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Interdisciplinarity in Nursing: The Expanding Role of Nurses

Pun KD

Interdisciplinary collaboration is widely recognized these days as an essential process of developing intellectual synergies and transformations in healthcare to ensure optimal development of knowledge and practice; most importantly to bring out the nursing perspective "the holistic view" which is very critical for human health.[1,2] Broadly defined, interdisciplinarity refers to the communication and collaboration across academic disciplines as well as to the integration of disciplinary contributions to provide holistic and systemic results.[3,4] Because of nurses' capability to see a person holistically in health promotion, disease prevention and healing, nurses are increasingly participating as a vital part of the interdisciplinary team in research or education or practice. Nurses' participation in interdisciplinary researches and other programs are becoming more meaningful as their roles are expanding with advancement in health care systems and technologies

A single discipline, be it a nursing or any other healthcare profession, cannot "know everything" to conduct research or to improve patient outcomes. History shows that nursing has enriched itself by adapting knowledge drawn from other disciplines such as biological sciences, medicine, psychology, sociology, philosophy, epidemiology, etc. Over time, knowledge built in nursing has also significantly influenced other disciplines in areas of research, patient care, multi-dimensional approach to pain management, 'bio-psycho-social' perspective in health, and many more.[2] All of these disciplines can work collaboratively using their own perspectives and skills to achieve a common goal of improving human health.

Nursing of present time has evolved from significant initiatives in the past to upgrade standards in nursing education, practice and research. It has now been established as a professional discipline with definite body of knowledge and scope of practice. Likewise, nurses of to days are competent enough in leading, coordinating and directing interdisciplinary teams. Nurses have a broad knowledge base and can contribute in various ways such as by understanding overviews of people's situation, carrying out critical conversations with different team members, conducting clinical and non-clinical research. However, nurses must advocate about their worthiness in conducting interdisciplinary practice, education and research.[5] Further more work is to be done to ensure adequate preparedness among nurses to promote them towards the interdisciplinary world of research and practices.

Because, despite several proven and unproven benefits of interdisciplinarity, there are several challenges for participants of an interdisciplinary research team as coming from diverse disciplines but collaborating to work in the same team. There is a possibility of one member, in order to establish his/her view, could dominate other's view or maximize attention towards themselves or avoid other's view.[2] Therefore, interdisciplinary approaches must be well-planned and well-communicated to maximize effectiveness.[6,7] Developing standard operating guidelines and clear vision towards the goal beforehand can help in eliminating these challenges.

I believe that nurse researchers and educators from our part of the world also must engage in interdisciplinary researches to tackle the issues and problems of health specific to our context. Therefore I take this opportunity to call for contributions from nurses in conducting interdisciplinary research and participating in interdisciplinary teams to provide quality care and increase interdisciplinarity in nursing education.

REFERENCES

1. Cashion A, Pickler RH. What Will I Bring: Nurse Scientists' Contributions to Interdisciplinary Collaboration. *Nurs Res.* 2018;67(5): 347-8.
2. Carnevale FA. Interdisciplinarity and nursing research: opportunities and challenges. *Revista Brasileira de Enfermagem.* 2014;67: 881-5.
3. Bruce, A., Lyall, C., Tait, J., & Williams, R. Interdisciplinary integration in the fifth framework programme. *Futures.* 2004; 36(4):457–70.
4. Jacobs, J., & Frickel, S. Interdisciplinarity: A critical assessment. *Annual Review of Sociology.* 2009;35:43-65.
5. Garrett LH. Interdisciplinary Practice, Education, and Research: The Expanding Role of the Occupational Health Nurse. *AAOHN Journal*. 2005;53(4): 159-65.
6. Larson EL, Cohen B, Gebbie K, Clock S, Saiman L. Interdisciplinary research training in a school of nursing. *Nurs Outlook.* 2011;59(1):29-36.
7. Grey M, Mitchell PH. Guest Editorial: Nursing and interdisciplinary research. *Nurs Outlook.* 2008;56(3):95-6.

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Fertility Awareness, Intentions Related to Childbearing and Attitudes toward Parenthood among University Level Students of Kathmandu

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ABSTRACT

Background

Most of the people express a desire to have children at stages of life. Postponing childbirth is becoming more common in Western and Asian countries among groups seeking higher educational qualifications and career opportunities.

Objective

To investigate fertility awareness issues, intentions related to childbearing and attitudes toward parenthood among male and female.

Method

Descriptive exploratory cross-sectional study design was used. Sample size was 384. The sample was selected by non-probably consecutive sampling method. The pre-tested self-administered questionnaire was used to collect data. The data was collected from 22nd April to 25th May; 2018. The data was analyzed by using descriptive and inferential statistics.

Result

Only 24.1% male and 19.9% female had adequate awareness level on fertility issues. The fertility awareness was depended on educational status of both sexes (p=0.001). More male (75.2%) preferred to have two children than female (61.9%). Female desired to have first child (28.26±2.47) and last child (30.61±3.04) in early age whereas male desired to have first child (30.43±3.91) and last child (34.32±4.73) in later age. The intention toward childbearing was depended on age, sex, desired number of children, and education (p< 0.005). Almost all female (97.2%) and male (96.2%) had positive attitudes toward parenthood. There was relation between fertility awareness and attitudes toward parenthood in female only.

Conclusion

Most of the male and female had inadequate awareness level on fertility issues. There was an overestimation of desire age of achieving first and last child in both sexes. There was a risk of involuntary childlessness in this group even though they had positive attitudes toward parenthood.

KEY WORDS

Attitudes toward parenthood, Fertility awareness, Intentions related to childbearing, University students

INTRODUCTION

Most of the people express a desire to have children at stages of life. The studies have revealed that young people are confident that they are able to have children whenever they want. It is unknown to what extent young women and men are aware to become pregnant at different ages. The attitudes of male and female toward parenthood are relatively unexplored.[1]

Postponing childbirth is become more common in Asian and western countries with higher educational groups. The age of women at first delivery is constantly increasing with higher education. Male and female students planned to have children at ages when female fertility has decreased .University students have just entered reproductive age and in the mean time they are facing competing interests, between their educational and career goals, and marriage and childbearing.[1,2]

There are relatively few studies on fertility awareness of male and female seeking higher educational and career opportunities groups are at risk for involuntary childlessness. The university students had poor knowledge about human fertility.[3]

The couples postpone having first child until they feel prepared socially, financially and completed planned education to become parents.[4]

Postponing childbirth is become common in Nepal with advanced educational groups. In the context of Nepal, there are relatively few studies on fertility awareness of male and female seeking higher educational and career opportunities groups are mostly at risk for involuntary childlessness. The study was conducted to investigate fertility awareness issues, intentions related to childbearing and attitudes toward parenthood among male and female.

METHODS

The descriptive exploratory cross-sectional study was conducted in April and May 2018. The study was conducted among master level students of different faculties of college of Kathmandu valley. The participants were recruited in regular class and were given short introduction about study. Confidentiality was maintained by not revealing the information received and identity of participants and using the information only for study. The participants were requested to sit three on a bench and were not allowed to discuss with each other to prevent contamination of the questionnaire. They were asked to fill out a questionnaire and return it back immediately.

Sample size was 384. It was calculated by z^2pq/ d^2in 95% CI where allowable error was 5% and 50% prevalence. The calculated sample was selected by non-probably consecutive sampling method. The inclusion criteria were married and unmarried male and female. The married male and female with baby were excluded in study.

The self-administered questionnaire was developed with help of review of literature and research team. It was divided into four parts. Part I consisted of information related to socio-demographic variables. Part II consisted of the knowledge related questions to assess awareness of male and female students on fertility issues. Part III consisted of Yes/No and open response questions related to intensions toward childbearing. Part IV consisted of seventeen items related to positive and negative life changes toward parenthood. The responses format was a Likert scale with five points; Strongly Agreed = 5, Agree = 4, No Idea = 3, Disagree = 2, Strongly Disagree = 1.

The content validity of the instruments was maintained through consultation with research experts and subject experts. Pretesting was done among 10% of sample size for reliability of the instruments. On the basis of the pretesting, instruments were revised and modified to increase its clarity.

Ethical approval was obtained from the Institutional Review Committee of Nepalese Army Institute of Health Sciences, Sanobharyang, Kathmandu. Formal permission for the study was taken from the concerned authorities of the selected college of Kathmandu valley. The verbal and written informed consent was taken from the each participant before data collection. None of the participants were forced to participate in the study.

The collected data was edited, coded and entered in Microsoft Excel. It was analyzed using descriptive statistics i.e. frequency, percentage, mean, standard deviation. The association and correlation was analyzed using chi-square, Fisher's exact test and Pearson's correlation. The statistical significance was defined as p value < 0.05. The used statistical package was SPSS version 17. The cut-off point of awareness level was 50% of total possible score (Mid -Value). Less than 50% were categorized as inadequate level of awareness and ≥ 50% was adequate level of awareness. The participants who obtained ≤ 3 and > 3 score in scale out of five scores were considered as negative and positive attitude toward parenthood respectively.

RESULTS

In table 1, majority of female (65.4%) than male (34.6%) were participated in the study. Most of female (80.9%) were ≤ 25 years old. Half of male (50.4%) were ≥ 26 years old. Most of female (80.5%) were unmarried than male (75.9%). The female (26.98±1.76) desired to get married in early age than male (29.36±2.78).

Most of male than female received information on fertility issues from internet (90.2%), magazine/newspaper (78.9%), books (71.4%), friends/relatives (68.4%), and health personnel (65.4%).

Table 1. Socio-Demographic Variables among Male and Female Participants

Variables	Sex			
	Male(n=133)		Female(n=251)	
	n	%	n	%
Age				
≤ 25	66	49.6	203	80.9
≥26	67	50.4	48	19.1
Marital status				
Married	32	24.1	49	19.5
Unmarried	101	75.9	202	80.5
Desired age of marriage (Mean age)	29.36±2.78		26.98±1.76	
Type of family				
Nuclear	81	60.9	172	68.5
Joint	50	37.6	77	30.7
Extended	02	1.5	02	0.8
Education				
Microbiology	26	19.5	99	39.4
Population studies	14	10.5	14	5.6
Rural development	31	23.3	45	17.9
Sociology	59	44.4	86	34.3
Anthropology	03	2.3	07	2.8

More female (87.6%) were aware about meaning of fertility than male (82.7%). Male had more knowledge on most fertile age of men (39.1%) and women (48.1%) than female. Male were more competent in estimation of decreased ability of female (88.7%) and male (86.5%) fertility than female. More male (72.2%) were aware on meaning of ovulation than female (68.9%) whereas similar percent of male (42.1%) and female (41.8%) estimated the time of ovulation. Female (52.9%) were more capable to identify the life span of sperm than male (48.1%). Almost similar percent of female (30.7%) and male (31.9%) identified the life span of mature ovum. Similar percent of male (60.1%) and female (61.1%) recognized the proper time to conceive a baby during ovulation period. More male (59.4%) were aware about ovulation calculation method to assess ovulation period than female (57.4%). Female (53.7%) were more aware on hormonal imbalance as female factor that causes difficulty to conceive a baby than male (50.4%). Nearly half of male (49.6%) presented a poor semen quality and less than half of female (48.2%) presented a failure to deliver sperm to the vagina as male factors that cause difficulty to conceive a baby (Table 2).

Less than half of male (24.1%) and female (19.9%) had adequate level of awareness on fertility issues (Table 3).

In table 4, there was significant association between fertility awareness and educational status statistically (p-value 0.001).

Table 2. Awareness of Fertility Issues among Male and Female Participants

Statements	Sex			
	Male(n=133)		Female(n=251)	
	n	%	n	%
The meaning of fertility as the ability to reproduce and have children	110	82.7	220	87.6
The most fertile age in women as 20-24 years	52	39.1	97	38.6
The ability of female fertility as decreased at 35-39 years	118	88.7	203	80.8
The most fertile age in male as 26-29 years	64	48.1	106	42.2
The ability of male fertility as decreased at > 40 years	115	86.5	203	80.9
The meaning of ovulation as the release of ovum from the fallopian tube	96	72.2	173	68.9
The time of ovulation as middle days of two menstrual cycles	56	42.1	105	41.8
The life span of the mature ovum as up to 48 hours	42	31.9	77	30.7
The life span of the sperm inside the uterus as up to 72 hours	64	48.1	113	52.9
The most appropriate time to conceive as during ovulation period	80	60.1	155	61.1
Assessment methods of ovulation period				
Mucus	16	12.0	33	13.1
Ovulation calculation	79	59.4	144	57.4
Temperature	15	11.3	25	10.5
Female factors that cause difficulty to conceive				
Defective ovulation	59	44.4	124	49.4
Hormonal imbalance	67	50.4	133	53.7
Male factors that cause difficulty to conceive				
Poor semen quality	66	49.6	112	44.6
Failure to deliver sperm to the vagina	59	44.4	121	48.2

Most of female (90.8%) than male (78.9%) wanted to have child. More male (75.2%) preferred to have two children than female (61.9%). Female desired to have first child (28.26±2.47) and last child (30.61±3.04) in early age whereas male desired to have first child (30.43±3.91) and last child (34.32±4.73) in later age (Table 5).

In table 6, there was no significant association between fertility awareness and intentions related to childbearing in both male and female statistically (p-value >0.05).

Table 3. Fertility Awareness Score among Male and Female Participants

	Sex			
	Male(n=133)		Female(n=251)	
Score	n	%	n	%
Inadequate	101	75.9	201	80.1
Adequate	32	24.1	50	19.9
Total	133	100	251	100

Table 4. Association of Fertility Awareness and Socio-demographic Variables

Variables		Inadequate	Adequate	value	p-value
Sex	Male	101	32	0.887	0.346
	Female	201	50		
Marital status	Married	64	17	0.008	0.928
	Unmarried	238	65		
Age	≤25	210	59	0.179	0.672
	≥26	92	23		
Education	Arts and Humanities	216	43	10.698	0.001
	Science	86	39		
Type of family	Nuclear	198	55	0.065	0.798
	Joint	104	27		

Table 5. Intentions related to Childbearing among Male and Female Participants

	Sex			
	Male (n=133)		Female (n=251)	
Statements	**n**	**%**	**n**	**%**
Desired to have children				
No	28	21.1	23	9.2
Yes	105	78.9	228	90.8
The desired number of children (M=105, F=228)				
only one	15	14.3	79	34.6
only two	79	75.2	141	61.9
>2	11	10.5	08	3.5
Desired age for first child (M=105, F=228)	30.43±3.91		28.26±2.47	
Mean age				
≤30 years	54	51.4	203	89.0
>30 years	51	48.6	25	11.0
Desired age for last child (M=105, F=228)				
Mean age	34.32±4.73		30.61±3.04	
≤35 years	68	64.8	223	97.8
>35 years	37	35.2	05	2.2

Table 7. Association of Socio-Demographic Variables and Intentions related to Childbearing

		Intentions			
Variables		**No**	**Yes**	**Values**	**p-value**
Sex	Male	28	105		
	Female	23	228	10.67	0.001
No of children	Married without children	0	39		
	Married with children	37	6		<0.001#
Type of family	Nuclear	34	219		
	Joint	17	114	0.016	0.889
Age	≤25	7	262		
	≥26	44	71	88.94	<0.001
Education	Arts and Humanities	46	213		
	Science	5	120	13.861	<0.001

#Fisher's exact test

Table 8. Attitude Score toward Parenthood among Male and Female Participants

	Sex			
Attitude score	**Male(n=133)**		**Female(n=251)**	
	n	%	n	%
Negative	5	3.8	7	2.8
Positive	128	96.2	244	97.2
Total	**133**	**100**	**251**	**100**

Table 9. Association between Intentions related to Childbearing and Attitudes toward Parenthood among Male and Female Participants

		Attitude score					
Attitude score		**Male(n=133)**			**Female(n=251)**		
		Negative	Positive	p-value	Negative	Positive	p-value
Desired to have children	No	00	22		00	16	
	Yes	04	101	>0.99#	07	221	>0.99#

#Fisher's exact test

Table 10. Correlation between Awareness and Attitudes

		Attitude score	
		Male (n=133)	**Female (n=251)**
Awareness score	p (correlation)	0.008	0.154*
	p -Value	0.931	0.015

In table 7, there was significant association of sex, age, desired number of children, and education with intentions related to childbearing statistically (p-value <0.05).

