lack of access to a good quality diet and suffer from deficiencies in specific micronutrients or macronutrients (WHO, 2005), higher levels of intake may be required to compensate for the deficiencies (UNAIDS, 2007). Thus, there is an urgent need for renewed focus on and use of resources for nutrition as a fundamental part of the comprehensive package of care at the country level.

Relationship between Nutrition and HIV/AIDS Infection

Nutrition and HIV are strongly related and complement each other. HIV causes immune impairment leading to malnutrition which leads to further immune deficiency, and contributes to rapid progression of HIV infection to AIDS (Oguntibeju et al., 2007; Duggal et al., 2012). Three key factors contribute to malnutrition in patients with HIV/AIDS: inadequate intake, malabsorption and increased energy expenditure (UNAIDS, 2001; Hsu, Pencharz, Macallan & Tomkins, 2005).

Good nutrition, being a fundamental part of caring for people living with HIV/AIDS, translated into a balanced diet is a positive way to respond to this illness, and it helps people live longer, and have more comfortable lives (WHO, 2009). Deficiencies in vitamins and minerals contribute to oxidative stress, which can accelerate immune cell death and increase HIV replication (Jesson et al., 2015). Good nutrition increases resistance to infections, improves energy, and thus makes a person stronger and more productive.

An HIV-infected person is more at risk for malnutrition due to reduced food intake, poor absorption, changes in metabolism, chronic infections and illnesses like diarrhoea, fever, oral thrush etc (UNAIDS, 2001). In addition, weight loss, caused by low dietary intake (loss of appetite, mouth ulcers, food insecurity), mal-absorption, and altered metabolism, is common in HIV infection (de Pee & Semba, 2010). Sub-Saharan Africa has the highest proportion of undernourished people in the world, along with the highest number of people living with HIV and AIDS (Audain, Zotor, Amuna, & Ellahi, 2015). The study from Nepal by Thapa, & collegues, (2015) reported one in five patients living with HIVs being under nourished.

Protein calorie malnutrition and zinc deficiency activate the hypothalamic-pituitary-adrenal axis. Increased circulating levels of glucocorticoids cause thymic atrophy and affect hematopoiesis (Cunningham-Rundles et al., 2005). Undernutrition has a debilitating effect on the immune system due to key nutrient deficiencies and the overproduction

of reactive species (oxidative stress), which causes rapid HIV progression and the onset of AIDS, even among people receiving antiretro viral therapy (ART) {Hsu et al., 2005; Aberman, Rawat, Drimie, Claros, & Kadiyala, 2014; Audain et al., 2015; UNICEF, 2016}. Thus, malnutrition, as a consequence, contributes to the severity of opportunistic infections which is a major factor in survival, as a body cell mass less than 54% of ideal body weight could result in death (Derman et al., 2010).

Human Immune Virus/Acquired Immune Deficiency Syndrome leads to poor absorption of nutrients (protein, carbohydrates, fats, vitamins, minerals and water) which accompanies diarrhea, a gastro-intestinal complaint with HIV infection (UNAIDS, 2001; Crum-Cianflone, 2010). GI symptoms are reported by 50–70% of HIV-infected persons, with even higher percentages among those residing in the developing world. More recently, a study team found that among HIV-positive individuals receiving ART in Canada, being food insecure and underweight were independently associated with a 1.94 increased risk of non-accidental death, compared to being food secure and of normal weight (Anema et al., 2013).

Through a vicious cycle of immune dysfunction, infectious disease and malnutrition, the impact is altogether devastating in terms of: human and economic development, food production and food security, and individual nutritional status (WHO, 2003). Furthermore, HIV/AIDS is associated with biological and social factors that affect the individual's ability to consume, utilize, and acquire food. Once there is an infection with HIV, the patient's nutritional status declines further leading to immune depletion and HIV progression (Duggal et al., 2012). Thus, food insecurity calls for structural interventions that address basic survival needs among people living with HIV, especially food security (Kalichman et al., 2014; Singer, Weiser & McCoy, 2015).

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Nutritional Care and Support for People Living with HIV/AIDS

Nutritional care and support for people living with HIV/AIDS is an important way to reduce human suffering and to regenerate societies that are damaged by the epidemic (Coetzee, 2013). Adequate dietary intake and absorption are essential for achieving the full benefits of antiretroviral therapy, and there is emerging evidence that patients who begin therapy without adequate nutrition have lower survival rates (UNAIDS, 2008). Dietary supplements using a range of palatable, affordable, available foodstuffs are needed for management of severe opportunistic infections such as persistent diarrhoea and tuberculosis (Hsu et al., 2005).

It is essential to maintain an adequate intake of macro and micronutrients to restore malnutrition-related immune dysfunction (Derman et al., 2010). For macronutrients, during the asymptomatic HIV stage, a 10% increase in energy intake is recommended in order to maintain body weight and physical activity. During the symptomatic stage and the stages thereafter that progress to AIDS, these requirements are increased to 20–30%. Energy requirements are increased by up to 50–100% during opportunistic infections (WHO, 2003; WHO, 2005; Derman et al., 2010). In addition to the extra energy requirements due to HIV infection, the pregnant and lactating women need to consume extra energy, protein and micronutrients required by pregnancy or lactation (UNAIDS, 2007).

With regards to recommendations for protein intake, protein requirement should fulfill 12% to 15% of total energy intake (WHO, 2005) which can result in a positive nitrogen balance and lean body mass repletion (Derman et al., 2010). The intake of fat depends on tolerance and individual symptoms, such as malabsorpotion and diarrhoea. Thus, fat intake may vary between individuals and need to be considered when determining each patient's recommendations for fat intake (WHO, 2003; Derman et al., 2010).

World health organization (WHO) recommends vitamin A, zinc, iron, folate and multiple micronutrient supplements should remain the same. Micronutrient intakes at daily recommended levels need to be assured in HIV-infected adults and children through consumption of diversified diets, fortified foods, and micronutrient supplements as needed (WHO, 2005; Derman et al., 2010).

Addressing the nutritional needs of people living with HIV, the WHO has integrated food and nutrition into the global AIDS policy which includes clinical nutritional assessments and nutrition counseling and supports. This policy includes the provision of specialized foods or micronutrient supplements- in clinical HIV setting (WHO, 2003). Equally, United Nations Children's Fund (UNICEF) provides support for nutritional assessments and counseling to manage HIV disease and the side effects of antiretroviral drugs. UNICEF also supports therapeutic feeding, together with antiretroviral therapy, for children living with HIV and suffering from severe acute malnutrition (UNICEF, 2016).

It is suggested that counseling on nutrient selection and food preparation should begin and be periodically reinforced which will establish a strong link between nutrition and HIV infection in the mind of the patient and health personnel that will alert both parties to more aggressive nutritional intervention when needed later (Oguntibeju et al., 2007). Thus, early ongoing medical nutrition therapy is important for all individuals with HIV infection and AIDS (Coetzee, 2013).

Conclusion

Human Immune Virus/Acquired Immune Deficiency Syndrome has a devastating impact on health, nutrition, food security and overall socioeconomic development in countries that have been greatly affected by the disease. Inadequate intake of nutrients may lead to suppressed immunity predisposing to infections and malnutrition among HIV/AIDS people. Therefore, supporting adequate dietary and nutritional intake as a part of successful treatment programs, including thorough provision of nutritional counseling and education is a crucial part of HIV/AIDS management.

References

Aberman, N.L., & Rawat, R. (2014). Food security and nutrition interventions in response to the aids epidemic: assessing global action and evidence. *AIDS Behaviour, 18*:S554–S565. doi:10.1007/s10461-014-0822-z

Anema, A., Chan, K., Chen, Y., Weiser, S., Montaner, J.S.G., & Hogg, R.S. (2013). Relationship between food insecurity and mortality among HIV-positive injection drug users receiving antiretroviral therapy in British Columbia, Canada. *PLoS ONE, 8*(5): e61277. doi:10.1371/journal.pone.0061277

Anema, A., Vogenthaler, N., Frongillo, E.A., Kadiyala, S., & Weiser, S.D. (2009). Food insecurity and HIV/AIDS: current knowledge, gaps, and research priorities. *Currents HIV/AIDS Reports, 6*(4):224-31.