Almost all female (97.2%) and male (96.2%) had positive attitudes toward parenthood (Table 8).

The table 9 presented that there was no significant association between intentions related to childbearing and attitudes toward parenthood in both male and female statistically (p -value >0.05).

Table 10 showed that there was significantly correlation between fertility awareness and attitudes toward parenthood in female only (p-value 0.015).

DISCUSSION

In present study, nearly one third (24.1%) of male and female (19.9%) had adequate level of awareness on fertility issues. But male had higher adequate level of awareness on fertility issues than female. Male had more exposure in different kinds of information sources than female. Male has also less responsibility of household chores and more chance to expose different sources of information in context of Nepal as male dominating society. Men do not feel an obligation when they are involved in the home as women do, as they perceive it more as a hobby or a free choice. Also, those house chores that keep the home every day such as childcare, shopping, cooking, washing dishes and clothes, and cleaning the house are considered feminine whereas paying bills, home repairs and family management are considered as male tasks. Some cultural interpretation argues that women are more involved in house chores as gender identity whereas men, whose gender identity has traditionally been marked by paid, work.[5,6]

The study among Australian students, 56% of female and 49% of male had good knowledge on fertility issues. More female had good fertility knowledge than male. Male who were born overseas was less likely to have good fertility knowledge than those born in Australia. Male who reported using marijuana had lower level of fertility knowledge.[7] The study in Australia, only 2.1% women had high level, 47.9% women had poor and 38.1% women had no awareness on fertility issues.[8] There was variation in setting and timing of study, characteristics of sample, sample size, and differences in socio-culture. So the findings might have been differed.

In this study, one third (39.1%) of male and female (38.6%) correctly estimated the most fertile age of women. The study in Sweden, 63% women, 46% men; in China, 16% female, 27% male; in Denmark, 61% women, 50% men; in Italy, 69% female, 60% male were aware about the most fertile age of women.[4,9,10,11] It indicated that women of Sweden, Denmark and Italy had higher level awareness than men on the most fertile age of women. Owing to the variation on study methodology, timing, nature of samples, sample size and socio-culture differences, findings might have been differed.

The present study, more than two third (88.7%) of male and two third (80.8%) of female correctly estimated the decreased ability of female fertility. The study in Sweden, 36% women, 24% men; in America, 24% women, 14% men; in China, 48% female, 37% male; and in Denmark, 31% women, 29% men correctly estimated the age of decreasing ability to become pregnant.[1,3,9,10] The male and female of Nepal were more conscious than men and women of Sweden, Denmark, America and China regarding age of decreasing ability to become pregnant. There is a deep rooted culture to have a child after a year of marriage. If not, society starts to blame the women as infertile. In Nepal, a practice of early marriage is still prevalent that is 27% and gendered social norms around marriage remain sticky. More than 40% of women who were ever married before the age of 19, compared with 19% of men. Girls face considerable pressure to bear a child particularly a son from the first year after marriage to prove their fertility. Thus, if the girl is not pregnant a few years after marriage, there is thought that she may be infertile and consequently there is a greater risk of second marriage. Expectations of childbearing in the first year after marriage come from the girl's own parents to make their daughter's future secure. Hence they put pressure on the girls to produce children early.[12,13] Therefore this might have been created awareness to women and men of Nepal regarding the decreasing fertility ability of women as the age advances.

In present study, one third (48.1%) of male and female (42.2%) were aware on the most fertile age of male. More than two third (86.5%) of male and two third (80.9%) of female correctly estimated the decreased ability of male fertility. It indicated that male had higher level awareness on most fertile age of male and decreased ability of male fertility than female. The male had more exposure in different sources of information than female.

In present study, male and female were more aware on ovulation calculation method than other methods as assessment methods of ovulation period. The ovulation calculation method is easy to understand and available method from different kinds of information sources. They were also exposed in different kinds of information source. Ovulation calculation method is most currently available method to detect ovulation period. It is an ideal method to detect ovulation. It is noninvasive, inexpensive, easily available, and easy to use. It is also precise in determining ovulation and the fertility window. Detection and monitoring of ovulation has long been practiced by women pursuing pregnancy.[14] Ovulation calculation methods are practically based on a woman's menstrual cycle. So each woman needs to monitor the length of her menstrual cycle for a period of six months to confirm her ovulation period.[15] Therefore male and female were more aware on ovulation calculation method than other methods as assessment methods of ovulation period.

In this study, majority (60%) of male and female were aware on most appropriate time to conceive during ovulation period. It is easily understood by reading from different sources like internet, books magazines etc. They were also

exposed in different kinds of information sources. The most appropriate time to conceive is based on ovulation period. Fifty six percent (56%) of women estimated their day of ovulation correctly in the cycle in which they conceived.[16] More couples today, turn to easy method of calculating the woman's fertile days to ensure contact on those days to increase chances of pregnancy. Ovulation calculation method has a success rate ranging from 80% to 99%.[17]

The male and female may have less curiosity to achieve knowledge on life span of mature ovum and sperm than other factors related to fertility issues. As a result, only 31.9% of male and 30.7% of female, and 48.1% of male and 52.9% of female were aware on life span of mature ovum and sperm respectively.

Two female and male factors that cause difficulty to conceive are hormonal imbalance and defective ovulation, and poor semen quality and failure to deliver sperm to the vagina correspondingly. These two factors can be more easily understood through different information sources than other factors that cause difficulty to conceive. So that male and female were more aware on those two factors than other factors that cause difficulty to conceive (Table 2).

In this study, most (90.8%) of female and two third (78.9%) of male had desire to have children. The study in Sweden, 97% men, 96% women; 88% women, 91% male in America; and 97% women, 87% men in Denmark liked to have children.[1,3,10] The studies indicated that most of women and men of Asian and Western countries liked to have children and continue their generation.

The present study explained that 75.2% male and 61.9% female preferred to have two children. The study in Sweden, 69% men, 56%women; in America, 54% men, 41% women; and in Denmark, 46% men, 37% women preferred to have two children.[1,3,10] The above study findings indicated that less percent of women desired to have two children than men. Many women struggle with the dramatic physical changes that are associated with pregnancy. The women have to carry a baby for ten months in their uterus and experienced long pain during labour. Women specifically feel the aches and pains after giving a birth of baby. Low back pain is the most common after having a baby and 30-95% of women experience back pain during the first year after giving birth. Many women still experienced injuries similar to athletic injuries, such as broken bones, stress fractures, muscle tears, and severe strains after giving birth. Moreover the society has also given more responsibilities of childcare as woman's task.[6,18]

In present study, female desired to have first child at younger age (28.26±2.47) than male (30.43±3.91).The female also liked to have last child at younger age (30.6±3.04) than male (34.32±4.73). In Sweden, women wanted to have first child at younger age (28±2.7) than men (30±2.9). Women also wanted to have last child at younger age (35±3.0) than men (36±4.0).[1] Majority (60%) of female and half (50%) of Italian male preferred to have first child between 25-29 years and 30-34 years respectively.[11] It indicated that most of male and female postponed to have first and last child when fertility capability was decreased. There is clear empirical evidence of the postponement of having children. The reasons are the rise of effective contraception, increases in women's education and labour market participation, value changes, gender equity, partnership changes, housing conditions, economic uncertainty and the absence of supportive family policies. Evidence shows that some social policies can be effective in countering postponement of having children.[19]

In this study, the fertility awareness was associated with educational status of both sexes (p=0.001). Education is important factor to increase fertility awareness in both sexes. Fertility awareness was not dependent on intensions related to childbearing in both sexes (p-value > 0.05). The intentions related to childbearing were associated with sex, age, education, desired number of children (P-value < 0.05). The gender was associated with intensions of childbearing in Denmark.[10]

In current study, almost all male (96.2%) and female (97.2%) had positive attitudes toward parenthood. The intensions related to childbearing were not associated with attitudes toward parenthood in both sexes (p-value > 0.05). Almost all the male and female irrespective of their desire to have children had positive attitudes toward parenthood. The increased awareness on fertility issues results positive attitudes toward parenthood in female only (p- value 0.015).

The findings of this study had to be seen in light of some limitations. There was imbalance of male (34.6%) and female (65.4%) participants in this study. There was also imbalance in marital status of participants, married (24.1%) and unmarried (75.9%). It would be more interesting to support these results of this study if equal percent of male and female and only married without children were involved in this study. The result would be more interesting to support if the students from different faculties of master level from different colleges situated in urban and rural areas of country were taken as participants. The study was based on quantitative analyses. It would be interesting to support these results with qualitative study (through interview or focus groups) that would helps to interpret the analyses of result framed.

CONCLUSION

Male and female had similar proportion of knowledge on individual issues and had inadequate awareness level in fertility issues. The increased education level seemed to increase fertility awareness in both sexes. The male and female planned to have two children. The intention of

childbearing was depended on age, sex, desired number of children, and education level. Male and female had positive attitudes toward parenthood. There was relation between fertility awareness and attitudes toward parenthood in female only.

The findings will provide a support for future research and plan different types of awareness programs on fertility issues. Awareness programs would decrease a risk of involuntary childlessness in married reproductive aged women. Further study can be carried out among married reproductive aged women on fertility issues.

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REFERENCES

1. Lampic C, Svanberg AS, Karlstrom P, Tyden T. Fertility awareness, intentions concerning childbearing, and attitudes towards parenthood among female and male academics. *Human Reproduction.* 2006; 21(2): 558-64.
2. Nouri K, Huber D, Walch K, Promberger R, Buerkle B, Ott J, Tempfer CB. Fertility awareness among medical and non-medical students: a case-control study. *Reproductive Biology and Endocrinology.* 2014; 12(1): 94. Doi: 10.1186/1477-7827-12-94
3. Peterson BD, Pirritano M, Tucker L, Lampic C. Fertility awareness and parenting attitudes among American male and female undergraduate university students. *Human Reproduction.* 2012; 27(5): 1375-82.
4. Rasch V, Knudsen L, Wielandt H. Pregnancy planning and acceptance among Danish pregnant women. *Acta Obstet Gynecol Scand*. 2001; 80:1030-5.
5. Martínez M C, Paterna C. Gender perspective applied to work-family conciliation. *Géneroy Conciliación de la Vida Familiary Laboral*. 2009; 17-44.
6. Cerrato J, Cifre E. Gender inequality in household chores and work-family conflict. *Frontiers in Psycology.* 2018; doi: 10.3389/fpsyg.2018.01330
7. Heywood W, Pitts MK, Patrick K, Mitchell A. Fertility knowledge and intentions to have children in a national study of Australian secondary school students. *Australian and New Zealand Journal of Public Health*. 2016;40(5).
8. Hampten K, Mazza D. Fertility-awareness knowledge, attitudes and practices of women attending general practice. *Australian Family Physician.* 2015; 44(11): 840-5.
9. Chan CHY, Chan TH, Peterson BD, Lampic C, Tam MY. Intentions and attitudes towards parenthood and fertility awareness among Chinese university students in Hong Kong: a comparison with Western samples. *Human Reproduction.* 2015; (2):364-372. Doi:10.1093/humrep/deu324.
10. Sørensen NO, Marcussen S, Backhausen MG, Juhl M, Schmidt L, Tydén T, Hegaard HK. Fertility awareness and attitudes towards parenthood among Danish university college students. *Reproductive Health.* (2016); (13): 146.
11. Rovei V, Gennarelli G, Lantieri T, Casano S, Revelli A, Massobrio M. Family planning, fertility awareness and knowledge about legislation on assisted reproduction among Italian academic students. Reproductive Bio Medicine online. 010; 20: 873-879.
12. Ministry of Health and Population (Nepal), New ERA. Nepal.
13. Demographic and Health Survey 2016. Kathmandu, Nepal: Ministry of Health and Population, New ERA, 2017.
14. Ghimire A, Samuels F. Change and continuity in social norms and practices around marriage and education in Nepal: shaping policy for development. *Country Report*. 2014.
15. Su HW, Yi YC, Cheng CM. Detection of ovulation, a review of currently available methods. *Bioeng Transl Med*. 2017; 2(3): 238-46. Doi: 10.1002/btm2.10058
16. Health Engine. Calendar Based Methods of Contraception. Health News. 2009.
17. Zinaman M, Johnson S, Ellis J, Ledger W. Accuracy of perception of ovulation day in women trying to conceive. *Current Medical Research & Opinion*. 2012; 28(5): 1-6.
18. Health status team. Simple methods to determine your fertile days. *Health Status.* 2016.
19. Ranit S. Postpartum pain syndrome. *Altavie.* 2016.
20. Mills M, Rindfuss RR, McDonald P, Velde E. Why do people postpone parenthood? Reasons and social policy incentives. *Human Reproduction Update.* 2011; 17(6):848-60. Doi:10.1093/humupd/dmr026

Prevalence of Surgical Site Infection at Tertiary Care Hospital, Kavre, Nepal

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ABSTRACT

Background

Health-care associated infection is an immense global burden, which affects billions of patients each year. It results in increased mortality, morbidity and cost of care. In low and middle income countries, surgical site infection is the leading type of health-care associated infections and represents the most common postoperative complication.

Objective

To estimate the impact of surgical site infection; as well as to consider the possibility for implementing systematic point prevalence registrations of health-care associated infections at Dhulikhel Hospital.

Method

During the period from September to October 2018 repeated point prevalence registrations of surgical site infection were conducted in the departments of orthopedics, surgery and obstetrics/gynecology at Dhulikhel Hospital, Kavre. A form based on criteria from The European Centre for Disease control and Prevention, The Centers for Disease Control and Prevention and The Norwegian Institute of Public Health were used to register surgical site infections.

Result

During the study period, 12 cases of surgical site infection were recorded among 483 in-patients with a total point prevalence of 2.5%. The overallprevalence of surgical site infection at the departments of orthopedics, obstetrics/gynecology and surgery were 1.5%, 2.8% and 3.5% respectively.

Conclusion

The prevalence of surgical site infection was lower in this study than most reports from other low and middle income countries, but higher than that reported from Europe. It can be recommended to implement regular point prevalence surveys of surgical site infections and probably also other health-care associated infections at the hospital.

KEY WORDS

Health-care associated infections, point prevalence, surgical site infection

INTRODUCTION

Surgical site infection (SSI) is a surgically related infection that occurs within 30 days after surgery or within a year in patients with an implant insertion.[1-3] It is the leading type of health-care associated infections (HAIs) in low and middle-income countries and represents the most common postoperative complication.[4,5]

Among surgical patients, SSIs account for 38% of HAIs.[6] In the World Health Organization (WHO) global guidelines on prevention of SSI, the pooled incidence was estimated to 11.8 per 100 surgical procedures in low and middle income countries, whichis 2-3 times higher than in high-income countries.[7] Systematic surveillance is an important tool in the effort to reduce SSI and other HAIs. Several high-income countries have established systematic surveillance for HAIs, while most low and middle income countries do not have such surveillance systems.[8] Due to this lack of surveillance; the burden of HAIs on patients and the health care systems is probably underestimated in many countries.

Several studies on HAIs including SSI have been conducted in Nepal, but none of these were point prevalence studies. The studies that have been published are incidence studies, retro and prospective studies and laboratory based studies.[9-16]

The aim of this study was to estimate the impact of surgical site infection as well as to consider the possibility ofimplementing a systematic surveillance system of HAIs in Dhulikhel Hospital. This could help reduce theoccurrence of such infections by promoting effective strategies for infection prevention. So there is a great need of such studies for better understanding of the prevalence of SSI.

METHODS

This descriptive cross-sectional point prevalence study was undertaken at Dhulikhel Hospital, Kathmandu University Hospital (KUH) from September-October 2018. A surgical wound was classified according to the American College of Surgeons National Surgical Quality Improvement Program (table 1). This classification is an important factor for the assessment of infectious risk and the foundation for development of perioperative protocols.[17,18] The criteria used for classification of an infection as a surgical site infection was adopted based on protocols from The European Centre for Disease control and Prevention (ECDC) and The Norwegian Institute of Public Health (table 2). An infection was classified, as a surgical site infection if two major criteria and at least one minor criterion was met.

Data were collected from all hospitalized patients of all ages from three surgical departments i.e. orthopedics, surgery and obstetrics/gynecology wards. Data were collected by repeated point prevalence registrations during a period of five weeks; altogether fifteen point prevalence registrations were taken. A predesigned questionnaire was used to collect information on demographics, surgery and postoperative status of the wound. Data were analyzed by SPSS version 18. Descriptive statistics including frequency, percentage, mean, standard deviation and 95% confidence

Table 1. Wound classification according to the American College of Surgeons National Surgical Quality Improvement Program

Wound Classification	
Clean	Uninfected operative wounds with no inflammation, and where the respiratory, gastrointestinal, urinary or genital tract not entered.
Clean contaminated	Operative wounds where the respiratory, gastrointestinal, urinary or genital tract are entered under controlled conditions and without any unusual contamination.
Contaminated	Open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique or gross spillage from the gastrointestinal tract and incisions in which acute, non-purulent inflammation is encountered, including necrotic tissue without evidence of purulent drainage.
Dirty infected	Old traumatic wounds with retained devitalized tissue and those that involve existing clinical infections or perforated viscera. This definition suggests that the organisms causing postoperative infection were present in the operative field before the operation.

Table 2. Criteriafor classification of a surgical site infection (adopted based on protocols from The European Centre for Disease control and Prevention and The Norwegian Institute of Public Health).

	Criteria	Present	Not Present
1.	Infection that occurs within 30 days after operation, or within a year with implant		
2.	The infection includes skin and subcutaneous tissue around the incision, deep soft tissue (fascia, muscle) around the incision or other parts of the body (such as organs or cavities) than the incision that was opened during an operation.		
At least one of the following			
	Purulent secretion from incision or drain tube.		
	At least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness or heat and superficial incision is deliberately opened by surgeon, unless incision is culture negative.		
	A deep incision opens or a surgeon intentionally opens the incision when the patient has one of the following: Fever (>38^{0}C), local pain or tenderness, unless culture from the wound is negative		
	An abscess or other signs of infection that includes the organ/cavity is proven with examination, during re-operation or with histopathological or radiological examination		
	A surgeon or the doctor who is treating the patient had diagnosed post-operative infection		

interval were used to analyze the data. Approval from the Institutional Review Committee (IRC), Kathmandu University School of Medical Sciences (KUSMS) was obtained to conduct the study.

RESULTS

During the study period, 483 patients who met the inclusion criteria were enrolled in the study. The mean age of the patients was 42.2±5 years. Among 483 patients, 12(2.5%, 95% CI 1.1-3.9) were diagnosed to have SSI, 8 were female and 4 male. The point prevalence of SSI was highestin the surgical department (3.5%, 6 of 172), followed by the obstetric andgynecology department (2.3%, 4 of 175) and orthopedics and traumatology (1.5%, 2 of 136) (Table 3). The prevalence of SSI between departments showed overlapping confidence intervals, indicating that the difference was not significant.

Table 3. Prevalence of surgical site infection in three departments

Department	Week 1*	Week 2*	Week 3*	Week 4*	Week 5*	Total* (%)	95% CI
Orthopedics	2/31	0/36	0/23	0/25	0/21	2/136 (1.5)	0-3.5
Surgery	2/41	2/35	2/26	0/35	0/35	6/172 (3.5)	0.8-6.2
Obstetrics/ Gynecology	2/34	0/32	0/33	1/36	1/40	4/175 (2.3)	0.1-4.5
Total	6/106	2/103	2/82	1/96	1/96	12/483 (2.5)	1.1-3.9

*Number of cases of SSI of number examined.

Four patients among six in the surgical department with an SSI had contaminated wounds at time of surgery; while both the orthopedic and obstetric/gynecology department had one case each of patients with contaminated wounds. Out of the total 12 patients with SSI, 5 patients had undergone emergency surgery including 3 out of 4 patients with emergency caesarean section inthe obstetrics/gynecology department. Similarly, in the surgery department 2 of 4 patients with SSI had open laparotomy surgeries (one patient was diagnosed with obstructed hernia; laparotomy followed by resection anastomosis of gangrenous ileal segment was done and another patient was diagnosed with peritonitis due to duodenal perforation with malignant mass; laparotomy with drainage was performed).

Four patients with SSI were readmitted after they were discharged postoperatively. The overall median length of stay for patients with an SSI in this study was 10 days. All the patients with SSI were prescribed with prophylactic antibiotic treatment in preoperative period. Eight out of the twelve SSI-cases were given one type of antibiotic in preoperative phase and more than one type in postoperative phase. Four out of twelve patients were given multiple types of antibiotics in both preoperative and postoperative phase.

A wound swab sample was taken from the surgical site wounds in all of the patients with SSI. There was no growth in samples from six patients. The laboratory results revealed growth of methicillin resistant *Staphylococcus aureus* (MRSA) in two patients, *Escherichia coli* in two, *Klebsiella pneumoniae* in one, and polymicrobial growth in one patient.

DISCUSSION

This study found that the overall point prevalence of SSI was 2.5% at Dhulikhel Hospital during the study period. Surprisingly, this number corresponds to theresult of a study at Dhulikhel hospital performed in 2015, where Shrestha et al. found anincidence of SSIs of 2.7%.[19] This findings was lower than the incidence of SSIs in Nepal reported by other studies which was 5.9% and 7.3%, respectively.[10,13]

Many previous studies conducted in Nepal reported mainly incidence data, while this study focused on point prevalence of SSIs.[9,10,13,19] This has to be taken into consideration, when comparing the numbers. Comparing numbers from the same type of study makes the best comparison. However, these two studies show that there is a close relationship between prevalence and incidence data.[20,21] But according to Gastmeier et al. conversion is not recommended even if it is theoretically possible.[20] The relationship between prevalence and incidence will depend on what kind of disease one collects data from. For instance, chronic disease often has a high prevalence without a high incidence, while acute illness that either passes fast or the patient dies, has a high incidence without a high prevalence. The timespan in which the incidence registration is being conducted also influences this relationship. Another studyconducted in Europe reported that the point prevalence for SSI was 1.5 % [95 % CI 1, 3-1,6] in 2012.[22] In that pilot study, 7.1% of 1408 patients included were diagnosed to have HAIs and SSI was the second most common type of HAIs, representing 18.9% of all HAIs.

According to a report recently published in ECDC`s Euro surveillance journal, it is recommended to do post-discharge surveillance.[23] The report showed that 65% of SSIs are detected in outpatient departments (OPDs). The proportion of detection varied by the different types of surgery, and was most frequent for caesarean section, breast surgery and abdominal hysterectomy.[23] The patients treated in the OPDs were not included in this study. This could be one of the reasons for lower prevalence rate of SSIs, however the more convincing reasons for this result could be an implementation of good infection prevention and control measures, good aseptic practices and adherence to the guidelines for cleaning and disinfection.

Recent studies have shown that the degree of contamination of the wound at the time of surgery is an important factor for later development of SSI.[9,24,25] As stated

earlier, wounds can be classified into four groups: clean, clean contaminated, contaminated and dirty. The risk of developing a SSI increases with the degree of contamination of the wounds. Ortega et al. reported different rates of SSI depending on the degree of contamination of wounds: 2.6% for clean wounds, 6.7% for clean-contaminated, 8.6% for contaminated and 11.8% for dirty.[18] This indicates that the type of wound is an important factor for prediction of the postoperative outcome.

Another important risk factor was the type of surgery. Five of the 12 patients developed SSI after emergency surgery in this study. The reason why timing of surgery is a risk factor is due to the fact that there may not be sufficient time for routine preoperative preparations in emergency surgeries, such as surgical aseptic technique, and many of the emergency surgeries involve contaminated areas as the bowel region.[26] Several studies report higher rates of SSI among emergency surgeries compared to elective surgeries.[6,19,26,27]

SSI increases costs, among others, caused by increased length of stay. The median length of stay for patients with an SSI in this study was 10 days. This finding is in line with that reported by other studies that patients with SSI are admitted longer than patients without SSI.[28-30] In a study conducted at John Hopkins Hospital in the United States in 2013, reported that the cost of the total stay of an infected patient was almost double ($79 134) compared to the cost if SSI was prevented ($44 727).[30]

In this study, pathogens isolated from the cultures were *E. coli, K. pneumoniae* and *methicillin* resistant *S. aureus* (MRSA). The findings of *E. coli* and *K. pneumoniae* correlates with the list in the ECDC report of the most frequent pathogens causingsurgical site infections.[22] The report also listed *S. aureus* as one of the most common pathogens.[19,31] *S. aureus* cause infections with higher irascibility than infections caused by *E. coli*. If the *S. aureus* in addition is resistant to penicillinase resistant penicillins, treatment could be more difficult. MRSA is an immense challenge for the healthcare system worldwide.[32] A global report published by WHO on antibiotic resistance points out that patients with infections caused by MRSA, have an increased mortality and higher risk of worse clinical outcome.[33] The WHO region of South-East Asia reports that in some parts of Asia, more than one quarter of all *S. aureus* causing infections are MRSA. The WHO Regional Director for South-East Asia has stated that working against drug resistance is a priority in the region.[33]

In the obstetrics and gynaecology department, three out of four cases of SSI were emergency lower segment caesarean section (LSCS). Higher infection rate in LSCS was also reported by the previous study where, 12.6% of the patients with LSCS developed SSI.[9] Similarly other studies also reporta high frequency of post LSCS wound infection.[34,35]

Point prevalence registration of SSI is a well-established survey design, which is possible to conduct regularly. However, for data from such asurveillance systemto be reliable, it would be a prerequisite thatthe health-care personnel involved in data collection and analysis aretrained for classification of wound and criteria for SSI. Standard protocol should be prepared and followed accordingly.

Data on different confounders which can affect the prevalence of SSI, such as comorbidities of the patients, duration of surgical procedures, blood sugar, technique of skin preparation, hair removal etc. were not recorded in the present study.

CONCLUSION

The prevalence of SSI in this study was lower than most reports from other low and middle-income countries, but higher than that reported from Europe. Structured surveillance of SSIs is an important factor to track the progress of infection control and to reduce the amount of such infections. It can be recommended to implement regular point prevalence surveys of SSI and probably also other health-care associated infections at the hospital. It may be a suitable tool for surveillance since it is not resource demanding and not sotime consuming.

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REFERENCES

1. European Centre for Disease Prevention and Control. Point prevalence survey of healthcare-associated infections and antimicrobial use in European acute care hospitals. 2016.
2. Centers for Disease Control and Prevention. Procedure-associated Module Surgical Site Infection. 2018.
3. Folkehelse instituttet. NOIS-5, mal for overvåking av infeksjon i operasjonsområdet 2014 [Available from: https://www.fhi.no/globalassets/dokumenterfiler/helseregistre/nois/nois- 5-infeksjon-i-operasjonsomrade-mal-januar-2014-pdf.pdf.
4. Allegranzi B, Bagheri S, Combescure C, Graafmans W, Attar H, Donaldson L, et al. Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. *Lancet*. 2011;377(9761):228-41.
5. GlobalSurg Collaboration. Surgical site infection after gastrointestinal surgery in high- income, middle-income, and low-income countries: a prospective, international, multicentre cohort study. *Lancet Infect*

Dis. 2018;18(5):516-25.

6. Anderson D. Overview of Control Measures for Prevention of Surgical Site Infection in Adults2018. Available from: https://www. uptodate. com/ contents/ overview-of-control- measures-for-prevention-of-surgical-site-infection-in-adults.
7. Leaper DJ, Edmiston CE. World Health Organization: global guidelines for the prevention of surgical site infection. *J Hosp Infect.* 2017;95(2):135-6.
8. Allegranzi B, Garcia G, Castillejos CK, Kelley E, Mathai E. Report on the Burden of Endemic Health Care-Associated Infection Worldwide. 2011.
9. Shrestha S, Shrestha R, Shrestha B, Dongol A. Incidence and risk factors of surgical site infection following cesarean section at Dhulikhel Hospital. *Kathmandu Univ Med J (KUMJ).* 2014;12(46):113-6.
10. Suwal A, Shrivastava VR, Giri A. A prospective study of wound infections after laparotomy in obstetrics and gynaecology department. *Nepal Med Coll J.* 2012;14(4):267-70.
11. Giri S, Kandel BP, Pant S, Lakhey PJ, Singh YP, Vaidya P. Risk factors for surgical site infections in abdominal surgery: a study in Nepal. *Surg Infect (Larchmt).* 2013;14(3):313-8.
12. Chaudhary R, Thapa SK, Rana JC, Shah PK. Surgical Site Infections and Antimicrobial Resistance Pattern. *J Nepal Health Res Counc*. 2017;15(2):120-3.
13. Giri BR, Pant HP, Shankar PR, Sreeramareddy CT, Sen PK. Surgical site infection and antibiotics use pattern in a tertiary care hospital in Nepal. *J Pak Med Assoc.* 2008;58(3):148-51.
14. Shrestha B, Pokhrel B, Mohapatra T. Study of nosocomial isolates of Staphylococcus aureus with special reference to methicillin resistant S. aureus in a tertiary care hospital in Nepal. *Nepal Med Coll J*. 2009;11(2):123-6.
15. Shrestha B, Pokhrel BM, Mohapatra TM. Antibiotic susceptibility pattern of nosocomial isolates of staphylococcus aureus in a tertiary care hospital, Nepal. *J Nepal Med Assoc (JNMA)*. 2009;48(175):234-8.
16. Parajuli NP, Acharya SP, Mishra SK, Parajuli K, Rijal BP, Pokhrel BM. High burden of antimicrobial resistance among gram-negative bacteria causing healthcare associated infections in a critical care unit of Nepal. *Antimicrob Resist Infect Control.* 2017;6:67.
17. Centers for Disease Control and Prevention. Procedure-associated Module Surgical Site Infection. 2018.
18. Ortega G, Rhee DS, Papandria DJ, Yang J, Ibrahim AM, Shore AD, et al. An evaluation of surgical site infections by wound classification system using the ACS-NSQIP. *J Surg Res.* 2012;174(1):33-8.
19. Shrestha S, Wenju P, Shrestha R, Karmacharya RM. Incidence and Risk Factors of Surgical Site Infections in Kathmandu University Hospital, Kavre, Nepal. *Kathmandu Univ Med J (KUMJ).* 2016;14(54):107-11.
20. Gastmeier P, Brauer H, Sohr D, Geffers C, Forster DH, Daschner F, et al. Converting incidence and prevalence data of nosocomial infections: results from eight hospitals. *Infect Control Hosp Epidemiol*. 2001;22(1):31-4.
21. Ustun C, Hosoglu S, Geyik MF, Parlak Z, Ayaz C. The accuracy and validity of a weekly point-prevalence survey for evaluating the trend of hospital-acquired infections in a university hospital in Turkey. *Int J Infect Dis*. 2011;15(10):e684-7.
22. Zarb P, Coignard B, Griskeviciene J, Muller A, Vankerckhoven V, Weist K, et al. The European Centre for Disease Prevention and Control (ECDC) pilot point prevalence survey of healthcare-associated infections and antimicrobial use. *Euro Surveill.* 2012;17(46).
23. European Centre for Disease Prevention and Control. Surveillance of surgical site infections in Europe. 2013.
24. Armstrong D. Risk factors for impaired wound healing and wound complications 2018. Available from: https://www.uptodate.com/contents/risk-factors-for-impaired-wound-healing- and-wound- complications? section Name=Surgical%20site%20 infection&topicRef=4044&anchor=H77899 3556&source=see_ link#H778993556.
25. Hafez S, Saied T, Hasan E, Elnawasany M, Ahmad E, Lloyd L, et al. Incidence and modifiable risk factors of surveillance of surgical site infections in Egypt: a prospective study. *Am J Infect Control*. 2012;40(5):426-30.
26. Khairy G KA, Al-Dohayan A et al. Surgical Site Infection in a Teaching Hospital: A Prospective Study 2011. Available from: https://www.sciencedirect.com/science/article/pii/S165836121170172X.
27. Nwankwo E, Edino S. Seasonal variation and risk factors associated with surgical site infection rate in Kano, Nigeria. *Turk J Med Sci*. 2014;44(4):674-80.
28. Vegasi A JV, Garcia M. Nosocomial infection in surgery wards - a controlled study of increased duration of hospital stays and direct cost of hospitalization. 1993. 50.
29. Whitehouse JD, Friedman ND, Kirkland KB, Richardson WJ, Sexton DJ. The impact of surgical-site infections following orthopedic surgery at a community hospital and a university hospital: adverse quality of life, excess length of stay, and extra cost. *Infect Control Hosp Epidemiol*. 2002;23(4):183-9. 51.
30. Shepard J, Ward W, Milstone A, Carlson T, Frederick J, Hadhazy E, et al. Financial impact of surgical site infections on hospitals: the hospital management perspective. *JAMA Surg.* 2013;148(10):907-14.
31. Malone DL, Genuit T, Tracy JK, Gannon C, Napolitano LM. Surgical site infections: reanalysis of risk factors. *Journal of Surgical Res.* 2002; 103(1):89-95.
32. Laxmi T. Rising Cesarean Section Rates in Nepal: Question of safety and Integrity on Obstetric Emergency Practice. *Journal of Gynecology and Womens Health.* 2017;7(4).
33. World Health Organization Geneva. WHO's first global report on antibiotic resistance reveals serious, worldwide threat to public health 2014. Available from: https://www.who.int/ mediacentre/ news/releases/2014/amr-report/en/.
34. Chhetry M SS, Banerjee B. Risk factors for post caesarean surgical site infection at a tertiary care center in Eastern Nepal. *Journal of College of Medical Sciences-Nepal*. 2017.
35. Wloch C, Wilson J, Lamagni T, Harrington P, Charlett A, Sheridan E. Risk factors for surgical site infection following caesarean section in England: results from a multicentre cohort study. *BJOG*. 2012;119(11):1324-33.