Audain, K.A., Zotor, F.B., Amuna, P., & Ellahi, B. (2015). Food supplementation among HIV-infected adults in Sub-Saharan Africa: impact on treatment adherence and weight gain. *Proceedings of the Nutrition Society, 74*: 517–525. doi:10.1017/S0029665115000063

Coetzee, J. (2013). The impact of a high protein food supplement on the nutritional status of HIV infected patients on ARV treatment and their families. Retrieved from http://scholar.ufs.ac.za:8080/xmlui/bitstream/handle/11660/730/CoetzeeJ.pdf?sequence=1

Crum-Cianflone, N.F. (2010). HIV and the gastrointestinal tract. *Infectious Disease in Clinical Practice (Baltim Md), 18*(5): 283–285. doi: 10.1097/IPC.0b013e3181f1038b

Cunningham-Rundles, S., McNeeley, D.F., & Moon, A. (2005). Mechanisms of nutrient modulation of the immune response. *The Journal of Allergy and Clinical Immunology, 115*(6):1119-28.

Derman, E.W., Whitesman, S., Dreyer, M., c Patel, D.N., c Nossel, C., & Schwellnus, M.P. (2010).

Healthy lifestyle interventions in general practice: Part 9: Lifestyle and HIV/AIDS. *South African Family Practice journal, 52*(1): 11-16.

Duggal, S., Chugh, T.D., & Duggal, A.K. (2012). HIV and Malnutrition: effects on immune system. *Clinical and Developmental Immunology, 2012*. doi:10.1155/2012/784740

Hsu, J.W.C., Pencharz, P.B., Macallan, D., &Tomkins, A. (2005). Macronutrients and HIV/AIDS: a review of current evidence. World Health Organization, Geneva. Retrieved from http://www.who.int/nutrition/topics/PN1_Macronutrients_Durban.pdf

Jesson, J., Masson, D., Adonon, A., Tran, C., Habarugira, C., Zio, R., ... & Leroy, V. (2015). Prevalence of malnutrition among HIV-infected children in Central and West-African HIV-care programmes supported by the *Growing Up Programme* in 2011: a cross-sectional study. *BMC Infectious Disease, 15*: 216.

Kalichman, S.C., Hernandez, D., Cherry, C., Kalichman, M. O., Washington, C., & Grebler, T. (2014). Food insecurity and other poverty indicators among people living with HIV/AIDS: effects on treatment and health outcomes. *Journal of Community Health, 39*(6):1133–1139.

Maluccio, J. A., Palermo, T., Kadiyala,S., & Rawat, R.(2015). Improving health-related quality of life among people living with HIV: results from an impact evaluation of a food assistance program in Uganda. *PLoS ONE, 10*(8): e0135879. doi:10.1371/journal.pone.0135879

Oguntibeju, O.O., van den Heever, W.M.J., & Van Schalkwyk, F.E. (2007). The interrelationship between nutrition and the immune system in HIV infection: A Review. *Pakistan Journal of Biological Sciences, 10: 4327-4338.*

Thapa, R., Amatya, A., Pahari, D.P., Bam, K., & Newman, M.S.(2015). Nutritional status and its association with qualityof life among people living with HIV attending public anti-retroviral therapy sites of KathmanduValley, Nepal. *AIDS Research and Therapy, 12*:14. DOI 10.1186/s12981-015-0056-9

UNAIDS. (2007). Recommendation for the nutrient requirements for people living with HIV/AIDS. Retrieved from ://www.unscn.org/web/archives_resources/files/Nutrient_Requirements_HIV

UNAIDS. (2008). UNAIDS policy brief: HIV, food security and nutrition. Retrieved from http://data.unaids.org/pub/manual/2008/jc1515_policy_brief_nutrition_en.pdf

UNAIDS. (2017). Fact sheet: global HIV statistic. Retrieved from http://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf

https://doi.org/10.1159/000107673

UNICEF. (2016). HIV and nutrition. Retrieved from https://www.unicef.org/nutrition/index_HIV.html

United Nations. (2010). Assessment of food security and nutrition situation in Nepal. Food and Agriculture Organization of the United Nations UN Complex, Nepal.

USAID. (2001). HIV/AIDS: A guide for nutrition, care and support. Retrieved from http://www.who.int/hac/techguidance/pht/8518.pdf?ua=1

Wintergerst, E.S., Maggini, S,. & Hornig, D.H. (2007). Contribution of selected vitamins and trace elements to immune function. *Annals of Nutritional & Metabolism, 51*:301–323

World health organization. (2003). Nutrition and HIV/AIDS. Geneva, WHO Press. Retrieved from http://www.who.int/nutrition/publications/Content_nutrient_requirements.pdf.

World health organization. (2005). Nutrition and HIV/AIDS. Retrieved from http://apps.who.int/gb/archive/pdf_files/EB116/B116_12-en.pdf

World health organization. (2009). Nutritional care and support for people living with HIV/AIDS: A training course. Retrieved fromhttp://www.who.int/nutrition/publications/hivaids/9789241591898/en/

World health organization. (2017). Global health observatory data on HIV/AIDS. Retrieved from http://www.who.int/gho/hiv/en/

Review Article

Low Birth Weight Babies and Kangaroo Mother Care

Adhikari Mishra Tulashi
Associate Professor, Maharajgunj Nursing Campus

Abstract

Babies with birth weight of less than 2.5 kg irrespective of the gestational age are the Low Birth Weight (LBW) Babies which include both preterm and small-for–date. Low Birth Weight babies have higher morbidity and mortality and are more prone to malnutrition, infections and neuro-development handicapped in later life.

Kangaroo mother care (KMC) is a method of care for preterm infants which involve infants being carried out usually by the mother through skin to skin contact. It is the cost effective and useful strategy to enhance the survival of low birth weight babies. It was first implemented by Roy and Martinez in 1979 at Maternal and Child Institute of Bogora, Colombia.

Kangaroo mother care helps to prevent infections, promote breastfeeding, regulate the baby's temperature, breathing and encourages mother and baby bonding. It is simple and can be easily practiced at home. So, it is a standard care for the LBW babies which can be applicable in all the settings. Babies have good weight gain of average 30gms/day and have short duration of hospital stay of average 9 days when they received kangaroo mother care. Similarly, Kangaroo mother care effectively reduces morbidity like hypothermia, apnea, skin infections and oral thrush among babies. Kangaroo mother care is a low cost approach for the care of low birth weight babies.

Kangaroo mother care is best suited care strategy to provide care to the low birth weight babies which help in the survival and improve the quality of life of those LBW babies who survive. This will ultimately help to reduce neonatal and infant mortality rates and cont ribute to overall health status of the country. This article helps to provide an overview of the Kangaroo Mother Care for health personnel.

Key words: Low Birth Weight, Kangaroo Mother Care, Skin-to-Skin Contact

Introduction

Low Birth Weight results from either preterm birth or due to intrauterine growth restriction or both (Ghai, 2013). Low birth weight (LBW) and prematurity accounts for 28 % of all newborn mortality globally. It is a major contributor to neonatal and infant morbidity with 30 % mortality in developing countries (Rasaily et al., 2017).

It is estimated that globally, out of 139 million live births, more than 20 million LBW babies are born each year and among them more than 95% are in developing countries, mainly in South Asia and Sub-Saharan Africa (Sachdev, 2001). In India about 30 to 40 % neonates are born LBW. Approximately 80% of all neonatal deaths and 50% of infant deaths are related to LBW (Datta, 2009). All the babies had exclusive breast feeding and KMC was acceptable to mothers (Subedi, Aryal & Grubacharya, 2009).

Kangaroo Mother Care refers to care of preterm or low birth weight infants by placing the infant in

skin-to skin contact with the mother or any other care giver. Kangaroo Mother Care results in keeping neonates warm and cozy. Babies get protected against cold stress and hypothermia. Physiological parameters such as heart and respiratory rates, oxygenation, sleep patterns get stabilized (Ghai, 2013). Kangaroo Mother Care has been proposed as an alternative method for caring low birth weight neonates. It was first implemented by Roy and Martinez in 1979 at Maternal and Child Institute of Bogota, Colombia. Kangaroo mother care is the low cost humane technique for caring low birth weight babies by the direct skin to skin contact with mother (Subedi, Aryal & Grubacharya, 2009).

Kangaroo mother care improves their health and well being by promoting effective thermal control, breastfeeding infection prevention and bonding (Sharma, 2009). It is a non-conventional, low-cost method for newborn care based upon intimate skin-to-skin contact between mother and baby. It consists of skin to skin contact, exclusive breast feeding and early hospital discharge (Whitelaw, 1985). It also includes regular follow up. It is provided when baby is stable and his vital signs are maintained. Breastfeeding begins within 1 hour after birth and then every 2-3 hours or on demand of baby and helps maintain temperature, heart rate, respiratory rate, oxygenation and other physiological parameters within normal ranges.