Effect of Different Maternal Positions on Reactivity of Non-Stress Test and Maternal Physiological Parameter among Pregnant Women attending Dhulikhel Hospital

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ABSTRACT

Background

The evaluation of the antenatal fetal heart rate pattern with electronic fetal monitoring is a widely accepted screening test of fetal wellbeing. Maternal position during non-stress test (NST) influences the hemodynamics of maternal and feto-placental circulation.

Objective

To determine the effects of different maternal positions on non-stress test.

Method

A true experimental cross over design was conducted in NST assessment room of Dhulikhel Hospital, Kathmandu University Hospital. A total of 126 women were randomly assigned to Group A (left lateral first, 63 and Group B (semi fowler first, 63) Logistic regression, McNemar Test and paired t-test were used for analysis.

Result

There is significant increment in maternal physiological parameters like systolic and diastolic BP and pulse rate in semi fowler position in comparison to left lateral position.There was statistically significant difference in mean systolic blood pressure, mean diastolic blood pressure and pulse rate with different position of mother (p=<0.001, p=<0.001 and p=<0.001). There is no significant association between maternal position and reactivity of non-stress test. There is no significant association between sequence of maternal position and change in reactivity of non-stress test. The mean reactivity time in left lateral position was slightly higher (8.93±4.40) than mean reactivity time in semi fowler position (8.28±4.34). However this difference is not statistically significant.

Conclusion

The semi-fowler position adopted for non-stress test by the women demonstrated a favorable maternal physiological parameter than in left lateral position. Hence semi fowler position can be encouraged as an alternative position that can be used for non-stress test, based on the preference of the pregnant women.

KEY WORDS

Maternal position, Non stress test, Physiological parameters

INTRODUCTION

Pregnancy is a normal biological event; it is a period when the lines of health and illness can become blurred. Even a slight deviation from the mother's normal physiology can threaten her wellbeing and that of the fetus.[1] The evaluation of the antenatal fetal heart rate pattern with electronic fetal monitoring is a widely accepted screening test of fetal well-being.[2] Non stress test is basically an electronic monitoring of fetal heart rate response to the fetal movements.[3] The major problem encountered in the application of NST in clinical practice is obtaining erroneous non-reactive NST results when, indeed, the fetus is healthy and oxygenation is sufficient.[1] There are certain factors that affect the reactivity as well as time to achieve reactivity during non-stress test i.e. maternal position, diet, exercise, manual stimulation, vibroacoustic stimulation, sleep cycle of baby.[3] These factors can contribute to false positive results and increase the time spent performing tests. One of them which health professional can control is maternal position.[4] Maternal position during NST influences the hemodynamics of maternal and feto-placental circulation.[2] Unfortunately, in Nepal, there are no standard, evidence-based guidelines for NST application. However, the maternal position during the testing is important element that should be part of practice guidelines. Hence, this study aimed to determine the effect of maternal position on non-stress test and maternal physiological parameters and to identifyalternative maternal positions during the test to provide optimum comfort for the pregnant women.

METHODS

True experimental cross over study design was used to determine the effects of different maternal positions on reactivity of non-stress test from the pregnant women attending NST assessment room of Dhulikhel Hospital, Kathamndu University Hospital from 10th December 2017 to 2nd February 2018. The pregnant women who arrived at NST assessment room of Dhulikhel Hospital, Kathamndu University Hospital were assessed for eligibility. The total 126 eligible pregnant women were randomly distributed in either group A or group B. Total of 63 pregnant women in Group A and 63 in Group B were distributed. First participant was allocated by using lottery methods to choose either Group A or Group B. Then other participants were alternately assigned to position strategy A or B. In Group A position strategy, left lateral position was given first followed by semi fowler position; whereas in Group B strategy, semi fowler position was given first followed by left lateral position.

The inclusion criteria were:

- Pregnant woman of 32 to 42 weeks of gestation
- Referred to NST assessment room from ANC OPD for NST
- Singleton pregnancy
- Intact membranes

The exclusion criteria were:

- Pregnant woman with history of oligohydraminous or polyhydraminous
- Intrauterine growth retardation
- Alcohol or barbiturate derivatives intake during the last 24 hours
- Smoking during the last 2 hours
- Known fetal anomalies from ultrasonography

The tools used for data collection were socio-demographic data and pregnancy related information, maternal physiological parameter monitoring chart and observational findings of non-stress test. The protocol was approved by Institutional Review Committee, Kathmandu University School of Medical Sciences. Prior to data collection, each respondent was explained about the purpose of the study.Written informed consent was taken from all the pregnant women. Voluntary participation of the respondent was carried out. Collected data was coded and entered in SPSS version 20.0. Data was analyzed using simple descriptive statistical method (frequency, mean) and percentage. Logistic regression was used to assess the reactivity differences between two groups and McNemar Test was used to assess the reactivity difference between different maternal position and paired t-test was used to compare the maternal physiological parameters and to assess differences in reactivity periods between different maternal positions.

RESULTS

As per socio-demographic data summarized in the table 1, in Group A out of 63 pregnant women, almost three-fourth (76.2%) were of age 20-30 years old with mean age of 26.02±4.71 (mean ± SD). The age of pregnant women ranges from 17 to 34 years. More than one third (39.7%) of pregnant women were primigravida while almost half (52.4%) of them were term. While in Group B out of 63 pregnant women, majority (85.8%) was of age 20-30 years old with mean age 25.62±3.98 (mean ± SD). The age of pregnant women ranges from 17 to 36 years. More than half (52.4%) of pregnant women were primigravida while near to half (47.6%) of them were preterm. The table shows that pregnant women in both groups have similar characteristics.

Table 2 shows that there is increment in maternal physiological parameters like systolic and diastolic BP and pulse rate in semi fowler position in comparison to left lateral position.

Table 3 shows that there was statistically significant difference in mean systolic blood pressure, mean diastolic blood pressure and pulse rate with different position of

Table 1. Socio-demographic and pregnancy related information (n=126)

Variables	Group A (n=63) n(%)	Group B (n=63) n(%)	p value
Age			
<20	5 (7.9)	4 (6.3)	0.345
20-30	48 (76.2)	54 (85.8)	
>30	10 (15.9)	5 (7.9)	
Gravida			
Primigravida	25 (39.7)	33 (52.4)	0.496
Secundigravida	23 (36.5)	18 (28.6)	
Multigravida	14 (22.2)	12 (19.0)	
Grand multigravida	1 (1.6)	-	
Weeks of gestation			
Preterm (<37 weeks)	23 (36.5)	30 (47.6)	0.198
Term (37-40 weeks)	33 (52.4)	23 (36.5)	
Postdated (>40 weeks)	7 (11.1)	10 (15.9)	
Presence of problems during this pregnancy			
Yes	29 (46.0)	33 (52.4)	0.476
No	34 (54.0)	30 (47.6)	
Presence of stress			
Yes	1 (1.6)	1 (1.6)	1.000
No	62 (98.4)	62 (98.4)	

Table 2. Mean scores for maternal physiological parameters in left lateral and semi fowler position during non-stress test

Physiological parameters	Left lateral position (Mean± SD)			Semi fowler position (Mean± SD)		
	0 min	7 min	14 min	0 min	7 min	14 min
Systolic BP (mm of Hg)	105.00 ±14.40	103.41 ±14.92	103.56 ±14.65	113 ±12.42	111.03 ±11.15	111.08 ±11.84
Diastolic BP (mm of Hg)	64.13 ±13.69	63.17 ±13.30	63.10 ±12.80	70.95 ±10.30	69.52 ±10.10	70.21 ±10.83
Pulse rate (beats/min)	89.20 ±12.71	92.18 ±12.17	88.16 ±11.90	91.29 ±13.15	92.17 ±12.17	91.94 ±11.68
Respiration (breath/min)	23.81 ±3.36	23.30 ±3.00	23.46 ±2.78	23.06 ±3.20	23.24 ±3.17	23.59 ±2.97

Table 3. Difference in maternal physiological parameters in relation to maternal position

Physiological parameters	Left lateral position (Mean± SD)	Semi fowler position (Mean± SD)	t	p value
Systolic BP (mm of Hg)	103.99±14.07	111.89±11.01	-10.917	<0.001
Diastolic BP (mm of Hg)	63.46±12.55	70.22±9.61	-8.307	<0.001
Pulse rate (beats/min)	89.84±11.65	91.80±11.66	-5.159	<0.001
Respiration rate (breath/min)	23.52±2.44	23.29±2.41	1.045	0.298

mother (p=<0.001, p=<0.001 and p=<0.001).

Table 4 shows that out of 126 pregnant women, semi fowler position was addressed to be more comfortable (79%) in

Table 4. Optimum comfort among pregnant women in different maternal positions (n=126)

Position	Comfortable	Uncomfortable
Left lateral position	**91 (72%)**	**35 (28%)**
Semi fowler position	100 (79%)	26 (21%)

compared to left lateral position (72%).

Table 5 indicates that in relation to position only, independent of sequence, 15% had nonreactive NST in left lateral position and 13% had nonreactive results in semi

Table 5. Reactivity of NST with different maternal position

Position	Non stress test		Total	p value
	Reactive	Nonreactive		
Left lateral	107 (85%)	19 (15%)	126	0.856
Semi fowler	109 (87%)	17 (13%)	126	
Total	216	36	252	

fowler position. However, it is not statistically significant.

Table 6 indicates that there is no significant association between sequence of maternal position and change in

Table 6. Change in reactivity of NST with sequence of position

Category	Change in reactivity of NST					
	Reactive to Non reactive		Non reactive to Non reactive		Non reactive to Reactive	
	AOR (95% CI)	p value	AOR (95% CI)	p value	AOR (95% CI)	p value
Group A	0.73 (0.16-3.46)	0.696	0.49 (0.04-5.58)	0.565	1.06 (0.43-2.66)	0.888
Group B	Reference		Reference		Reference	

The reference category is Reactive to Reactive
Group A: Left lateral to semi fowler, Group B: Semi fowler to left lateral
CI: Confidence Interval
AOR: Adjusted Odds Ratio

reactivity of NST.

Table 7 shows that mean reactivity time in left lateral position was slightly higher (8.93±4.40) than mean reactivity time in semi fowler position (8.28±4.34). However this difference

Table 7. Difference in reactivity time of NST in relation to maternal position

Position	Reactivity time (in minutes) Mean ± 1SD	T	p value
Left lateral	8.93±4.40	0.504	0.615
Semi fowler	8.28±4.34		

is not statistically significant.

DISCUSSION

This true experimental cross over study found that there was increment in systolic and diastolic blood pressure and pulse

rate in semi fowler position in comparison to left lateral position whereas there was not increment in respiratory rate in semi fowler position in comparison to left lateral position. Some of the findings corroborate the findings reported by Rachel et al. who conducted the cross over design to compare the maternal physiological parameters of pregnant women during NST monitoring and found that there was significant reduction in maternal physiological parameters like systolic and diastolic blood pressure, pulse rate and respiration in lateral position in comparison to sitting position.[5] In this study, the maternal physiological parameters such as systolic blood pressure, diastolic blood pressure and pulse rate in semi fowler position were found to be more favorable and within normal range than in left lateral position which was similar as reported by Rachel et al.[5] The study showed that the mean difference obtained for maternal physiological parameters such as systolic blood pressure was 8.0 mm of Hg, 7.62 mm of Hg and 7.52 mm of Hg; diastolic blood pressure was 6.82 mm of Hg, 6.35 mm of Hg and 7.11 mm of Hg; pulse rate was 2.09 bpm, -0.01 bpm and 3.78 bpm and respiration rate was -0.75 breaths/min, -0.06 breaths/min and 0.13 breaths/min at 0 min, 7 min and 14 min time interval between semi fowler and left lateral position. The findings of present study was supported the study conducted by Tamas et al., where the parameters of non stress test were correlated to hemodynamics indices.[6]

This study showed that out of 126 pregnant women, more of them (79%) addressed semi fowler position to be comfortable compared to left lateral position (72%). However the findings is different with the study done by Kaur et al., which revealed that left lateral position is more preferable during NST and it can be applied in daily practice for time effective evaluation and comfort.[3] It might be as in present study, left lateral position was compared with semi fowler however Kaur et al. had compared left lateral position with sitting position.

The present study showed that there is no significant association between sequence of maternal position and NST results. The present study was contrast to the study conducted by Nathan et al., which showed that pregnant women who are examined in the left lateral position first were 1.8 times more likely (p<.05) to have change from non reactive to a reactive result when the position was switched after 10 minutes than were those who were examined semi fowler position first.[4] It might be because in present study there is no gap in between the sequence of the position whereas in the study done by Nathan et al. the second NST was performed in subsequent visit.

When analyzed in relation to position only, independent of sequence, 15% had non reactive NST in left lateral position and 13% had non reactive results in semi fowler position. However there is no significant association between maternal position and NST results. This finding is in line to the study done by Bashtian et al. which showed that there was no significant correlation between maternal positions (semi fowler and left lateral position) with the results of NST.[7] This finding is also coherent with the study by Kaur et al., which showed that there was no significant difference in reactivity of non stress test in left lateral and sitting position.[3] While this finding is different from the findings as reported by Nathan et al. which showed that there was more non reactivity in the left lateral position than in semi fowler position (45.0% vs 34.6%), p-0.001.[4] It might be because in present study there is no gap in between the sequence of the position so that reactivity results in first position might have been continued in second position also.

The study findings demonstrated that mean reactivity time in left lateral position was 8.93±4.40 (mean±SD) and mean reactivity time in semi fowler position was 8.28±4.34 (mean±SD) which showed there is no difference between maternal position and time to reactivity in NST. This finding is in coherent with the result of the study done by Alus et al. which also showed that there were no statistically significant differences among the four study group (sitting up, semi fowler, supine left and supine) as F=2.05 and p= 0.107).[1] However the findings contrast from the study of Kaur et al., which showed that non stress test performed in left lateral position significantly required less time to achieve reactivity as compared to sitting position as t= 5.96 and p < 0.001.[3] And the findings also contrast from the study of Nathan et al. which showed that the semi-fowler position is a superior position for conducting a non stress test and use of this position could decrease the need for prolonged monitoring, thus leading to a more time-effective evaluation of patients at risk.[4] It might be because there is still controversy in the best maternal position which requires less time to achieve reactivity.

The data revealed that there is statistically significant difference in maternal physiological parameters like systolic blood pressure (p<0.001), diastolic blood pressure (p<0.001) and pulse rate (p<0.001) in between left lateral and semi fowler position during NST monitoring. The finding are similar to the results reported by Racheal et al. which also showed that there was statistically significant difference in the maternal physiological parameters like systolic blood pressure (p<0.01), diastolic blood pressure (p<0.01) and pulse rate (p<0.01).[5]

Several issues and limitations should be considered. Participants were allowed to change their position without having any interval so if the result is reactivity in first position, its residual effect may remain in next position which might give false results.