Low birth weight babies are more vulnerable to suffer from common day to day infections during infancy and 40% LBW babies are malnourished at one year of age (Singh, 2009). Low birth weight infants are approximately 13 times more likely to die than normal birth weight counterparts (Yasmin, Osrin, Paul & Costello, 2001). The results of the clinical trial revealed that the neonates in the KMC group demonstrated better weight gain after the first week of life (15.9 +/- 4.5 gm/day vs. 10.6 +/- 4.5 gm/day in the KMC group and control group respectively $p < 0.05$) and earlier hospital discharge (27.2 +/- 7 vs. 34.6 +/- 7 days in KMC and control group respectively, $p < 0.05$). The number of mothers exclusively breastfeeding their babies at 6 week follow-up was double in the KMC group than in the control group (12/14 vs. 6/14) ($p < 0.05$) (Ramanathan, Paul, Deorari, Taneja & George, 2001).

Kangaroo mother care can be continuous or intermittent. The procedure is most suitable for providing care to stable infants with a birth weight between 1500 and 1800 gm or gestation of 32-34 weeks. A large number of physiological and clinical benefits of KMC have been documented. Babies receiving KMC showed modest but statistically significant improvement in vital physiological parameters on all 3 days. According to Bera (2014) without using special equipment, the KMC strategy can offer improved care to LBW babies.

Benefits of Kangaroo Mother Care

1. Kangaroo Mother Care results in increased breastfeeding rates also the duration of breast feeding.
2. Prolonged skin–to–skin contact stabilizes the baby's body temperature
3. Stabilizes vital signs of babies
4. Reduces risk of nosocomial infections.
5. Babies cry less and help to improve sleep as well.
6. It promotes infant – mother bonding.
7. It decreases the hospital stay to minimal by stabi lizing the baby.
8. Babies receiving KMC have more regular breathing pattern and fewer predispositions to apnea.
9. KMC leads to a significant reduction of neonatal mortality when compared to conventionally cared babies {All India Institute of Medical Sciences (AIIMS) & World Health Organization (WHO), 2014}.
10. Mother feels competent in caring their baby.
11. KMC does not need special equipments and facilities. It needs simple arrangements to make the mother comfortable throughout the procedure.

Eligibility Criteria for Kangaroo Mother Care

All stable LBW babies are eligible for KMC, however very sick babies needing to special care should be cared under radiant warmer initially.

- Mother: All mothers can provide KMC but she must be willing to provide KMC and free from serious illness.
- Babies: All stable LBW babies are eligible for KMC.
- Babies having birth weight of >1800g as they are generally stable at birth; therefore KMC can be initiated soon after birth.
- Babies having birth weight between 1200 -1799g might take a few days to initiate KMC as they usually have significant problems in neonatal period.
- Babies with birth weight < 1200 g may frequently develop serious prematurity related morbidity (Ghai, 2012). It may take days to weeks before baby's condition allows initiation of KMC

Procedure of Kangaroo Mother Care

- Mother can wear a comfortable dress which is open in the front like Nepali cholo, gown etc. that is culturally acceptable too.
- The baby should wear cap, socks and napkin.
- The baby should be placed between the mother's breasts in an upright position.
- Head of the baby should be turned to one side and in a slightly extended position.
- Hips should be flexed and abducted in a "frog" position; the arms should be flexed. Finally the baby will be in Kangaroo position.
- Baby's abdomen should be at the level of the mother's epigastrium as a result the baby will have enough area for abdominal breathing. Mother's breathing stimulates the baby thus reducing the occurrence of apnea.
- Support baby with the binder such that the top of the binder is just under the baby's ears and the bottom of the baby is supported in a way that baby doesn't slip out when mother stands up.

Fig: 1 Method of Kangaroo Mother Care

- Monitor the babies receiving KMC carefully; mother observes the baby throughout the period of KMC.
- Mother should be explained about holding the baby near the breast stimulates milk production, support the lower part of the jaw of baby with her thumb and fingers to prevent blocking of airway of baby and that she can breastfeed or express the breast milk directly to baby's mouth during KMC.
- The skin to skin contact should be as continuous as possible, day and night as long as it is comfortable to both mother and baby that is the length of skin-to- skin contact should be gradually increased up to 24 hours a day that is interrupted only for changing diapers. Minimum duration of 6-8 hours should be practiced (AIIMS WHO, 2014).

Conclusion

Kangaroo Mother Care is simple and cost-effective technique that can be done by mother and family. It can be continued at home after the termination of hospital stay. Kangarooing is an effective way to meet baby's needs for warmth, breastfeeding, clean environment, human contact, safety, mother and child bonding. Kangaroo Mother Care can help to avoid complications as it is a standard care for low birth weight babies in Nepalese setting. So, health professionals should counsel and encourage mothers for kangaroo mother care who have low birth weight babies.

References

AIIMS WHO CC ENBC (2014). Learning Guide Newborn Nursing for facility based care. Department of pediatrics: WHO Collaborating Centre for Training.

Bera, A. Ghosh, J, Singh, Hazra A, Son T & Munian, D. (2014). Effect of Kangaroo Mother Care on Vital Physiological Parameters of Low Birth Weight Newborn. Indian Journal of Community Medicine,39(4);245-249

Conde - Agudelo A . & Diaz- Rosselio (2014). Kangaroo mother care to reduce morbidity and mortality in low birth weight infants. Cochrane Database System Review, (4). Available at http://www.cochrane.org/CD002771/NEONATAL_kangaroo-mother-care-to-reduce-morbidity-and-mortality-in-low-birthweight-infants.

Datta P., (2014).Pediatric Nursing.(3rd ed.). Jaypee Brothers Medical Publishers (P) Ltd.

Ghai, O.P., Paul, V.K & Bagga (2009). Ghai Essential Pediatrics (7th ed.). CBS Publishers & Distributors Pvt. Ltd. New Delhi.

Ghai, O.P., Paul, V.K & Bagga (2013). Ghai Essential Pediatrics (8th ed.). CBS Publishers & Distributors Pvt. Ltd. New Delhi.

Ramanathan ,K., Paul, V.K., Deorari, A.K., Taneja, U & George, G.(2001). Kangaroo Mother Care in very low birth weight infants. Indian Journal of Pediatrics, 68 (11), 1019-23.Available at; http://www.ncbi.nlm.nih.gov/pubmed/11770234

Rasaily, R., Ganguly, K.K., Roy, M., Vani, S.N., Kharood, N., Kulkarni, R., Chauhan, S., Swain, S. & Kanugo, L. (2017). Community Based Kangaroo Mother Care for Low Birth Weight Babies: A Pilot Study. Indian Journal of Medical Research, 145 (1), 51-57. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5460573/

Sachdev, H, P. (2001). Low birth weight in south Asia. International Journal of Diabetes in Developing Countries, 21, 13–31.

Sharma, R. (2013). Essentials of Pediatric Nursing. (1st ed.) Jaypee Brothers Medical Publishers. New Delhi.

Subedi. K, Aryal, DR & Gurubacharya, SM (2009). Kangaroo Mother Care for Low Birth Weight Babies: A prospective Observational Study. Journal of Nepal Paediatric Society, 29 (1), 6-9.

Singh M. (2008). Essentials Pediatrics for Nurses. (3rd ed.).CBS Publishers & Distributers Pvt. Ltd. New Delhi.

Suman , R.P., Udani, R & Nanavati, R.(2008). Kangaroo mother care for low birth weight infants: a randomized controlled trial. Indian Pediatrics Journal, 45(1), 17-23. Available at;

http://www.ncbi.nlm.nih.gov/pubmed/18250500

Yasmin S, Osrin D, Paul E, Costello A (2001). Neonatal mortality of low-birth-weight infants in Bangladesh. Bulletin of World Health Organization, 79, 608–14.

Whitelaw, A. &Sleath, K.(1985). Myth of Marsupial Mother; Home Care of very Low Birth Weight Babies in Bogota, Columbia. Lancet, 1 (8439), 1206-1208.

Wong, D. L., & Hockenberry, M. J. (2006). Wong's Nursing Care of Infants and Children (7th ed.). New Delhi : Mosby, Elsevier. Chapter 7; pp 172-177.

Review Article

Medicine Adherence in Elderly: A Greatest Concern

Shrestha Krishna Devi
Lecturer, Maharajgunj Nursing Campus

Abstract

There is a continuous and growing trend of population aging, increasing the cost of health care and increasing reports of adverse drug reactions by multimorbid elderly. The burden of chronic disease in elderly tends to lead numerous use of medications and the prevalence of prescription of drug use among older adults increases substantially with age. Medications adherence is a key component of treatment for patients and poor adherence to medications is the common public health concern. Numerous studies have shown several factors contributing to successful adherence, including the patient and/or caregiver's socioeconomic level, the presence or absence of motor and cognitive deficits, patient's understanding of disease, and a satisfactory doctor-patient relationship. Non- adherence is responsible for suboptimal clinical outcomes, decreased quality of life, and increased expense to the health-care system. So, multidisciplinary approach needs to be carried out to improve the adherence in elderly. Hence, the aim of this article is to highlight the factors associated with medication adherence and the measures to improve the adherence in elderly.

Key words: Elderly, Medicine Adherence, Non-adherence

Introduction

Globally, the number of older persons is growing faster than the numbers of people in any other age group. The global population aged 60 years or over is 962 million in 2017. It is expected to double by 2050, and is projected to reach nearly 2.1 billion. Two thirds of the world's older persons live in the developing regions and Asia is comprised of 57.1 % older population. It is estimated that in 2050, 79 % of the world's population aged 60 or over will be living in the developing regions. Asia is expected to experience a twofold increase in the number of older persons from 549 million in 2017 to nearly 1.3 billion in 2050 (United Nations, 2017). Nepal is a developing country experiencing a rapid increase in the elderly population (Khanal & Gautam, 2011). According to the 2011 census of Nepal, there were 2.1 million elderly inhabitants, which constitute 8.1 percent of the total population (Central Bureau of Statistics, 2011).

In Nepal, elderly people are defined as those above 60 years of age and they are addressed as Senior Citizens according to the Senior Citizen Act, 2063 BS (2006 AD). The prevalence of co- morbidity is high, with 80% of the elderly population having three or more chronic conditions and it is associated with a decline in many health outcomes, high mortality and increase use of health care resources (Caughey et al., 2008). According to Khanal and Gautam (2011), elderly are facing numerous health and social problems. World Health Organization (WHO, 2003) stated that adherence to long-term therapy for chronic illnesses in developed countries averages 50% and in developing countries, the rates are even lower for elderly.

Elderly population mostly has cardiovascular diseases, mental health problems, cancer, diabetes mellitus, musculoskeletal diseases and injuries. Polypharmacy is highly prevalent in the elderly due to an increased number of co-morbid conditions as-

sociated with age (Cooney & Pascuzzi, 2009). Approximately 90% of older adults suffer from more than one chronic condition, and over 69.7% of those aged 65 years and older have multiple chronic diseases, which may result in complexity in the medication regimen. Also, among patients who are aged 65 years and above, 82.0% take more than one prescribed medication and 60.3% of these patients have prescriptions that contain three or more medications (Jin, Kim, & Rhie, 2016). It has been mentioned that polypharmacy positively correlates with an increased risk for adverse drug reactions (ADRs), as well as drug-drug and drug-disease interactions. On the other hand, it can increase the risk for medication non-adherence which consecutively can cause suboptimal therapeutic effectiveness and poor clinical response (Zelko, Klemenc-ketis, & Tusek-bunc, 2016). Schmitt et al. (2013) reported that among 151 older adults, 127 (84.1%) had chronic diseases and were on continuous medication. Among older adults, the consequences of medication non-adherence may be more serious and less easily detected compared with younger age groups (Testman, 2010).

Factors Affecting Non- adherence

The rates of non-adherence to pharmacological treatments are estimated to vary from 41 to 74% among individuals older than 60 years old. Average adherence decreases from approximately 79% in patients taking medication once daily to 51% in those taking medications 4 times a day (Claxton, Cramer, & Pierce, 2001).The elderly patient with multiple medical problems requiring complex drug regimens may find it difficult to take numerous medications multiple times each day (Osterberg & Blaschke, 2005). An estimated 33 to 50% of patients do not adhere to their medication regimens as prescribed (Munger, Van Tassell, & LaFleur, 2007). Pasina et al., (2014) reported that non- adherence at the first follow-up was 55.1% and 69.6% in 3 months from discharge. The main reasons for non-adherence were voluntary withdrawal of a drug, change of dosage without medical consultation and the number of drugs prescribed at discharge. According to Jin et al. (2016), among 160 participants, 52.5% revealed low adherence to medication. The factors affecting medication adherence included the patient's degree of satisfaction with the service, sufficient explanation of medication, education level, health-related problems and dosing frequency.

The various risk factors associated with non-adherence in the elderly include *patient factors* (e.g., old age, male gender, low education level, physical and mental status, and health literacy), *health care system factors* (e.g., inability or difficulty in accessing pharmacy, lack of follow-up, and poor treatment by untrained staff), *medication factors* (e.g., complexity of medication regimen, high medication costs, and poor labeling instructions) and *patient–provider relationship factors* (dissatisfaction with health care providers, lack of trust, and lack of patient involvement) (Osterberg & Blaschke, 2005). One major factor that influences adherence is the patient's ability to read and understand medication instructions. Patients with low literacy may have difficulty understanding instructions; this ultimately results in decreased adherence and poor medication management (Jimmy & Jose, 2011).

An elderly patient would be more likely to adhere to a medication that has a simpler dosing schedule as compared to another medication that has a more complex dosing schedule (Ingersoll, & Cohen, 2008).Other important factors such as the cost of medication would be relevant, particularly to the elderly patients who have retired or those from the lower-income groups where concerns for food and shelter have a higher priority than the purchase of medications.

Table 1 : Factors Affecting Medication Adherence

Patient - centered factors	Health care system factors	Therapy-related factors	Social and economic factors	Disease factors
Demographic factors: age, ethnicity, gender, educational level, marital status	Lack of accessibility	Route of administration	Inability to go to work	Disease symptoms
Psychosocial factors: beliefs, motivation, attitude of patient	Long waiting time	Treatment complexity	Costs and income	Severity of the disease
Health literacy Patient's knowledge Physical difficulties	Difficulty in getting prescriptions	Duration of the treatment period Medication adverse effect Degree of behavior change required	Social support	Information about disease Disease symptoms vs adverse effect
Tobacco, smoking and alcohol intake forgetfulness	Unhappy clinic visit	Unpalatable taste of medication Special storage requirement		Asymptomatic diseases

Adopted from: WHO (2014)

Non-adherence with medication regimens may result in increased use of medical resources, such as physician visits, laboratory tests, unnecessary additional treatments, emergency department visits, and hospital or nursing home admissions including treatment failure (Testman, 2010). Other consequence of non-adherence is waste of medication, progression of disease, reduction in functional abilities, a lower quality of life, and increased use of medical resources such as nursing homes, hospital visits and hospital admissions. Medication non adherence can have negative consequences not only for the patient but also for the provider, the physician, and even the medical researchers who are working to establish the value of the medication on the target population (Jimmy & Jose, 2011).

Measures to Improve Adherence

Medication-taking behavior is extremely complex and individual requires numerous multi-factorial strategies to improve adherence. The WHO has proposed a foundational model for improving medication adherence based on three factors: information, motivation, and self-efficacy.

- Information is a prerequisite for behavior change and includes basic knowledge about the medical condition.

- Motivation encompasses personal attitudes toward the adherence behavior, perceived social support, and perceptions of how others may behave.

- Self-efficacy describes the patient's belief or confidence in his or her ability to carry out a target behavior and the extent to which the behavior is actually carried out correctly (Testman, 2010). Claxton et al. (2001) highlighted that less frequent dosing regimens resulted in better compliance among the respondents. Similarly, Jin et al. (2016) mentioned that complete explanation of medication management by pharmacists and patients' satisfaction in counseling influence medication adherence in the elderly. Furthermore, health care providers play an increasingly important role in the patient's adherence to medications. They should:

Assess the patient's mental status, associated other

co-morbidities, behavior, attitude, habits, knowledge & beliefs about his/ her medications and disease, capability of handling his own medications, need of caregiver assistance, willing to take his medications and adherent to follow ups.

Identify difficulties and barriers related to adherence and address the problems by building the trusting relationship between health care providers and the patients (Yap, Thirumoorthy & Kwan, 2016).

Explain key information when prescribing/ dispensing a medicine in simple, understanding way (Jimmy & Jose, 2011).

Include the elderly in the decision-making process regarding their treatment plan to successfully overcome non-adherence and maintain these behaviors in the long term (Testman, 2010).

Involve the patient's care givers to overcome non-adherence due to forget fullness. Simplify the medication regimen by prescribing combination drug regimens and once a day dosing if possible and using generic medications if cost is an issue.

Provide proper oral hygiene, adequate fluid, proper positioning, assist in swallowing, and examine the oral cavity after administration to ensure that the patient receives full benefits of medicine.

Recommend to prepare medicine boxes and ask patients to bring in the box at every visit. Provide detailed description of both verbal and written instructions to them including drug's name, dose, schedule, route of administration, special precaution to be taken and its adverse reaction (Latif, & McNicoll, 2009).