CONCLUSION

The semi fowler position adopted for NST by the women demonstrated a favorable maternal physiological parameter than in left lateral position. Hence semi fowler

position can be encouraged as an alternative position that can be used for NST, based on the preference of the pregnant women. However we would like to recommend that the study may be replicated by having some period of interval between the sequence of position change so that if the reactive results in first position, may not give residual effect in next position which might give false results. The study may be replicated by comparing favorable maternal positions with respect to fetal position which had not been addressed in the present study.

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REFERENCES

1. Aluş M, Okumuş H, Mete S, Güçlü S. The effects of different maternal positions on non-stress test: An experimental study. *J Clin Nurs*. 2007;16(3):562-8.
2. Sekhavat L, Tabatabaei A. The Effect of Different Maternal Position on Nonstress Test (NST). *World Appl Sci J*. 2014;32(5):853–6.
3. Kaur S, Saha PK. A comparative study to assess the effect of different Maternal position on reactivity and time consumption for non stress test. *Nurs Midwifery Res J.* 2015;11(4):145–52.
4. Nathan EB, Haberman S, Burgess T, Minkoff H. The relationship of maternal position to the results of brief nonstress tests: A randomized clinical trial. *Am J Obstet Gynecol.* 2000;182(5):1070–2.
5. Rachel S, Karkada S , Fernandes S BP. Original article Materno foetal physiological parameters in sitting and left lateral position during non - stress test (NST) monitoring in pregnancy: a cross over study. *Manipal J Nurs Heal Sci.* 2015;1(2):83–6.
6. Tamas, P, Szilagyi, A, & Jeges S. Effects of maternal central hemodynamics on fetal heart rate patterns. *Acta Obstet Gynecol*. 2007;86:711–4.
7. Bashtian H., Khameneh SS. KH. The relationship between maternal position and results of non stress test among high risk pregnancy women. *J Qazvian Universxity Med Sci.* 2006;10(3):54–8.

Knowledge on Modern Contraceptive Methods and Usage among Married Women of Reproductive Age in Selected Ward of Dhulikhel Municipality, Kavre

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ABSTRACT

Background

Family planning allows people to attain their desired number of children and determine the spacing of pregnancies.

Objective

To assess the knowledge on modern contraceptive methods and usage among married women of reproductive age.

Method

A descriptive cross sectional research study was conducted in Dhulikhel Municipality of Kavre district. Convenient sampling technique was used for data collection from 157 married women of reproductive age. Structured questionnaire was developed and interview techniques was used for data collection. For data analysis, Statistical Package for Social Science Version 20 was used for descriptive (Frequency and percentage) and inferential statistics (Chi- Square test).

Result

The age of the respondents ranged from 18 to 49 years with the mean age of 33.60 ± 6.48. The majority (99.4%) of respondents have heard about modern contraceptive device. Among them nearly (78%) of respondents have known about Depo Provera, 88% of respondents have knowledge on importance of family planning. Eighty four percent of respondents ever used of any one device of modern family planning and 61% of respondents were currently used modern contraceptive device. Among non users majority (85%) of them said it was not necessary to use and Forty one percent of respondents have used Depo Provera as modern contraceptive device. More than half of the respondents (56.7%) had good knowledge on family planning whereas nearly half (43.3%) had poor knowledge on modern family planning methods. Level of knowledge on modern family planning methods was significantly associated (p=0.008) with religion of respondents.

Conclusion

This study concluded that Depo Provera is the most common modern contraceptives devices among respondents.

KEY WORDS

Knowledge, Modern contraceptive device, Usage

INTRODUCTION

Family planning reinforces people's rights to determine the number and spacing of their children. By preventing unintended pregnancy, family planning/contraception prevents deaths of mothers and children.[1] All couples and individuals have the basic human right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so.[2]

Since the beginning, the Government of Nepal (GON) has implemented various approaches to fulfill family planning needs of individuals and couples. Family planning is now an integral part of the health system of Nepal. Despite political instability and armed conflict in the last decade, Nepal has made remarkable progress in the use of modern contraceptives methods, especially during the period between 1996 and 2006.[3] Fifteen percent of married women want to delay childbearing (delay first birth or space another birth) for at least two years. Additionally, 61% of married women do not want any more children. Women who want to delay or stop childbearing are said to have a demand for family planning. The total demand for family planning among married women in Nepal is 76%. More than half (53%) of married women age 15-49 use any method of family planning among them 43% use a modern family planning method and 10% use a traditional method. The use of any method of family planning by married women has nearly doubled from 29% in 1996 to 53% in 2016. Similarly, modern method use has increased from 26 to 43% during the same time period, but has not changed since 2006. Fifty-six percent of the demand for family planning in Nepal is satisfied by modern methods.[4]

METHODS

A descriptive cross sectional research study was conducted in Dhulikhel Municipality of Kavre District from 26th November to 31st December 2017. Ethical approval was taken from Institutional Review Committee (IRC) of Kathmandu University School of Medical Sciences.

A structured questionnaire was developed by researcher herself after literature review, consulting subject experts and colleagues. The questionnaire was pretested among reproductive married women in one of the ward of Dhulikhel and required modification was done which was not included in the main study. Before the data collection, the purpose of the study was informed and informed consent was taken from reproductive married women. For data collection, one hundred fifty seven married reproductive aged group women were selected purposively for the study. Data was collected by face to face interview technique. Data was coded and entered in SPSS 20 version. Descriptive and inferential statistics method like frequency, percentage and Chi- square test were used.

RESULTS

Table 1 shows the age of the respondents ranged from 18 to 49 years with the mean age of 33.60±6.48. Regarding education forty percent of respondent's education level was primary education. More than half of the respondents (68.2%) were involved in agriculture as their occupation and ninety percent of the respondents were Hindu.

Table 1. Demographic information of respondents (n= 157)

Variables	Frequency (%)
Age in years	
≤ 20	2 (3.1)
21-25	20 (31.4)
26- 30	33 (51.8)
31- 35	43 (67.5)
36- 40	34 (53.3)
> 40	25
Mean age : 33.60 ± 6.48	
Education	
Illiterate	53 (33.8)
Literate only	16 (10.2)
Primary	63 (40.1)
Secondary	20 (12.7)
Higher secondary	5 (3.2)
Occupation	
Housemaker	47 (29.5)
Agriculture	107 (68.2)
Business	2 (1.2)
Service	1(0.6)
Religion	
Hindu	142 (90.4)
Buddhist	9 (5.7)
Christian	6 (3.8)

Table 2 shows almost all of the respondents (99.4%) have heard about family planning. Among them majority (78%) of respondents have known about Depo Provera. Around 88% of respondents said that importance of family planning to avoid unwanted pregnancy. Regarding the sources of information among respondents majority 68% got information from television/radio. Seventy six percent of respondents have heard about side effects of family planning and among them 48% of respondents have known about irregular bleeding as most common side effects of family planning.

Table 3 indicates that majority (84.1%)of respondents ever used of any one device of modern family planningand 61.8% of respondnets were currently used modern family planning device. Among non users majority (85%) of the them said it was not necessary to use.

Table 2. Knowledge on modern contraceptive method (n= 157)

Variables	Frequency (%)
Heard about modern contraceptive	
Yes	156 (99.4)
No	1 (0.6)
***Knowledge on different modern contraceptive devices**	
Depoprovera	122 (77.7)
Oral pills	62 (39.5)
Condom	47 (29.5)
Norplant	51 (32.5)
Copper –T	47 (29.5)
Vasectomy	44 (28.0)
Tubectomy	52(33.1)
***Importance of modern contraceptive devices**	
Avoid unwanted pregnancy	138 (87.9)
Bring about wanted birth	22 (14.0)
Maintain interval between birth	35 (22.3)
Determine the number of children	20 (12.7)
Others (healthy mother and children)	6 (9.4)
Do not know	3 (1.9)
***Source of information about modern contraceptive devices**	
Television / Radio	106 (67.5)
News paper/ books	27 (`7.2)
Friends/ relative	13 (8.3)
Health personnel	49 (31.2)
Others	1 (0.6)
***Information on side effects of modern contraceptive devices**	
Yes	120 (76.4)
No	37 (23.6)
***Information on different side effects of modern contraceptive devices**	
Irregular bleeding	76 (48.4)
Spotting	7 (4.5)
Discomfort during intercourse	1 (0.6)
Dizziness	26 (16.5)
Headache	52 (33.1)
Nausea/vomiting	37 (23.6)
Change in weight	45 (28.7)
Back pain	23 (14.6)
Abdominal pain	21 (13.6)
Weakness	25 (15.9)
Anemia	4 (2.5)

* Multiple responses

Fig. 1 depicts that eighteen percent of user age group were belongs to 31 to 35 years.

Fig. 2 shows that 41.2% of respondents have used depoprovera whereas, other used vasectomy (20.6%) Very few of them (2.0%) used condom.

This study shows that more than half of the respondents (56.7%) had good knowledge on family planning whereas nearly half (43.3%) had poor knowledge (Table 4).

Table 3. Uses on modern family planning method (n= 157)

Uses on modern family planning method	Frequency (%)
Ever used modern family planning	
Yes	132 (84.1)
No	25 (15.9)
Currently used modern family planning	
Yes	97 (61.8)
No	60 (38.2)
Reasons for not using modern Family planning devices (n=60)	
Not necessary to use	51 (85)
Not interested to use	6 (10)
Not allowed by husband	3 (5)

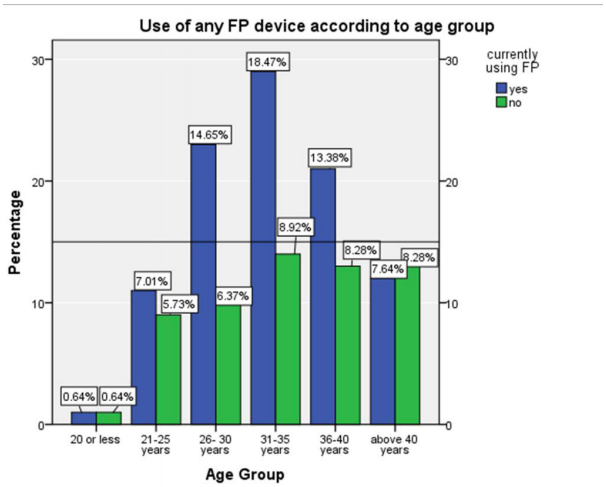

Fig. 1 Use of Modern family planning device according to age (n= 157)

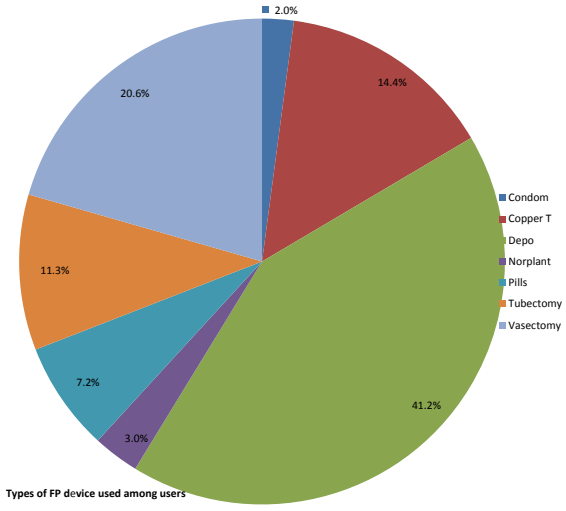

Fig. 2 Types of modern family planning devices used (n= 97)

Table 5 indicates that among selected socio demographic variables, there is significant association between level of knowledge on modern family planning and religion of the respondents (p=0.008).

Table 4. Level of knowledge on Modern Family Planning (n=157)

Knowledge score	Frequency (%)
Good knowledge	89 (56.7)
Poor knowledge	68 (43.3)

Table 5. Association between socio demographic variables and level of knowledge on Modern family planning method (n=157)

Variables	Level of knowledge		p-value
	Poor	Good	
Religion			
Hindu	85(59.8)	57(40.1)	
Buddhist	4(44.4)	5(55.5)	0.008
Christian	0	6(100)	
Total	89(56.7)	68(43.3)	
Education			
Illiterate	28(52.8)	25(47.1)	
Literate	7(43.7)	9(56.2)	
Primary	43(68.2)	20(31.7)	0.118
Secondary	8(40)	12(60)	
Higher secondary	3(60)	2(40)	
Total	89 (56.7)	68(43.3)	
Occupation			
Home maker	29(61.7)	18(38.2)	
Agriculture	60(56.0)	47(43.9)	0.193
Business	0	2(100)	
Service	0	1(100)	
Total	89(59.7)	68(43.3)	

DISCUSSION

The present study found that the mean age of the respondents was 33.60 years, which was higher (31.55) than the study conducted in Sindhupalchok, Nepal, 2016.[5]

Knowledge of contraceptive methods is an important factor for increasing uptake of FP services.[6] Almost cent percent (99.7%) of the respondent heard about modern contraceptive which is similar to NDHS which mentioned that the knowledge is nearly universal.[4] Radio, television and posters are three main channels for FP messages that the majority of the population has been exposed to, which is similar as in this study.[6] Enquiring on types family planning majority of them had heard about temporary methods such as 77.7% of them had heard about Depo Provera, and less than that, 39.5% of them heard about oral pills, and 33.1% of the had heard about permanents method. According to NDHS, condoms, pills, and injectable are the universe of possible modern methods.[4]

There are several importance of family planning but majority of women knew planning is to avoid unwanted pregnancy and very few mentioned family planning are important to bring about wanted birth and determine the number of children.[7] Some of them even mentioned that family planning is important for healthy mother and children.

Many barriers prevent the use of family planning and result in unplanned pregnancies.[9] During informed choice on family planning, women should be informed about the possible side effects of family planning devices. With regard to side effects of contraception, many women in this study could name specific side effects; the more commonly reported side effects, like irregular bleeding and headache, change in weight, nausea and vomiting.

Globally, use of modern contraception has risen slightly, from 54% in 1990 to 57.4% in 2015.[7] According to NDHS 2016, More than half (53%) of married women age 15-49 use any method of family planning.[4] In this study also 84.1% of women have ever used family planning and 61.8% of them are currently using any of the family planning devices. Same study NDHS, mentioned that Female sterilization is the most popular modern method but in this study, 14.4% of them had done vasectomy and 11.3% of them had done tubectomy.[4] Majority of women in this study used temporary derives such as Depo-Provera (41.2%), Copper T (14.4). This is also lower than the study conducted in Kakani VDC, Nuwakot district, Nepal, 2011.[8]

Among the non-users of FP devices them main reason women mentioned was not necessary to use (85%) and very few of them also mentioned the reason as not interested to use them and husband not allowed to use it (5%).

This study found that nearly 57% of respondents had good knowledge on modern family planning which was slightly lower than studies done in different parts of Nepal.[9] This might be due to difference in study settings as our study was done in semi-urban area and the other study was done in urban areas of Nepal.

Level of knowledge was significantly associated with religion in this study. However, similar findings were not found in other studies with similar types of religion among respondents. Knowledge on the modern family planning was not statistically significant with education in this study which contradicts the study conducted in Kakani VDC, Nuwakot district, Nepal, 2011.[8] and in Jimma Zone, Ethiopia.[10]

CONCLUSION

In the study, almost all of respondent had heard about modern contraceptive method. More than half of the respondents had good knowledge on modern family planning methods.

Current users of modern contraceptive was 61.8%. Among non users majority (85%) of the them said it was not necessary to use and forty one percent of respondents

have used Depo provera as modern contraceptive method. Level of knowledge on modern family planning methods was significantly associated with religion of respondents.

This study concluded that Depo Provera is the most common modern contraceptives devices among respondents.