Suggest to use medication adherence improving aids such as provide medication calendars or schedules that specify the time to take medications, medicine related information and special containers indicating the time of dose. Schedule the appropriate follow up. Monitoring the medication adherence should also be a criterion while scheduling patients follow up. Check the effectiveness of medication adherence aids used during follow up (Jimmy & Jose, 2011).

Conclusion

Medication adherence is a crucial component in the treatment of elderly. Adherence to therapies is a primary determinant of treatment success. Failure to adherence is a serious problem which not only affects the patient but also the health care system. Increasing adherence may have a bigger effect on health than improvement in specific medical therapy. The extent of non-adherence varies widely in various studies and many factors are likely to affect adherence such as patient, health care provider and health system factors. As poor adherence may have a major impact on clinical outcome and increased the costs of health care, multidisciplinary approach needs to be carried out with the support of all those who are involved in medication use to increase the adherence. Health care professionals such as physicians, nurses and pharmacists have significant role to improve medication adherence in the elderly.

References

Caughey, G.E., Vitry, A.I, Gilbert, A.L., & Roughead, E.E. (2008). Prevalence of co morbidity of chronic diseases in Australia. *BMC Public Health BMC series*. 2008; **8**:221, **DOI:** 10.1186/1471-2458-8-221

Central Bureau of Statistics. Population census, National Report (2011). Government of Nepal National Planning Commission Secretariat, Kathmandu:Volume 01.

Claxton, A.J., Cramer, J., & Pierce, C. (2001). A systematic review of the associations between dose regimens and medication compliance. *Clinical Therapeutics* Aug; 23(8):1296-310.

Cooney, D., & Pascuzzi, K. (2009). Polypharmacy in the elderly: focus on drug interactions and adherence in hypertension. *Clinics in Geriatric Medicine.* May; 25(2):221-33.

Ingersoll, K.S., & Cohen, J. The impact of medication regimen factors on adherence

to chronic treatment: a review of literature. *Journal of Behavioural Medicine*; 31:213e24.

Jimmy, B., & Jose, J. (2011). Patient Medication Adherence: Measures in Daily Practice

Oman Medical Journal; Vol. 26 (3): 155-159, DOI 10. 5001/omj.2011.38

Jin, H., Kim, Y., & Rhie, S. J. (2016). Factors affecting medication adherence in elderly people. *Patient Preference and Adherence;* 10: 2117–2125.

Khanal, S, & Gautam, K.M. (2011). Prevalence and Management of Health Conditions in Older People's Homes: A Case Study in Kathmandu. Nepal Geriatric Centre, Kathmandu.

Latif, S., & McNicoll, L. (2009). Medication and Non-Adherence in the Older Adult

Medicine & health/rhode island, 92(12), 2009

Munger, M. A., Van Tassell B.W., & LaFleur, J. (2007). Medication Nonadherence: An Unrecognized Cardiovascular Risk Factor. *Medscape Genatric Medicine*;9 (3):58.

Osterberg L., & Blaschke T. (2005). Drug therapy – adherence to medication. The *New England Journal of Med*icine; 353(5):487–497.

Pasina, L., Brucato, A.L, Falcone, C., Cucchi, E., Bresciani, A., Sottocorno, M. & et al. (2014). Medication non-adherence among elderly patients newly discharged and receiving polypharmacy. *Drugs Aging;* 31(4): 283-9.

Patients' Adherence (2014). World Health Organization, *Sudan Journal of Rational Use of Medicine*, issue 9.

Schmitt, A. A. S., Lindner, S., & Tiaraju, E. (2013). Assessment of adherence in elderly patients in primary care. *Rev Assoc Med Bras* ;59(6):614-621

Senior Citizens Act, 2063 (2006). Retrieved from http://www.lawcommission.gov.np/en/documents/2015/08/senior-citizens-act-2063-2006.pdf on 5th Sep, 2017.

Testman, J. (2010). Invisible Epidemic. *Aging Well,* Vol. 3(2); 24, Retrieved from http://www.todaysgeriatricmedicine.com/archive/050310p24.shtml on 26th Aug, 2017.

United Nations. (2017). World Population Ageing, Department of Economic and Social Affairs Highlights.

World Health Organization. (2003). Adherence to long-term therapies. Evidence for action. Geneva, Switz: World Health Organization retrieved fromhttp://whqlibdoc. who.int/publications/2003/9241545992.pdf on 10th Sep, 2017.

Yap, A. F., Thirumoorthy, T., & Kwan, Y. H. (2016). Medication adherence in the elderly. *Journal of Clinical Gerontology & Geriatrics*; 7 64-67

Zelko, E., Klemenc-ketis, Z., & Tusek-bunc, K. (2016).Medication adherence in elderly with Polypharmacy living at home: a systematic review of existing studies, *Mater sociomed;* Apr, 28(2): 129-132 .

Review Article

Mixed Methods Research: An Overview

Sharma Muna[1]
Pandey Bista Archana[2]
[1]Assist Prof, Maharajgunj Nursing Campus
[2]Asso. Prof, Maharajgunj Nursing Campus

Abstract

The mixed methods research employ rigorous quantitative research assessing magnitude and frequency of constructs and rigorous qualitative research exploring the meaning and understanding of constructs. The design utilizes multiple methods and integrating these methods to draw on the strengths of each and framing the investigation within philosophical and theoretical positions. Mixed methods studies provide opportunities for combination of a variety of theoretical perspectives with multiple purposes. The basic concept is that integration of quantitative and qualitative data maximizes the strengths of each type of data. Generally,three approaches are used to integrate namely, merging data; connecting data; and embedding data. In nursing practice, usually four types of mixed methods designs are used. These are convergent parallel design, sequential explanatory design, and sequential exploratory design and embedded design.

Introduction

The mixed methods research has emerged in social and behavioral sciences, combining qualitative and quantitative method of scholar of inquiry as a "third research community" (Teddlie &Tashakkori, 2003; Sale, Lohfield & Brazil, 2003; Kong, Yaacob, Rosemary, & Ariffin , 2016). Quantitative study typically focuses on numeric data collection and analyses while, qualitative study typically focuses on narrative data and analyses. The mixed methods researchers focus on both numeric and narrative data and analyses. In mixed methods research, researchers tend to work from perspectives that allow them to explore and examine the problems and issues that are consistent with their own beliefs and views and that are most important to their scholarly community (Teddlie & Tashakkori, 2003).

Purpose of Mixed Methods Research

The purposes of mixed methods research are ported as initiation, completeness, complementarity expansion of knowledge, development, hypothesis development, triangulation, and inferences (Onwuegbuzzie & Collins, 2007; Doyle, Brady &Byrne, 2009).

Completeness: using a combination of research approaches provides a more complete and comprehensive picture of the study phenomenon.

Complementarity: refers to the use of qualitative and quantitative methods to examine the overlapping and different facets of a phenomenon in order to obtain a more meaningful understanding of the phenomenon. For example, findings from a quantitative survey can be followed up and explained by conducting interviews with a sample of those surveyed to gain an

understanding of the findings obtained. Illustration of data: using a qualitative research approach to illustrate quantitative findings can help paint a better picture of the phenomenon under investigation (Bryman, 2006)

Expansion of knowledge: Creswell and Plano Clark (2007) argue that different research questions applied on mixed methods research helps researchers to answer the research questions that cannot be answered by quantitative or qualitative methods alone and provides a greater repertoire of tools to meet the aims and objectives of a study. Expansion occurs as qualitative and quantitative components are included in a study to increase its scope and breadth

Development: involves using on method after the other so that the first method guides the second in terms of decisions made about sampling, measurement, and implementation.

Develop hypotheses: Develop hypotheses to be tested in a follow-up quantitative phase. Instrument development and testing: a qualitative study may generate items for inclusion in a questionnaire to be used in a quantitative phase of a study.

Initiation: occurs in mixed methods when paradoxes are discovered; consistencies and discrepancies in qualitative and quantitative findings are compared and analyzed for new perspectives and insights that can yield new questions.

Triangulation: involves the use of qualitative and quantitative methods in an effort to research convergence of findings. Simply triangulation allows for greater validity in a study by seeking corroboration between quantitative and qualitative data. Triangulation of qualitative and quantitative methods is considered an antecedent to mixed methods (Creswell & Clark, 2011).

Inferences: many authors agree that utilizing a mixed methods approach can allow for the limitations of each approach to be neutralized while strengths are built upon thereby providing stronger and more accurate inferences (Bryman, 2006; Creswell, et al., 2003).

Designing Mixed Methods Research

Designing research studies is a challenging process in both quantitative and qualitative research. This process can become even more of a challenge when the researcher has decided to use a mixed methods approach due to the inherent complexity in mixed methods designs. Although the design and conduct of any two mixed methods studies will never be exactly alike, there are several key principles that researchers consider to help navigate this process: using a fixed and/or emergent design; identifying a design approach to use; matching a design to the study's problem, purpose, and questions; and being explicit about the reason for mixing methods. Creswell and Plano Clark (2011) have identified the following core characteristics of mixed methods research in which researcher:

Collects and analyzes persuasively and rigorously both qualitative and quantitative data based on research questions.

Mixes or integrates the two forms of data concurrently by combining them or merging them, by having one build on the other sequentially, or by embedding one within the other.

Gives priority to one or both forms of data in terms of what the research emphasizes.

Uses these procedures in a single study or in multiple phases of a program of study.

Frames these procedures within philosophical world views and theoretical lenses.

Combines the procedures into specific research deign that direct the plan for conduction the study.

Approaches of Mixed Methods Research

Currently, there are many mixed methods research designs in existence. In the book by Tashakkori and Teddlie (2003), approximately thirty five mixed methods research designs are outlined. Thus, in order to simplify researchers' design choices, several typologies have been developed (Creswell, Plano Clark, Guttmann, & Hanson, 2003; Johnson & Onwuegbuzie, 2004; Azorirnlm, & Cameron, 2010; Tashakkori & Teddlie, 2003). These typologies differ in their levels of complexity. The major four designs are outlined here:

Convergent parallel design

Explanatory sequential design

Exploratory sequential design

Embedded design

Convergent Parallel Design :The convergent parallel design also called the convergent design occurs when the researcher uses concurrent timing to implement the quantitative and qualitative strands

during the same phase of the research process, prioritizes the methods equally (QUAN + QUAL), and keeps the strands independent during analysis and then mixes the results during the overall interpretation. In other words, QUAN and QUAL strands are conducted separately yet concurrently and merged at the point of interpretation. In convergent design, equal priority is given to each strand (qualitative and quantitative design within a study). This design is used to form a more complete understanding of a topic, or to validate or corroborate quantitative scales. For example, the researcher might use a convergent design to develop a complete understanding of nurses' attitudes about application of client's rights with intubated patients. At first, the researcher surveys nurses working on intensive care units about their attitudes and also conducts focus group interviews with equal priority on the topic with nurses. The researcher analyzes the survey data quantitatively and the focus group qualitatively and then merges the two sets of results to assess in what ways the results about nurses attitudes converge and diverge (Sharma & Shrestha, 2016). The data analysis consists of merging data and comparing the two sets of data and results.

Explanatory design: Exploratory dosing usually referred as Sequential explanatory design consists of two phases, beginning with the quantitative phase and then the qualitative phase, which aims to explain or enhance the quantitative results. The explanatory design requires a longer implementation time due to the sequential nature but is regarded as the easiest of the four methods to implement.

Exploratory design: is a sequential design where the first phase, qualitative, helps in the development of the quantitative phase. Creswell, et al. (2003) described this design as sequential exploratory design.

Embedded design: The embedded experimental model is the most common variant of the embedded design, and the priority is given to the quantitative methodology, and the qualitative data set is subservient (Creswell and Plano Clark, 2007). One of the purposes of the qualitative component may be to examine the process of the intervention. The embedded experimental model has been previously known as the concurrent nested mixed methods design (Creswell, et al., 2003). The last variation of the embedded design is the correlational model where the qualitative data are embedded within a quantitative design to help explain the outcomes of the correlation model. Within the embedded designs, the methods may be conducted concurrently or sequentially.

Conclusions

Mixed methods research is applicable when researcher intents to merge quantitative and qualitative data for multiple research purpose. There are different typologies of mixed method research. In convergent design, two sets of data are collected in parallel way in order to validate both data sets for deeper understanding of the phenomenon under study. In sequential explanatory design quantitative design is carried out before qualitative design and in explanatory design qualitative design follows quantitative in embedded design the methods may be conducted concurrently or sequentially. The basic concepts of mixed methods research is to integrate the different approaches of research methods in order to discover new phenomena with data enrichment.

References

Azorirnlm, M., & Cameron, R. (2010). The application of mixed method in organizing research. A literature review. *Journal of business research, 8* (2), 95-105. ISSN 1477-7029. Retrieved from www.ebrm.com.

Bryman, A. (2007). Barriers to Integrating quantitative and qualitative research: quan-qual research. *Qual Res, Sage publication 1*(8), 97–113. *doi:10177/1234567890290531*

Creswell, J. W., Plano, Clark, V. L., Guttmann, M. L., & Hanson, E. E. (2003). *Handbook of mixed methods in social and behavioral research.* Sage publication.

Creswell, J., Clark, P., & V. L. (2017). *Designing and Conducting mixed methods research* (2nd ed.). Sage publication. ISBN14334701x

Dolle, L., Brady AM., & Byrne G.(2009). *Journal of research in Nursing 14,*175 . Sage publication. Available from www. htp/sagepub.com/content/1412/175.doi 10.1177174987

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, *33* (7), 14-26.

Kong , S. Y , Yaacob N. M , Rosemary, A., & Ariffin , M. (2016). Constructing a Mixed Methods Research Design: Exploration of an Architectural Intervention. Available from https://doi.org/10.1177/1558689816651807

Onwugbuzie, A. J., & Collins, K. M. T. (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report*, *12* (2), 281-316. Retrieved from http://www.nova.edu/ssss/QR/QR12-2/onwuegbuzie2.pdf

Sale, JEM., Lohfield, LH., & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: implications for mixed methods research. *Qual Quant,36* (1), 43–53.doi:10-1023/A1014301607592.

Sharma, M., & Shrestha, S. (2016). Factors associated with ethical problems among nurses in clinical duty: Mixed method study. *Asian academic research Journal of multidisicpilineary, 3*(2), 12-18.

Tashakkarori, A., & Teddlie, C. (2010). *Mixed methods in Social & Behavioral Research. Sage handbook.* (2nd ed.). SAGE publication.

Teddlie, C., & Tashakkori, A. (2003). *Handbook of mixed methods in social and behavioral research*. Sage publication.

Reveiw Article

Swine Flu

Koirala Surya
Associate Professor, Maharajgunj Nursing Campus

Abstract
Swine flu is a respiratory disease caused by influenza viruses that can be transmitted to humans from pigs and result in a barking cough, decreased appetite, nasal secretions and listless behavior. Swine flu viruses may change within one to four days so that they are easily transmissible among humans. Symptoms of swine flu in humans are similar to most influenza infections: fever (100 F or greater), cough, nasal secretions, fatigue, and headache. The incubation period for the disease is about one to four days. Swine flu is contagious from about one day before the onset of symptoms to about five to seven days after symptoms develops; some patients may be contagious for a longer time span. The disease lasts about three to seven days with more serious infections lasting up to 10 days. It has a devastating effect on the economy and health of the communities even though it can be prevented and controlled with different measures like vaccines and antiviral drugs. The most serious complication of the flu is pneumonia.

Keywords: H1N1 visus, Influenza, PPE**,** Pandemic, Swine Flu.

Introduction

The swine flu is an infection of the nose, throat, and lungs. There are three major types of influenza that infect humans influenza A, B and C. Influenza A and B can both cause serious infections, and are the cause of what we call the flu. Influenza C virus differs from influenza A and B, and only causes a mild infection. The seasonal influenza a strains currently circulating in humans is H1N1 and H3N2, but they have changed a lot since their first introduction into humans. Influenza B strains do not circulate in animals, so they cannot cause a disease. But, like influenza A viruses, they continually change, so we will never become immune to every strain [Centers for Disease Control and Prevention (CDCP), 2016].

A person must not fear of having H1N1 influenza if he/she has simply cold, cough and fever. But if those symptoms are seen among the persons who had visited the affected area or been in contact with H1N1 influenza infected person then he/she must be screened for the disease.

History

Eruptions of swine flu in humans dates back to investigation of the 1918 Spanish influenza pandemic, which infected one third of the world's population (an estimated 500 million people) and caused approximately 50 million deaths. In 1918, the cause of human influenza and its links to avian and swine influenza was not understood. The answers did not begin to emerge until the 1930s, when related influenza viruses (now known as H1N1 viruses) were isolated from pigs and then humans. In 2009, cases of influenza like illness were first reported in Mexico on March 18; then the outbreak was subsequently confirmed as H1N1 influenza A. It was termed H1N1 flu since it was mainly found infecting people and exhibits two main surface antigens, H1 (hemagglutinin type 1) and N1 (neuraminidase type1).