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REFERENCES

1. Gulani K.K. Community Health Nursing Principles & Practice. 2nd edition; New Delhi: Jaypee.2013
2. WHO. Framework for ensuring human rights in the provision of contraceptive information and services. 2014.
3. Shrestha DR, et. al. Emerging Challenges in Family PlanningProgramme in Nepal. *J Nepal Health Res Counc*. 2012 May;10(21):108-12
4. Ministry of Health New ERA & DHSProgram.Nepal Demographic and Health Survey 2016. Key Findings.2017.
5. Upadhayay A, Shah SK, Thapa DK, Ts S, Ghimire R, Dahal HR. et al. Knowledge, Attitudes & Practice of family planning method among married women of reproductive age group in Earth quake displaced population of Sindhuplachok, district, Nepal.*American Journal of Public Health Research*. 2017;5(1):1-5.
6. Government of Nepal, Ministry of Health and Population. National Family Planning Costed Implementation Plan 2015-2020. November 2015.
7. WHO.Family planning/Contraception, fact sheet. Available from: https://www.who.int/en/news-room/fact-sheets/detail/family-planning-contraception
8. K. Sushmita and K. Kshitij. Knowledge and practice of family planning methods among married women of reproductive age of Kakani VDC, Nuwakot district, Nepal. *Al Ameen J Med Sci.* 2016; 9(1):24-9.
9. Adhikari R. Demographic, socio-economic, and cultural factors affecting fertility differentials in Nepal. *J BMCpregnancy & Child birth.* 2010; October 19.
10. Tilahun T, Coene G, Luchters S, Kassahun W, Leye E, Family planning knowledge, attitude & practice among married couples in Jimma Zone, Ethiopia. *PLOSONE.* 2013;8(4).

Knowledge on Teenage Pregnancy among Adolescents of Rural Nepal

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ABSTRACT

Background

Pregnancy among adolescent women is associated with high risks to both the mother and her child. Pregnancy-related deaths are twice as common among women aged 15–19 years, than women aged in their twenties. Around the world, adolescent pregnancies are more likely to occur in marginalized communities, commonly driven by poverty and lack of education and employment opportunities.

Objective

This study explores teenagers' knowledge on teenage pregnancy.

Method

Schools around different outreach centers of Dhulikhel Hospital and Dhulikhel were included. Structured questionnaire was self-administered in 316 adolescents. Any classes provided during study days from grade 8 to 10 days were involved in the study.

Result

Among the adolescents investigated, their mean age was 14.59±1.22 years and 47.2% were males and 52.8% were females. Regarding the personal reason, 89.6% of adolescents responded ignorance and lack of sex education as the reason of teenage pregnancy. Among them68.4% revealed the media influenceas reason of teenage pregnancy. Concerning the social consequences of teenage pregnancy, 80.7% revealed personal and family stress as the consequences of teenage pregnancy followed by extra burden to family (76.6%), school dropout (75.3%) and community rejection (72.5%). Regarding the best way to prevent teenage pregnancy, majority of the adolescents (93.4%) agreed on sex education as the best way to prevent teenage pregnancy.

Conclusion

Adolescents are aware of reason, consequences and prevention of the teenage pregnancy but still they are the most vulnerable group of population and they should be provided adequate and repeated information to prevent teenage pregnancy.

KEY WORDS

Adolescents, Knowledge, Teenage pregnancy

INTRODUCTION

Pregnancy among adolescent women is associated with high risks to both the mother and her child. Pregnancy-related deaths are twice as common among women aged 15-19 years, than women aged in their twenties.[1] Around the world, adolescent pregnancies are more likely to occur in marginalized communities, commonly driven by poverty and lack of education and employment opportunities.[2] Complications during pregnancy and childbirth are the leading cause of death for 15 to 19 year-old girls globally.[3]

Regarding the high rate of teenage pregnancy in developing countries like Nepal, has been attributed by the factors like lack of knowledge of sexuality, peer group influence, lack of knowledge and/or ineffective use of contraceptives, low socioeconomic status, family instability, early age of marriage and cultural permissiveness.[4]

First pregnancy at an early age is risky. The changes due to pregnancy in adolescence have health consequence not only in adolescence but also over the life-course. Rather, early pregnancy is a consequence of little or no access to school, information or health care.[5] Girls without this knowledge are more likely to have their first live birth before age 18.

So this study explores teenagers' knowledge on teenage pregnancy. The rationale for this study is understanding teenagers' perspective on teenage pregnancy. This study seeks to broaden the framework through which teenage pregnancy is understood and how future interventions and programs will be designed and implemented.

METHODS

This study was descriptive cross-sectional study. Teenagers attending schools nearby outreach centers of Dhulikhel Hospital were involved in the study.The objectives of the study were explained to principals and teachers of every school and permission was obtained from them. The verbal consents were also obtained from the participants on the study days.

Schools of Dhadhing, Bolde, Bahunepati, Hindi, Godamchaur, Kirnetar, Dhungkharka, Solambu and Dhulikhel were included. Self-administered structured questionnaire were administered in 316 adolescents which was prepared through extensive literature reviews as per the objectives of the study and translated to Nepali and pretested at one of the school he outreach which was not included in the study after getting ethical approval from IRC KUSMS. Required modifications were done.

Interested students after explaining objectives were included in the study. Any classes provided during study days from grade 8 to 10 days were involved in the study. On the day of data collection, trained nurses explained about the objectives of the study and verbal consent was taken before starting data collection. Participants were assured strict confidentiality of information, as well as privacy and anonymity. Variables included in the study were, socio-demographic characteristics of adolescents, knowledge on reasons of teenage pregnancy, consequences of pregnancy and prevention of teenage age pregnancy. Responses were multiple responses.

Collected information were entered in the Epidata version 3.1 and extracted to SPSS version 21 for further analysis. Descriptive statistics were summarized into frequency and percentage for categorical variables and the mean and standard deviation for continuous variables.

RESULTS

The mean age was 14.59±1.22 years. Among the adolescents investigated, 47.2% were males and 52.8% were females. More than half of the adolescents (56.6%) were Hindu and 28.8% of them were Tamang. Majorities of adolescents (51.3%) lived in nuclear family.(Table 1)

Table 1. Socio demographic characteristics of adolescents

Socio-demographic Variables	Frequency (%)
Age Min-Max (Mean±SD) 12-18 (14.59±1.22)	
Gender	
Male	149 (47.2)
Female	167 (52.8)
Caste	
Brahamin	61 (19.3)
Chettri	66 (28.8)
Newar	32 (10.1)
Tamang/Magar/Sherpa	91 (28.2)
Other (Danuwar, Yadav, Thami)	66 (20.9)
Religion	
Hindu	179 (56.6)
Buddhist	120 (38.0)
Christians	14 (4.4)
Others	3 (0.9)
Types of family	
Nuclear	162 (51.3)
Joint	138 (43.7)
Missing	16 (5.1)

Regarding knowledge on personal reason of teenage pregnancy, 89.6% of adolescents responded ignorance and lack of sex education as the reason of teenage pregnancy. Whereas, 63.9% of them replied that failure of contraception is the reason of teenage pregnancy. Majority (71.0%) of male adolescents knew not using contraceptive methods properly as the reason of teenage pregnancy but lesser to that only 65.6% of females knew it as a reason. Concerning influence of society and media as the reason

Table 2. Knowledge on reasons of teenage pregnancy

Knowledge on reasons of teenage pregnancy	Male Frequency (%)	Female Frequency (%)	Total Frequency (%)
Personal and Psychological reasons			
Ignorance and lack of sex education	132 (88.6)	151 (91.5)	283 (89.6)
Improper use of contraception	103 (71.0)	99 (65.6)	202 (63.9)
Influence of society and media			
Peer pressure	97 (65.5)	96 (58.9)	193 (61.1)
Alcohol, substance abuse	94 (63.5)	100 (62.1)	194 (61.4)
Media influence	107 (74.3)	109 (71.2)	216 (68.4)
Family reason			
Early marriage	111 (75.0)	124 (76.5)	235 (74.4)
Family desire to have a grandchild	105 (73.9)	127 (82.5)	221 (69.9)
Lack of love and parental guidance	90 (62.5)	101 (65.6)	191 (60.4)
Economic Reason			
Poverty	106 (73.6)	116 (74.8)	222 (70.3)
Maintenance of relationship	98 (68.1)	102 (67.1)	200 (63.3)

of pregnancy, majority (68.4%) of them revealed the media as the reason of teenage pregnancy. Relating to the family reason, 74.4% of adolescents were aware about the early marriage as the as the reason of teenage pregnancy. The 70.3% of adolescents mentioned that poverty as the reason. (Table 2)

Table 3. Knowledge on consequences of teenage pregnancy

Knowledge on consequences of teenage pregnancy	Male Frequency (%)	Female Frequency (%)	Total Frequency (%)
Social consequences of teenage pregnancy			
Extra burden to family	104 (70.3)	138 (84.1)	242 (76.6)
School dropout	108 (75.0)	130 (82.3)	238 (75.3)
Community rejection	98 (65.5)	131 (84.0)	229 (72.5)
Personal and Family stress	122 (85.3)	133 (86.9)	255 (80.7)
Health effects due to early pregnancy			
Premature birth	126 (88.1)	138 (89.0)	264 (83.5)
Difficult labor	125 (86.8)	139 (89.1)	264 (83.5)
Depression and Suicide	116 (81.1)	127 (82.5)	143 (76.9)
Stress	122 (47.8)	133 (52.2)	255 (80.7)

Concerning the knowledge on consequences of teenage pregnancy, majority of adolescents (80.7%) revealed personal and family stress as the consequences of teenage pregnancy followed by extra burden to family (76.6%), school dropout (75.3%) and community rejection (72.5%) as the social consequences,. Regarding these, female adolescents knew more than male adolescents as the consequences of teenage pregnancy. (Table 3)

Regarding the health consequences, majority of them (89%) recognized premature birth and difficult labor at the consequences, 80.7% know stress and 76.9% of identified depression and suicide as health consequence of teenage pregnancy.

Regarding the best way to prevent teenage pregnancy, majority of the adolescents (93.4%) agreed on sex education as the best way to prevent teenage pregnancy and 79.4% of them replied early sex education at home as the prevention. Majority male and female adolescents, 94.4% and 92.9% respectively knew focus on education as preventive strategies at family to prevent teenage pregnancy. The study also revealed that 88.3% of adolescents recognize good parent child relation as the prevention of teenage pregnancy. (Table 4)

Table 4. Knowledge on prevention of teenage pregnancy

Knowledge on prevention of teenage pregnancy	Male	Female	Total
The best way to prevent teenage pregnancy			
Sex education	138 (93.2)	157 (95.2)	295 (93.4)
Early sex education at home	119 (83.2)	132 (86.3)	251 (79.4)
Sex education at school	119 (83.2)	135 (87.7)	254 (80.4)
Absenteeism from sex by teenagers	119 (84.4)	141 (92.2)	260 (82.3)
Acceptance of contraceptive use	122 (83.0)	144 (87.3)	266 (84.2)
Preventive strategies at family			
Disciplines at home	130 (90.9)	141 (91.6)	217 (85.8)
Focus in education	135 (94.4)	144 (92.9)	247 (78.2)
Good parent child relationship	118 (83.1)	133 (86.4)	279 (88.3)

DISCUSSION

Adolescent pregnancy and its consequences represent a major public health concern in many low-middle income countries of the world.[6] To address this issue, sexual and reproductive health services for adolescents are being rolled out in Nepal, but many young people have yet to benefit.[7] The objective of the study was to investigate adolescents' knowledge on reason, consequences and prevention of teenage pregnancy in rural areas of Nepal.

The study revealed that majority adolescents were aware of the reasons of teenage pregnancy. Mostly they know about lack of sex education, early marriage, poverty, media influence are the reasons of teenage pregnancy. The finding of this study is similar as another study which was conducted in Gorkha Nepal, which revealed that the reason of adolescent pregnancy are early marriage, poverty, low lack of family support.[8] According to WHO, lack of knowledge about sex and family planning and the lack of skills to put that knowledge into practice put adolescents

at risk for pregnancy. Effective sexuality education is lacking in many countries.[9] Similarly in this study as well still many adolescents did not know the improper use of contraception, is the reason of teenage pregnancy. In the same way, only few adolescent knew lack of parental guidance peer pressure and use of alcohol can also be the reason of teenage pregnancy.

Adolescents were about aware the social consequences of teenage pregnancy majority of the personal and family stress extra burden to family and school dropout. Similarly a study in Africa and USA teenagers perceived, difficulty in school, blame form friends and family members and feeling guilty are the consequences which is almost similar in this study.[10,11]

Complications from pregnancy and childbirth are the leading cause of death among girls aged 15-19 years in many low- and middle-income countries.[3] This study reveals that adolescents mainly female students were more aware of health consequences of teenage pregnancy: premature birth, difficult labor, and depression which is similar as in the study in Nigeria.[12] The consequences of adolescent pregnancy reverberate throughout the girl's life and for generations' after so adolescents girls should be aware of health consequences of the teenage pregnancy.[13]

For the prevention of teenage pregnancy, the study reveals that adolescents mainly majority female students were aware about the ways to prevent teenage pregnancy. Majority revealed sex education, good parent child relationship, discipline at home and acceptance of contraception as the way to prevent teenage pregnancy. A study in South Africa revealed that adolescents agreed teenage pregnancy can be prevented through abstaining from sex which is similar as in the study.[14]

There has been so much discourse about sex and sexuality education all over the world. Along with that many young people do not seek information or services because they think that they are at little or no risk of health problems.[15] Due to the existence of low parental control and communication about sexual and reproductive issues among divorced parents compared to married ones more teenage agers are getting pregnant.[16]

CONCLUSION

Adolescents are aware of reason, consequences and prevention of the teenage pregnancy but still they are the most vulnerable group of population and they should be provided adequate and repeated information to prevent teenage pregnancy. Sex education and education on family planning should be prioritized at home and school according to the age and needs through appropriate way to that physically and mentally healthy adolescence would step towards healthy adulthood.

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REFERENCES

1. Pradha R, et. al. Factors Associated with Pregnancy among Married Adolescents in Nepal: Secondary Analysis of the National Demographic and Health Surveys from 2001 to 2011. *Int J Environ Res Public Health.* 2018;229.
2. World health organization. Adolescent Pregnancy Fact sheet [Internet]. 2018. Available from: http://www.who.int/mediacentre/factsheets/fs364/en/
3. World health organization. Adolescent pregnancy factsheet [Internet]. 2014. Available from: http://apps.who.int/iris/bitstream/10665/112320/1/WHO_RHR_14.08_eng.pdf.
4. World Health Organization, Ministry of health, Department of Health Services Nepal. Adolescent Sexual and Reproductive Health Programme to Address Equity, Social Determinants, Gender and Human Rights in Nepal, Report of the Pilot Project. 2017.
5. UNFPA. Pregnant Adolescents [Internet]. Available from: https://www.unfpa.org/adolescent-pregnancy
6. Chandra-Mouli et al. WHO Guidelines on Preventing Early Pregnancy and Poor Reproductive Health Outcomes Among Adolescents in Developing Countries. Vol. 2013. Geneva: World Health Organization; 2015.
7. WHO. Reaching adolescents with health services in Nepal. Bull World Health Organ. 2017 Feb 1;95(2):90–1.
8. Bhandari SD et.al. Perception and perceived experiences about prevention and consequences of teenage pregnancy and childbirth among teenage mothers: a qualitative study. *Journal of Advanced Academic Research* [Internet]. 2017; Available from: http://dx.doi.org/10.3126/jaar.v3i1.16625.
9. WHO. Early marriage, adolescent and young pregnancies [Internet]. 2011 Dec. Available from: https://apps.who.int/gb/ebwha/pdf_files/EB130/B130_12-en.pdf
10. Kanku T, et. al. Attitudes, perceptions and understanding amongst teenagers regarding teenage pregnancy, sexuality and contraception in Taung. *S Afr FamPract.* 2010 Nov 1;52(6):563-72.
11. R.T. Lebese, et. al. Knowledge, Attitudes and Perception of Students on Teenage Pregnancy: A Case Study of Rural Based University Students in South Africa,. *J Hum Ecol* [Internet]. 2015; Available from: http://dx.doi.org/10.1080/09709274.2015.11906894
12. Achema G. et.al. Factors responsible for teenage pregnancy and its implication on adolescent health and education: Perception of secondary school students in Nigeria. *International Journal of Medical and Health Research.* 2015;48-51.
13. UNFPA. Girlhood, Not Motherhood: Preventing Adolescent Pregnancy [Internet]. 2015. Available from: www.unfpa.org/sites/default/files/pub-pdf/Girlhood_not_motherhood_final_web.pdf

14. Maxwell GM. et al. Awareness of preventing of teenage pregnancy amongst secondary school learners in Makhado municipality. *Afr J Prm Health Care Fam Med* [Internet]. 2016; Available from: http://dx.doi.org/org/10.4102/phcfm. v8i2.967

15. Regmi PR. et al. Barriers to Sexual Health Services for Young People in Nepal. *J Health Popul. Nutr*. 2010 Dec;8(6):619-27.