A few months (on June 11, 2009) after the first swine flu cases were reported, rates of confirmed H1N1-related illnesses were increasing in many parts of the

world. As a result, the World Health Organization declared the infection a global pandemic (WHO, 2010). Nepal has started laboratory diagnosis of pandemic influenza A/H1N1 from mid June 2009 though active screening of febrile travelers with respiratory symptoms was started from April 27, 2009. Case fatality ratio for pandemic influenza A/H1N1 in Nepal was 1.74 % (Adhikari et al, 2011). The second half of 2011, a novel swine influenza virus was emerged. The new strain, dubbed a (H3N2), includes a gene from the human pandemic strain and affects mostly children. The virus was a result of pig-to-human transmission (Christopher, 2002).

Mode of Transmission

Any flu virus can spread from person to person when person with the flu coughs or sneezes into air that others breathe in. Someone touches a doorknob, desk, computer, or counter with the flu virus on it and then touches their mouth, eyes, or nose. Someone touches mucus while taking care of a child or adult who is ill with the flu.

Risks for H1N1 influenza

Persons at higher risks for H1N1 influenza are children aged younger than 5years, adults aged 65 years and older, health care professionals, obesity (BMI ≥40), pregnant women during the influenza season, caregivers of people with medical conditions, residents of long- term-care facilities, persons with different diseases like; lung, heart, liver, kidney disease, blood disorders (sickle cell anemia), diabetes, neurological disorders, cancer and HIV/AIDS. Similarly persons with immunosuppressant either by medications or HIV infection are also at risk.

Incubation Period

The incubation period for the disease is about one to four days.

Contagious period: In adults it usually begins 1 day before the onset of symptoms and lasts about 5 to 7 days after the person becomes sick. However, people with weakened immune systems and children may be contagious for a longer period (about 10 to 14 days).

Period to resolve the swine flu: In uncomplicated infections, swine flu typically begins to resolve after 3 to 7 days, but the malaise and cough can persist 2 weeks or more in some patients. Severe swine flu may require hospitalization that increases the length of time of infection to about 9 to 10 days

Pathophysiology

When influenza virus is introduced into the respiratory tract, by aerosol or by contact with saliva or other respiratory secretions from an infected individual, it attaches to and replicates in epithelial cells. The virus replicates in cells of both the upper and lower respiratory tract. Viral replication combined with the immune response to infection lead to destruction and loss of cells lining the respiratory tract. As infection subsides, the epithelium is regenerated, a process that can take up to a month. Cough and weakness may persist for up to 2 weeks after infection.

Clinical Presentation

Clinical presentation of Swine flu are fever (>100^0F), coryzal symptoms (congestion, runny nose), cough, sore throat, difficulty in breathing, body ache, headache, chills and fatigue, diarrhea and vomiting (possible). In children, signs of severe disease may present that include apnea, tachypnea, dyspnea, cyanosis, dehydration, altered mental status, and extreme irritability.

Diagnosis

Diagnosis may be made based on the signs and symptoms of the disease and history of onset & duration of symptoms. The Centers for Disease Control and Prevention (CDC) criteria for suspected H1N1 influenza are: Onset of acute febrile respiratory illness within 7 days of close contact with a person who has a confirmed case of H1N1 influenza A virus infection, or onset of acute febrile respiratory illness within 7 days of travel to a community where one or more H1N1 influenza A cases have been confirmed, or acute febrile respiratory illness in a person who resides in a community where at least one H1N1 influenza case has been confirmed.

Physical Examination: Physical examination

may found high temperature≥100^{0}F, chills, coryzal symptoms, cough, and sore throat.

Laboratory Diagnosis: Laboratory tests include blood tests, chest X-rays and throat, nasal and nasopharyngeal secretions or tracheal aspirate or washings tests. Sample need to be collected within the first 4 to 5 days of illness (when an infected person is most likely to be shedding virus).

Management of Swine Flu

Therapeutic Management: Treatment is largely supportive and consists of bed rest, increased fluid consumption, cough suppressants, and antipyretics and analgesics (e.g., acetaminophen, non-steroidal anti-inflammatory drugs) for fever and myalgia. Severe cases may require intravenous hydration and other supportive measures along with mechanical ventilation, if needed.

Antiviral treatment should be considered for confirmed, probable, or suspected cases of H1N1 influenza. An antiviral agent within 48 hours of symptom onset is imperative for providing treatment efficacy against influenza virus. The recommended duration of treatment is 5 days. Antiviral drugs can shorten the illness duration by 1 day, hospitalization and may reduce the risk of complications from influenza (e.g. otitis media in young children, pneumonia and respiratory failure).

Antiviral drugs: Oseltamivir 75mg orally BD for 5 days, Zanamivir 10 mg BD for 5days starting within 48 h of the initial symptoms via inhaler if resistant to Oseltamivir.

Prophylaxis: Prophylaxis with antiviral agents should also be considered (pre-exposure or post-exposure). For chemoprophylaxis, the recommended dosage of Oseltamivir is 75 mg taken once daily for 10 days after exposure and Zanamivir two 5mg inhalations (10mg total) once daily.

Nursing Management

Standard & droplet precautions: When working in direct contact with patients, standard and droplet precautions should always be applied.

Vaccination: There is a vaccine available to protect against swine flu, all should take it.

Hand Hygiene: Health care personnel (HCP) should perform hand hygiene before and after all patient contact, by washing with soap and water or using alcohol-based hand rubs.

Use personal protective equipment (PPE): Personnel protective equipment used in health care settings are: gloves, gowns/aprons, masks, goggles and face shields. PPE should be donned before contact with the patient, generally before entering the room. They should be removed and discarded carefully, either at the doorway or immediately outside patient room; but mask should be removed after leaving patient room and closing door. They should perform hand hygiene immediately before putting on and after removing all PPE. Different types of PPE are used together to prevent multiple routes of transmission.

Approach to putting on PPE: The following sequence is a general approach to putting on PPE first gown; then mask or respirator; then goggles or face shield; then gloves.

Approach to removing PPE: The following sequence is a general approach to removing PPE first gloves; then goggles or face shield; then gown; then mask or respirator.

Gowns: Sterile gowns are only necessary for performing invasive procedures, such as inserting a central line. Gowns should fully cover the torso, fit comfortably over the body, and have long sleeves that fit snuggly at the wrist. While removing isolation gown person should unfasten ties, peel gown away from neck and shoulder and turn contaminated outside toward the inside folding or rolling into a bundle and discard it.

Surgical Mask: Mask should be checked to make sure that there are no defects, and placed over nose, mouth and chin. While removing a mask, health care personnel should untie the bottom, then top tie. For ear loop mask, remove the mask from the side with head tilted forward (mask should be disposed by touching only the ear loops or the ties) and discard it. Mask should never leave a mask hanging off one

ear or hanging around neck and it should not be reused.

N95 Respirator Indent: It is necessary to protect from inhalation of infectious sprays. Health care provider should use respiratory protection, a fit-tested disposable N95 filtering face-piece respirator upon entry to the patient room or care area. If disposable respirators are used, they should be removed and discarded after leaving the patient room or care area and closing the door. N95 Respirators should not be left hanging around neck.

While removing it, one should tilt head forward and remove the N95 respirator by pulling bottom strap over back of head, followed by the top strap without touching the front of mask. Discard an N95 respirator by touching straps only and perform hand hygiene before and after use of an N95.

Face Protection: Masks should fully cover nose and mouth and prevent fluid penetration. Goggles should fit snuggly over and around eyes and secured to the head using the ear pieces or headband; personal glasses are not a substitute for goggles. Face shields should cover forehead, extend below chin and wrap around side of face. While removing goggles, ear or head pieces should be grasped with ungloved hands and lifted away from face. Then, they should be placed in designated receptacle for processing or disposal.

Gloves: Health care personnel should clean hands before putting on gloves and after removing gloves. They should change gloves if it is torn and when heavily soiled (even during use on the same patient) and after use on each patient. They should not touch face or adjust PPE with contaminated gloves and not touch environmental surfaces except as necessary during patient care.

While removing the 1st glove, edge near the waist should be grasped and peeled away from hand, turning glove inside out and hold in the opposite gloved hand. While removing the 2ndglove ungloved finger should be slide under the wrist of the remaining glove and peeled off from inside, creating a bag for both gloves & then discard.

Patient Placement : A patient who may be infected with H1N1 influenza virus associated with severe disease should be placed in an Airborne Infection Isolation Room (AIIR) .If an AIIR is not available, the patient should be transferred as soon as is feasible to a facility where an AIIR is available. Awaiting transfer, a facemask on patient should be placed and he/ she should be isolated in an examination room with the door closed. The patient should not be placed in any room where room exhaust is re-circulating without high-efficiency particulate air (HEPA) filtration. Limited personnel should be allowed to enter the patient's room.

If it becomes necessary to place patients with probable or diagnosed influenza in the same room with asymptomatic patients, emphasis should be placed on maximizing their physical separation (at least 1 meter distance and greater, if possible).