16. Habitu YA, et. al. Prevalence and Factors Associated with Teenage Pregnancy, Northeast Ethiopia,. A Cross-Sectional Study. *Journal of Pregnancy* [Internet]. 2017; Available from: http://dx.doi.org/10.1155/2018/1714527.

A Comparative Study on Postnatal Quality of Life among Women After Cesarean Section and Normal Vaginal Deliveries

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ABSTRACT

Background

Postnatal Quality of Life among women after Cesarean Section (CS) and Normal Vaginal Deliveries (NVD) would serve as a guidance in planning promotional programs focusing on better quality of life in post-natal period with regards to the mode of delivery.

Objective

To compare the postnatal quality of life among women after Cesarean Section (CS) and Normal Vaginal Deliveries (NVD).

Method

A comparative descriptive cross-sectional study was conducted to compare the postnatal quality of life among women after Normal Vaginal Deliveries and Cesarean Section. A total of 100 postnatal women: 70-NVD and 30-CS at their 6th week post-partum in Gynecological OPD and Immunization clinic at Dhulikhel Hospital using non-probability purposive sampling technique was included in the study. SF-36 questionnaire was used to assess the quality of life of the respondents. The scores of Physical Component Summary (PCS) and Mental Component Summary (MCS) and the mean scores were compared using unpaired t-test at 5% level of significance.

Result

The study revealed that the mean PCS scores of postnatal women after Normal Vaginal Deliveries (69.49±17.37) was significantly higher than those after Cesarean Section (48.42±20.32) with p-value <0.001. Similarly mean Mental Component Summary scores after Normal Vaginal Deliveries (74.44±16.6) was significantly higher than that after caesarean section (65.186±19.87) with p value 0.018.

Conclusion

The women after Normal Vaginal Deliveries were found to score more in both Physical Component Summary and Mental Component Summary in total. Thus, Normal Vaginal Deliveries group had better quality of life than Cesarean Section group.

KEY WORDS

Mental component summary, Physical component summary, Postnatal quality of life

INTRODUCTION

There is significant difference in the physical as well as emotional health of the postpartum mothers after Cesarean Section (CS) and Normal Vaginal Deliveries (NVD), affecting their quality of life. The ones undergoing CS are found to be more associated with physical health problems.[1] Worldwide, despite the postpartum difficulties CS brings about, the rates are increasing every year worldwide.[2] In the context of Nepal, the rate of CS is 1.25% and is higher at private settings and tertiary care centers: Twenty percent (20%) at Maternity hospital, 25% at TUTH, 44% at KMC and 49% at Kirtipur hospital.[3]

The findings of the research can be useful in planning for promotional programs regarding the mode of delivery and focusing on better quality of life in the postpartum period and prevent the problems in physical health and emotional health due to cesarean section or normal vaginal deliveries; whichever seems unfavorable.[4]

Therefore, the study was to compare the postnatal quality of life among women after CS and NVD.

METHODS

A quantitative comparative descriptive cross-sectional design was used to compare the postnatal quality of life among women after CS and NVD.[5] The setting of the study was in Gynecological OPD and Immunization OPD of Dhulikhel Hospital, Kathmandu University Hospital with the total duration of 10 months. The study was conducted to assess the Physical Component Summary (PCS) (physical functioning, role-physical, bodily pain, general health) of the postnatal women after CS and NVD; assess the Mental Component Summary (MCS) (vitality, social functioning, role-emotional, mental health) of the postnatal women after CS and NVD; compare the mean scores of PCS of postnatal women after CS and NVD and compare the mean scores of MCS of postnatal women after CS and NVD visiting Dhulikhel Hospital.

A total of 100 postnatal women were included in the study using Non-probability purposive sampling technique, where 30 of them had undergone cesarean section and 70 of them had normal delivery. The study included the postnatal women who had given birth to a term, live, singleton child after normal vaginal deliveries or cesarean section visiting Gynecological OPD for follow up at 6 weeks postpartum and immunization clinic for DPT 1st vaccination of their child at 6 weeks after delivery. While the study excluded the postnatal women with history of traumatic deliveries, postnatal women with history of postnatal depression or other psychiatric disorders and the postnatal women who gave birth to babies less than 2500 gm.

Structured as well as semi-structured questionnaire was used as research tool to measure socio-demographic data and postnatal quality of life. SF-36 questionnaire was used to assess the postnatal quality of life.[6] To ensure the validity, the instrument which had already been used in the context of Nepalese population was used.[7] Furthermore, consulting research advisor and subject expertise was done. Similarly, reliability was ensured by pretesting of the tools ensuring test-retest, inter-rater reliability and cronbach's alpha test.

Written and verbal consent were obtained from the concerned authority and submission of the official written documents to IRC of DH was done. Permission of the data collection was obtained from the concerned authority of the study area. Written consent was taken from all the respondents before data collection to maintain their right to have information. The anonymity and confidentiality of the subjects was maintained, and information obtained was used only for the research purpose.

For statistical analysis, simple descriptive statistics such as percentage, mean, standard deviation was used and inferential statistics using unpaired t-test was applied to identify significant difference at 5% level of significance using SPSS version 16 software.

RESULTS

Table 1 shows that among 100 respondents, majority of them (53%) were of age group 21- 25 years. Majority of the respondents (96%) were literate with majority (36%) having bachelors and above educational level. Majority of the respondents (51%) were housewife by occupation and more than half of them (65%) were primiparous. 70% of the respondents had normal vaginal delivery as their mode of recent delivery while 30 % of the respondents had cesarean section. 99% of the respondents did not have any history of chronic illness and there were no respondents with mental illness.

Table 2 shows the mean scores of various domains of physical health among women after normal deliveries. The highest score was in physical functioning(89.7143) whereas lowest in Role-physical (46.7857).

Table 3 shows the mean scores of various domains of physical health among women after cesarean section. The highest score was in Bodily pain (59.1667) whereas lowest in Role-physical (20.000).

Table 4 shows the mean scores of various domains of mental health among women after normal vaginal deliveries. The highest score was in Social functioning(83.3929) whereas the lowest in Role-emotional (67.6190).

Table 5 shows the mean scores of various domains of mental health among women after cesarean section. The highest score was in Mental health (78.1333) whereas the lowest in Role-emotional (51.111).

Table 6 shows that the mean PCS score of postnatal women after normal vaginal delivery(69.4196) is higher than that of postnatal women after cesarean section (48.4167).

Table 1. Socio-Demographic Information of the Respondents (n=100)

Variables	Frequency/Percentage
Age group	
15- 20 years	10
21- 25 years	53
26- 30 years	30
31-35 years	6
36-40 years	1
Educational Status	
Illiterate	4
Literate	96
Educational Level	
Primary level	9
Lower secondary level	5
Secondary level	21
Higher Secondary level	25
Bachelors and above	36
Occupation	
Housewife	51
Agriculture	9
Business	15
Service	23
Others	2
Parity	
Primi para	65
Multi para	35
Mode of recent delivery	
Normal vaginal delivery	70
Cesarean section	30
Presence of chronic illness	
Yes	99
No	1
Presence of mental illness	none

Table 2. Physical Component summary Scores (PCS) of postnatal women after normal vaginal deliveries. (n=70)

Variables	Possible score	Mean PCS score	SD
Physical functioning	0 to 100	89.7143	11.63720
Role-physical	0 to 100	46.7857	46.41523
Bodily pain	0 to 100	76.8214	16.83747
General health	0 to 100	64.3571	13.04733

Table 7 shows that the mean MCS score of postnatal women after normal vaginal delivery (74.4423) is higher than that of postnatal women after cesarean section (65.1861).

Table 8 shows that there is much significant difference between the mean scores of PCS among women after normal vaginal deliveries and cesarean section (p=0.000)

Table 3. Physical component summary Scores (PCS) of postnatal women after cesarean section (n=70)

Variables	Possible score	Mean PCS score	SD
Physical functioning	0 to 100	56.6667	29.40013
Role-physical	0 to 100	20.0000	36.19869
Bodily pain	0 to 100	59.1667	18.59659
General health	0 to 100	57.8333	15.23852

Table 4. Mental Component summary Scores (MCS) of postnatal women after normal vaginal deliveries: (n=70)

Variables	Possible score	Mean PCS score	SD
Role-emotional	0 to 100	67.6190	44.31313
Vitality	0 to 100	69.7857	14.97427
Social functioning	0 to 100	83.3929	18.14812
Mental health	0 to 100	76.9714	14.81771

Table 5. Mental Component summary Scores (MCS) of postnatal women after cesarean section. (n=30)

Variables	Possible score	Mean PCS score	SD
Role-emotional	0 to 100	51.1111	46.92321
Vitality	0 to 100	57.3333	19.24136
Social functioning	0 to 100	74.1667	21.75821
Mental health	0 to 100	78.1333	12.76778

Table 6. Comparison of mean scores of Physical Component Summary (PCS) of postnatal women after cesarean section and normal vaginal deliveries (n=100)

Type of delivery	Number of respondents	Possible score	Mean PCS score	SD
Normal delivery	70	0 to 100	69.4196	17.37967
Cesarean Section	30	0 to 100	48.4167	20.12872

Table 7. Comparison of mean scores of Mental Component Summary(MCS) of postnatal women after cesarean section and normal vaginal deliveries (n=100)

Type of delivery	Number of Respondents	Possible score	Mean MCS score	SD
Normal delivery	70	0 to 100	74.4423	16.60115
Cesarean Section	30	0 to 100	65.1861	19.87149

as p-value is less than 0.05 it is statistically significant. Similarly there is significant differences between MCS scores among women of the two groups (p=0.018). Hence there is significant difference between the mean scores of the PCS and MCS among women as per mode of delivery.

Table 9 shows that there is significant difference between the mean scores in domains of Physical health, physical functioning (p=0.000), role physical (p=0.006), bodily

Table 8. Comparison of mean PCS score and mean MCS score of normal vaginal deliveries and cesarean section (n=100)

Variables	Mean scores as per Type of delivery		t-value	p-value	95%CI
PCS	69.417	48.4167	5.278	0.000*	13.11-28.89
MCS	74.4425	65.1861	2.406	0.018*	1.62-16.88

*Statistically significant (p<0.05) at 95% CI

Table 9. Comparison of PCS summary scores of normal vaginal deliveries and cesarean section: (n=100)

Variables	Mean scores as per Type of delivery		t-value	p-value	95%CI
	ND	CS			
Physical functioning	89.7143	56.6667	8.082	0.000*	24.93-41.53
Role-physical	46.7857	20.0000	2.813	0.006*	7.89-45.68
Bodily pain	76.8214	59.1667	4.656	0.000*	10.13-25.18
General health	64.3571	57.8333	2.177	0.032*	0.58-12.47

*Statistically significant (p<0.05) at 95% CI

pain(p=0.000) , general health (p=0.032) as per mode of the delivery.

Table 10 shows that there is significant difference between the mean scores of domains of Mental health; Vitality (p=0.001), social functioning (p=0.031) with the mode of delivery. Whereas there is no significant difference between the mean scores of the domains like Role-emotional (p=0.097), Emotional health (p=0.709).Since, p>0.05 it is not statistically significant.

DISCUSSION

This study showed that the mean PCS scores of postnatal women after NVD (69.42±17.37) being significantly higher than of those after CS (48.42±20.32) similar to the study done by Zubaran C. where the mean score in physical domain for postnatal women after NVD (75.01±11.74) was significantly higher than that after CS. (70.54±10.48) with p-value < 0.001.[8] This might be because, NVD group faces less physical pain and lesser complications compared to CS group; allowing them for better and sooner physical rehabilitation.[9]

This study revealed that the mean MCS scores of postnatal women after normal vaginal deliveries (74.44±16.60) was significantly higher than of those after cesarean section (65.18±19.87) with p value 0.018 similar to the study done

Table 10. Comparison of MCS summary scores of normal vaginal deliveries and cesarean section (n=100)

Variables	Mean scores as per Type of delivery		t-value	p-value	95%CI
	ND	CS			
Role-emotional	67.6190	51.1111	1.677	0.097	-3.02-36.04
Vitality	69.7857	57.3333	3.489	0.001*	5.38-19.54
Emotional health	83.3929	74.1667	-0.374	0.709	0.87-17.57
Social functioning	76.9714	78.1333	2.192	0.031*	-5.0-7.32

*Statistically significant (p<0.05) at 95% CI

by Zubaran C. where the mean MCS score (73.14±14.71) for women after normal vaginal delivery was significantly higher than the mean MCS score for cesarean group (69.23±13.71) with p-value 0.024.[8] Likewise, in the study done by Torkan B., the scores were higher in all mental domains in case of normal vaginal delivery but significant for vitality and social functioning.[10]

The MCS scores of NVD group is higher than CS group revealing possibilities of emotional stress that the cesarean section is causing to the women.

This study also showed that the MCS scores of NVD were significantly higher than those of CS in domain like Vitality with p-value 0.001 and the score was lower for NVD than CS in social functioning with p-value 0.031 which is similar in a study done by Zubaran C. showing a significant difference in the scores in domains: vitality and mental health with p value 0.03 for both. This might be because of people's perception and presumption regarding one undergoing a surgery and their caring behavior towards them.[8]

The limitations of the study are that the study involves only quantitative assessment of quality of life in post-partum period and adoption of mix method study design with addition of qualitative approach would have given more comprehensive information of the postnatal quality of life. Also the study design is cross-sectional so a longitudinal approach would provide more precise information.

CONCLUSION

The postnatal women after NVD were found to score more in both physical component and mental component in total. There was significant difference in every domain of physical component and mental component except role-emotional and emotional health. Thus, NVD group had better quality of life than CS group.

REFERENCES

1. Schipper HJCMAJ. Why measure quality of life? 1983;128(12):1367.
2. Goonewardene M, Manawadu MH, Priyaranjana DJJSAFOG. Audit: the strategy to reduce the rising caesarean section rates. 2012;4(1): 5-9.
3. Subedi S. Rising rate of cesarean section-A year review. *Journal of Nobel Medical College.* 2011;1(2):50-6.
4. Cheng C-Y, Fowles ER, Walker LO. Postpartum maternal health care in the United States: A critical review. *The Journal of Perinatal Education.* 2006;15(3):34.
5. Basavanthappa. BT editor. Nursing Research. First ed: Jaypee brothers; 2001.
6. Jenkinson C, Wright L, Coulter AJQoLR. Criterion validity and reliability of the SF-36 in a population sample. 1994;3(1):7-12.
7. Eller LS, Mahat G. Predictors of life satisfaction in HIV-positive Nepali women. *Journal of the Association of Nurses in AIDS Care*. 2007;18(5):17-26.
8. Zubaran C, Foresti K, Schumacher MV, Thorell MR, Muller LC, Amoretti ALJC. An assessment of maternal quality of life in the postpartum period in southern Brazil: a comparson of two questionnaires. 2009;64(8):751-6.
9. Nikpour M, Abedian Z, Mokhber N, Ebrahimzadeh S, Khani S. Comparison of quality of life in women after vaginal delivery and cesarean section.
10. Torkan B, Parsay S, Lamyian M, Kazemnejad A, Montazeri A. Postnatal quality of life in women after normal vaginal delivery and caesarean section. *BMC pregnancy and childbirth*. 2009 Dec;9(1):4.
11. Conroy K, Koenig AF, Yu YH, Courtney A, Lee HJ, Norwitz ER. Infectious morbidity after cesarean delivery: 10 strategies to reduce risk. *Reviews in Obstetrics and Gynecology.* 2012;5(2):69.

Urinary Incontinence and its Associated Factors among Postnatal Women in Community Based Hospital

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ABSTRACT

Background

Urinary Incontinence (UI) is one of the significant problems among women which can limit social mobility, physical activities and self-esteem. Pregnancy and child birth are regarded as key health determinants of urinary incontinence and there are other contributing factors which can influence postpartum urinary incontinence.

Objective

To identify the proportion of urinary incontinence and its associated factors among postnatal women.