All patients should remain on droplet precautions for a minimum of seven days following symptom onset in addition to maintain in droplet precautions until 24 hours following resolution of acute influenza symptoms, particularly fever.

Once the patient vacates a room, others patients should not be allowed in that room until sufficient time (at least 48 hours) has elapsed for enough air changes to remove potentially infectious particles. In addition, the room should undergo appropriate cleaning and surface disinfection before susceptible individuals are allowed to reenter it, for next case management.

Precautions for Aerosol-generating Procedures: These procedures should only be performed if they are medically necessary and cannot be postponed. The number of health care personnel during the procedure should be limited to only those essential for patient care and support. The procedure should be conducted in an AIIR when feasible. Room doors should be kept closed except when entering or leaving the room, and entry and exit should be minimized during and shortly after the procedure.

Management of visitor access and movement within the facility: Visits to patients in isolation should be

scheduled and controlled. Facilities should provide instruction before visitors enter patients' room on hand hygiene, limiting surfaces touched, and use of personal protective equipment (PPE) according to the facility policy. Visitors should be instructed to limit their movement within the facility and exposed visitors should be advised to report any signs and symptoms of acute illness to their health care provider for a period of at least 10 days after the last known exposure to the sick patient.

Monitoring activity of Severe Respiratory Infection in the Healthcare Setting: Health care personnel should be alerted the about increased respiratory illness activity or outbreak within the facility. Procedures to identify health care personnel at highest risk should be established and they should be actively followed for acute respiratory illness. All health care personnel should be encouraged to self-report acute respiratory illness. Communication and collaboration with public health authorities is essential.

Prevention

Vaccination: Inactivated influenza Vaccine

Distance Maintenance: Maintain a distance of at least 1meter from the confirmed or suspected person with influenza.

Self-isolate: Patients who develop flulike illness (i.e., fever with either cough or sore throat) should be strongly encouraged to self-isolate in their home for 7 days after the onset of illness or at least 24 hours after symptoms have resolved, whichever is longer.

Seek Immediate Medical Attention: Patients who have difficulty breathing or shortness of breath or who are believed to be severely ill should be encouraged to seek immediate medical attention.

Use of Face Mask: Patient should wear a face mask to reduce the risk of spreading the virus in the community when coughing, sneezing, talking, or breathing. If a face mask is unavailable, ill persons who need to go into the community should use tissues to cover their mouth and nose while coughing.

Precaution in Home Isolation: While in home isolation, patients and other household members should be given infection control instructions, including frequent hand washing with soap and water. Use of alcohol-based hand gels (containing at least 60% alcohol) when soap and water are not available and hands are not visibly dirty is acceptable. Patients with H1N1 influenza should wear a face mask when within 6 feet of others at home. Designate a single household family member as caregiver for the patient to minimize interactions with asymptomatic persons.

Social Distancing: Large gatherings linked to settings or institutions with laboratory-confirmed cases should be canceled. Persons with underlying medical conditions who are at high risk for complications of influenza should consider avoiding large gatherings.

Prognosis

The 2009 influenza pandemic caused significant economic, social, and health problems. Although the number of deaths was not high for a pandemic influenza virus, it is concerning that death rates in pregnant women and otherwise healthy young people were disproportionately high. For most people, the prognosis is good, but for a few others in whom the disease progresses more severely, the prognosis can be guarded.

Complications

Pneumonia (primary viral or secondary bacterial), bronchitis, bronchiolitis, respiratory failure, worsening of chronic diseases (heart & renal disease and asthma), neurological signs and symptoms, ranging from confusion to seizures, encephalopathy and multisystem failure

Conclusion

The patients with swine-flu like signs and symptoms should be isolated and managed aggressively. The prognosis of the disease is best when treatment is started as early as 48 hours after onset of symptoms. Co-morbidities increase the risk of death in ventilated patients. The earliest signs of deterioration of the

respiratory parameters safety early intervention with ventilator support, antiviral therapy, and good supportive treatment can protect the patient's life.

References

Adhikari, B.R., Shakya, G., Upadhyay, B.P., KC, K.P., Shrestha, S.D., Dhungana, G.R. (2011). Outbreak of pandemic influenza A/ H1N1 2009 in Nepal. *Virol J. Mar* 23;8:133.*doi*: *10.1186/1743-422X-8-133*.

Christopher, W.O. (2002). The emergence of novel swine influenza viruses in North America. *Virus Research*. Volume 85, Issue 2, 10 May 2002, Pages 199-210. https://doi.org /10.1016/ S0168-1702(02)00027-8

Centers for Disease Control and Prevention, (2016). *Influenza* (Flu). United States of America: US department of Health and human services.

World Health Organization (2010)."*H1N1 in post-pandemic period*." Aug. 10, retrieved from http://www.who.int/mediacentre/news/ statements/2010/h1n1

Do's and Don'ts for wearing procedure in non-surgical healthcare setting. (2015). Retrieved on 20 August 2017 form www.osha.gov/SLTC/ respiratoryprotection/guidance.html

Do's and Don'ts for wearing gloves in the healthcare environment. (2016). Retrieved on 20 August 2017 from www.apic.org/InfectionPreventionandYou

Do's and Don'ts for wearing N95 respirators in non-surgical healthcare settings. (n.d.). **Retrieved** on 20 August 2017 from www.osha. gov/SLTC/respiratoryprotection/gui dance.html

Emedicinehealth. (2017). *Swine Flu*. Retrieved on August 18 2017 from http://www. medicinenet.com/swine_flu/article.htm.

Guidance for the Selection and Use of Personal Protective Equipment (PPE) in Healthcare Settings. (n.d.).Retrieved on 16 August 2017 from ppeslides6-29-04%20CDC%20guidanc e.pdf

Mayo Clinic.(2017).*Swine flu (H1N1*).Retrieved on August 18 2017 from http://www. mayoclinic. org/diseases-conditions/swine-flu/basics/definition/ CON-20034916.

Medscape.(2017). *H1N1 Influenza (Swine flu)*. Retrieved on August 16 2017 from http://eme dicine. medscape.com/article/1807048

Ministry of Health and Population. (2016). *Infectious Disease Control Guideline*. Kathmandu: Government of Nepal.

Sinha, M. (2009). Swine flu. *Journal of Infection and Public Health*, 2 (4), 157-166. DOI: http:// dx.doi.org/10.1016/j.jiph.2009.08.006

World Health Organization. (2015). *Use of Influenza Rapid Diagnostic Tests*. Retrieved from http://www. who.int/tdr/publications/documents/rdt_influenza. pdf

Guideline for Manuscript Submission

Information for authors

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Manuscript Layout

- The manuscript must be typed double-spaced on A4 size white paper.
- Preferred script is Time New Roman and font size of 12 points.
- Margins 1.5 cm at three sides and 2 cm at left hand side.
- All the page should be numbered consecutively, beginning with the title page and centred it on the bottom of the page.
- The manuscript should not exceed 2,500 words excluding references and abstract for original article.

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The title page should carry:

1. Type of manuscript e.g. Original article, Case Report, review of Article etc.
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Abstract

- The second page should carry the full title of the manuscript and an abstract.
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- Below the abstract, specify 3 to 5 keywords ar ranged alphabetically.

Introduction

This section provides a context or background for the study (the problem and significance). It should also include the objectives, rational of the study with citation of the relevant literature using APA style.

Methodology

The methodology section should contain; design, setting, population, sampling technique, sample size, instrumentation, method and duration of the data collection, ethical considerations, applied statistical analysis.

Findings/Result

Findings of the study should be presented in logical sequence in the text as well as in the table along with descriptions. Limit the tables as far as possible (not more than five) but should provide important findings. Do not repeat the same information in the text as well all as in the tables. All the tables (Bar and line digammas) and figures should be numbered along with the complete headings.

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Discussion section should include new and important aspect of the study and compare the present findings

with previous study findings. Provide explanation whether it supports with your findings, if it differs give probable explanation.

This section should include a paragraph of inherent limitation of the study, and explain the implications of the findings for future research and clinical practice.

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The conclusion should be written in the concise form which should reveal the inferences of the major findings. However, it should answer the objectives of the study.

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Include the background, objects, and key messages presented in the article.

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- Author must provide his/her contact address along with e-mail and mobile number.
- The cover letter must include signature of author(s), affiliated institution along with e-mail address, mobile number and FAX No. of the author responsible for the correspondence.

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Brief summary of the article not exceeding 150 words and it needs to describe what the paper cover including the purpose of the article.

Key words: Should not more than five words.

Content: Should include introduction presentation of the information along with conclusion including a recommendation.

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