Method

A cross sectional study conducted among 145 postnatal women at Dhulikhel hospital with purposive sampling method between May and December, 2016. Data was collected usingself-reported international consultation incontinence questionnaire -short form (ICIQ-SF).

Result

Urinary Incontinence among postnatal women was present on 31.03% (n=145). Stress urinary incontinence (28.97%) wascommon than urge incontinence (2.07%). Parity, type of delivery, birth spacing had a significant association with UI with p-value of 0.001, 0.027, 0.003 respectively whereas BMI, place of delivery, duration of labor, weight of baby had no significant association with urinary incontinence.

Conclusion

One third of postnatal women had reported urinary incontinence. The factors associated with urinary incontinence are parity, type of delivery and birth spacing. The results emphasizes the need of more study on urinary incontinence.

KEY WORDS

International consultation incontinence iuestionnaire-short form (ICIQ-SF), Postnatal women, Urinary incontinence

INTRODUCTION

Urinary Incontinence (UI) is one of the common problems among postnatal women. It is defined as, involuntary loss of urine that is objectively demonstrable and social or hygienic problem.[1,2] It affects approximately 20 million people in the United States with the prevalence ranging from 26% to 46%.[3] More than 60% of incontinent women associate its onset with pregnancy, child birth or postpartum.[4] Literatures have shown that high parity, birth weight greater than 4000 grams, episiotomy, operative vaginal deliveries (forceps and vacuum extraction), and second stage of labor lasting longer than 60 minutes are associated with UI.[1,3-5] Postpartum UI may also be caused by damage to the muscles, ligaments and nerves of pelvic floor during childbirth which control the urine flow.[1,7] UI has greater impact on quality of life of women.[8] It can cause social problems by creating embarrassment and negative self-perception, reducing social interaction andphysical activities,it also affects sexual relationshipleading to anxiety and depression.[3,7-9] It can also cause serious medical problem such as perineal rash, pressure ulcer and urinary tract infection.[4] Despite that, there is scarce amount of literature in Nepal focusing on reproductive health especially among postnatal women. A study done in eastern Nepal has found that the prevalence of UI in general women is high as 50.06% which included women with gynecological conditions and did not include postpartum and pregnant women. Similarly, a study done in Dhulikhel Hospital among pregnant women found stress urinary incontinence to be in 33% of women.[10,11] However, there is paucity of data about UI among postnatal women. Hence, this study aimed to identify proportion of UI among post natal women and its association with various selected factors.

METHODS

Descriptive cross-sectional study was conducted in Obstetrics and Gynecology OPD, Immunization OPD department of Dhulikhel hospital from May to December in 2016. After sample calculation 145 postnatal women with 6 weeks to 6 months post delivery period recruited with purposive sampling.

Inclusion criterias:

- Postnatal women (6 weeks to 6 months),
- women with any parity
- women with any type of delivery

Exclusion Criteria:

- History of gynecological and urological surgery
- Urinary tract infection
- Chronic lung disease
- Diseases under medication eg. diuretics.

Data was collected using interview technique. The information acquired included demographic data, obstetrics and gynecologic history, including mode of delivery, duration of labour, birth spacing etc. Postnatal body mass index (BMI, calculated as weight in kilograms divided by the square of height in meters) and screening tool ICIQ SF was used as screening tool for urinary incontinence.[15] It has moderate test-retest reliability (kappa=0.72-0.75), moderate construct validity i.e. 0.7, excellent internal consistency (cronbach"s alpha = 0.88). The ICIQ UI-SF is a validated self-reported questionnaire.[16]

Ethical clearance was obtained from the Institutional Review Committee, Kathmandu University School of Medical Sciences with reference number 93/16. Permission was obtained from Dhulikhel Hospital. The purpose of the study was explained, verbal and written consent was obtained from the women prior to the data collection. The privacy and confidentiality of the women were maintained throughout the study there after. Collected data was checked thoroughly for accuracy and completeness.

Data was kept carefully and coded for further analysis. Data analysis was done using SPSS 16 software. Baseline characteristics of study population were analyzed using Descriptive statistics. The chi-square test was applied to find out the significant difference between UI with associated factors where level of significance was p<0.05.

RESULTS

UI was assessed using ICIQ-SF Questionnaires among 145 post-natal women, with mean age of 25.16. Prevalence of UI among 6 weeks to 6 months postnatal women were 46 (31.03%) as shown in (fig. 1) and 29.66% reported they leak when they cough or sneeze where as 2.07% reported leaking before getting into the toilet.

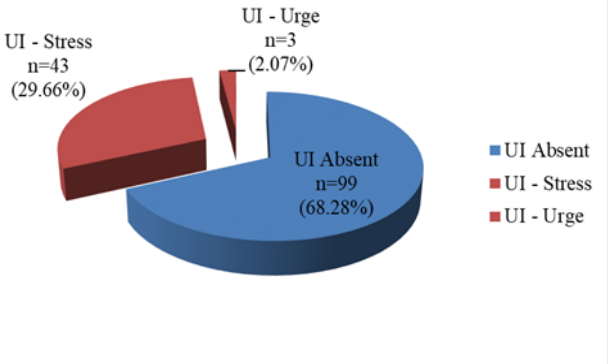

Figure 1. Urinary Incontinence among postnatal women (n=145)

Table 1 shows analysis to find out the factors association with UI. Result showed the multiparous participants had more UI 46.77% as compared to Primiparous 20.48%. The prevalence of UI was found to be increased with the increase in parity of the women (p = <0.001). Participants having normal instrumental delivery were more associated with UI 50% as compare to participants having Normal

Table 1. Factors association with Urinary Incontinence (n=120)

Characteristics	Categories	Urinary Incontinence		Std. dev	P-value
		Present n(%)	Absent n(%)		
BMI	Under-weight	1(33.33)	2(66.67)	.746	0.764
	Normal	25(28.74)	62(71.26)		
	Over-weight	16(38.10)	26(61.90)		
	Obese	4(30.76)	9(69.24)		
Parity	Prim parous	17(20.48)	66(79.52)	.496	**0.001***
	Multipa-rous	29(46.77)	33(53.23)		
Type of delivery	Normal Vaginal Delivery	26(44.07)	33(55.93)	.905	**0.027***
	Normal Delivery with Episi-otomy	10 (30.30)	23(69.70)		
	Instru-mental de-livery (eg. Vaccum, forcep)	1(50)	1(50)		
	Cesarean section	9(17.65)	42(82.35)		
Duration of labor	Normal	43(33.08)	87(66.92)	.306	0.303
	Prolonged (>18hr.)	3(20)	12(80)		
Weight of baby	Low birth weight (<2.5kg)	3(15)	17(85)	.484	0.215
	Normal birth weight (>2.5kg)	41(34.1)	79(65.9)		
	High birth weight (>3.5kg)	2(40)	3(60)		
Birth Spacing	<2 years	17(20.48)	66(79.52)	0.969	**0.0030***
	2 – 3 years	2(40)	3(60)		
	>3 years	27(47.37)	30(52.63)		

* p value < 0.05

delivery, Episiotomy and Cesarean section. This shows type of delivery is associated with UI (p = 0.027). Birth spacing was also significantly associated with UI (p = 0.003). The other factors BMI, duration of labor, weight of baby had no significant association with UI.

DISCUSSION

The prevalence of UI was 31.03% among postnatal women which is higher than other Asian countries like in India (21.8%) and China (23.3%).[6,12] Most common type of UI was stress urinary incontinence (SUI) 28.97% whereas urge incontinence was in only 2.07% in this study. A study done in Nepal reported 33% SUI among antenatal women and 70% of them had SUI even after delivery.[11] Literatures have shown that SUI is commonest among women of age between 25-49 years and is complained by 50% of women whereas urge incontinence is more common in older people.[1,10,16] In this study the mean age of women was 25.16 which could be the reason for more SUI. Also in Nepal, as women tend to return to their work within 2 weeks which is very early and is a healing period for pelvic floor muscle (PFM), this might be the reason for Nepalese women to have weaker PFM than other countries that lead to UI.[17]

Pregnancy and delivery related risk factors are considered as the main risk factors for the development of UI.[3] In this study there was significant association between UI and type of delivery, i.e. in normal vaginal delivery (44.07%), with episiotomy (30.30%) and in caesarean section (17.65%). The results are consistent with the results of the study done by Singh et al. in India also showed the higher prevalence of UI in vaginal deliveries and the lowest in caesarean deliveries.[6] The result is also supported by the study done in China which explained about more laceration in pelvic support tissue of birth canal during vaginal deliveries without episiotomy.[12] This study also showed significant association between UI and parity, with prevalence higher in multiparous (46.77%) than primiparous (20.48%). There are many studies which explained repeated injuries to PFM with multiple deliveries there is impairment in nerves to PFM, development of atrophy of PFM and prolapse over time.[3,15] This study showed significant association between birth spacing and UI (p-value < 0.05). In the study women with birth spacing of more than 3 years had UI (47.37%) than women with less than 3 years (40%). Study done by Rasouli et al. showed significant association between birth spacing and episiotomies.[18] Greater the birth spacing lesser will be the chances of episiotomy. In case of normal vaginal birth without episiotomy there is high chance of unwanted vaginal tear which can lead to UI.[17] This could be the reason for women with birth spacing greater than 3 years had UI in our context. However, there are conflicting results in literature regarding relationship between perineal tear and episiotomy.[16]

There was no significant association between UI and other risk factors such as BMI, place of delivery, duration of labor and weight of baby. Despite of no significant association, there is higher prevalence of UI in overweight women (38.10%) which explains higher BMI corresponds to increased intra-abdominal pressure resulting in increased intravesical pressure than urethral closure pressure leading to UI.[1] Also, in this study thereis higher prevalence of UI in women giving birth to baby of weight > 3.5 kg (40%). The study showed greater birth weight consequences such as damage to pudendal nerve, connective tissue and PFM lead to UI.[16] Contradictory to the studies, in this study prevalence of UI was lower in women with 'prolonged

duration labor'. This might be because; most of the women who had prolonged labor underwent caesarean section which reduced the chances of trauma to PFM which could be the reason for the prevalence to be lower than normal duration of labor.

In this study the prevalence of UI in postnatal women was present in almost on one third of respondents. Various studies reported that UI is treatable.[19-21] Cochrane reviews have suggested pelvic floor muscle strengthening is recommended in conservative programs as first line of treatments for UI.[20-21] Therefore, in developing country like Nepal where alternative treatment is unaffordable by a majority of population, preventive strategies such as incorporating PFM strengthening exercise can be beneficial to uplift their quality of life.

The study population was limited to only one community hospital. Also, none of the subjects underwent gynecological examination for UI and UI was only inquired verbally which may reduce the accuracy of diagnosis.

CONCLUSION

UI is found to be among 31.03% of post natal women in Nepal with significant association with parity, mode of delivery and birth spacing. No significant association with place of delivery, weight of the baby, BMI and duration of labor was identified. This shows an urgent need of further study incorporating pelvic floor muscle strengthening exercise as a part of antenatal and postnatal care.

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REFERENCES

1. Abrams,P, Cardozo, L, Wagg, A, Wein, A. (Eds) Incontinence 6th Edition (2017). ICI-ICS. International Continence Society, Bristol UK, ISBN: 978-0956960733.
2. Ghaderi F, Oskouei AE. Physiotherapy For Women With Stress Urinary Incontinence: A Review Article. *J. Phys. Ther. Sci.* 2014;26(9):1493-9. PMID: 25276044
3. Melville JL, Katon W, Delaney K, Newton K. Urinary Incontinence in US Women: A Population-Based Study. *Arch Intern Med.* 2005;165(5):537–542. doi:https://doi.org/10.1001/archinte.165.5.537
4. Aoki Y, Brown HW, Brubaker L, Cornu JN, Daly JO, Cartwright R. Urinary incontinence in women. *Nature Reviews Disease Primers.* 2017 Jul 6;3:17042.doi:10.1038/nrdp.2017.42.
5. Hannestad YS, Rortveit G, Sandvik H, Hunskaar S.A community-based epidemiological survey of female urinary incontinence: the Norwegian EPINCONT study. Epidemiology of Incontinence in the County of Nord-Trøndelag. *J Clin Epidemiol.* 2000; 53(11):1150-7. doi: 10.1016/s0895-4356(00)00232-8
6. Singh U, Agrawal P, Verma ML, Dalela D, Singh N, Shankhwar P. Prevalence and risk factors of urinary incontinence in Indian women: A hospital-based survey. *Indian J Urol.* 2013;29(1):31-36. http://www.indianjurol.com/text.asp?2013/29/1/31/109981
7. Arshiya S, Noor L, Rangaswamy PA, Sundari T. Etiology, Risk Factors And Pathophysiology Of Stress Urinary Incontinence: A Review. *International research journal of biological sciences.* 2015;4(6):75-82. www.isca.in, www.isca.me
8. SeshanV, Mulira JK. Self-reported urinary incontinence and factors associated with symptom severity in community dwelling adult women: implications for women's health promotion, *BMC Women's Health.* 2013;13:16. https://doi.org/10.1186/1472-6874-13-16
9. Mallah F, Tasbihi P, Navali N, Azadi A. Urinary Incontinence during pregnancy and postpartum Incidence, Severity and Risk Factors in Alzahra and Talequani Hospitals in Tabriz, Iran, 2011-2012. *Int J Women's Health Reproduction Sci.* 2014;2(3). doi: 10.15296/ijwhr.2014.26
10. Regmi MC, Uprety D, Poonam M. Prevalence of urinary incontinence among gynecological admissions at tertiary care hospital in eastern Nepal. *Health Renaissance.* 2012;10(1):16-9. https://doi.org/10.3126/hren.v10i1.6001
11. Khadgi B, Shrestha L, Shrestha S. Effectiveness of the antenatal pelvic floor exercise for stress urinary incontinence among the postpartum women. *International Journal of Scientific and Research Publications.* 2015; 5(9). ISSN 2250-3153 http://www.ijsrp.org/research-paper-0915/ijsrp-p4565.
12. Abrams P,Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U et al. The standardization of terminology of lower Urinary tract function: report from the standardization sub- committee of the international continence Society. *Neurourol Urodynamics*. 2002;21(2):167-178
13. Tamanini JTN, Dambros M, D'Ancona CAL, Palma PCR, Netto Jr NR. Validation of "International Consultation on Incontinence Questionnaire – Short Form" (ICIQ), *Rev. Saude Publica*. 2004;38(3).
14. Liu B, Wang L, Huang S, Wu Q, Wu D. Prevalence and risk factors of urinary incontinence among Chinese Women in Shanghai. *Int J Clin Exp Med*. 2014;7(3):686-696. PMCID: PMC3992409
15. SirraumpuchJ, Temtanakitpaisan T, Buppasiri P, Chumworathayi B, Chongsomchai C, Soontrapa S, et al. Prevalence of urinary incontinence in 6-weeks Postpartum women. *Thai J ObstetGynaecol.* 2014;22(2):88-94. https://semanticscholar.org/414e/4ca11b3925e45268eff2ada937c54d6accb2.
16. Walker GJ, Gunasekera P. Pelvic organ prolapse and incontinence in developing countries: review of prevalence and risk factors. *International urogynecology journal.* 2011 Feb 1;22(2):127-35.
17. Rasouli M, Keramat A, Khosravi A, Mohabatpour Z. Prevalence and Factors Associated With Episiotomy in Shahroud City, Northeast of Iran. *International Journal of Women's Health and Reproduction Sciences.* 2016;4(3):125-9.
18. Kilic M. Incidence and risk factors of urinary incontinence in women visiting Family Health Centers. *Springer plus.* 2016 5(1);1331.
19. Dinc A, Beji NK, Yalcin O. Effect of pelvic floor muscle exercises in the treatment of urinary incontinence during pregnancy and the postpartum period. *Int. Urogynecol. J.* 2009;20:1223-31.
20. FLOOR CO. Comparisons of approaches to pelvic floor muscle training for urinary incontinence in women: an abridged Cochrane systematic review. *European journal of physical and rehabilitation medicine*. 2012 Dec;48:689-705.
21. Dumoulin C, Hay-Smith J, Habée-Séguin GM, Mercier J. Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women: A short version Cochrane systematic review with meta-analysis. *Neurourology and urodynamics*. 2015 Apr;34(4):300-8.