Original Research Article

Effectiveness of Information Booklet on Knowledge Regarding Puerperal Sepsis and Its Prevention among Nurses Working in Selected Hospitals of Kamrup (M), Assam: An Evaluative Study

Bedani Yumlembam[1], Arline Beshra[2]

[1]MSc. Nursing, Department of Obstetrics and Gynaecological Nursing, Asian Institute of Nursing Education, Guwahati, Assam, India
[2]Assistant Professor, Department of Obstetrics and Gynaecological Nursing, Asian Institute of Nursing Education Guwahati, Assam, India

Corresponding Author: Bedani Yumlembam

ABSTRACT

Background: Puerperal sepsis is a postpartum complication, occurs when a recently delivered mother gets an infection while giving birth due to unhygienic practices and poor quality healthcare. If not treated properly in time may lead to death. Lack of awareness among healthcare providers can lead to higher rates of infection.

Objective: To assess the effectiveness of information booklet on knowledge regarding puerperal sepsis and its prevention among nurses working in selected hospitals of Kamrup (M), Assam.

Methods: The pre experimental one group pre-test post-test research designed was adopted in the study. 100 nurses were selected as sample by using convenience sampling technique in selected hospitals of Kamrup (M), Assam. To assess the nurses' knowledge regarding puerperal sepsis and its prevention structured knowledge questionnaire was used.

Results: In pre-test, the mean knowledge score was 11.76 with standard deviation 2.90. In post-test, the mean knowledge score was 19.81 with standard deviation 1.96. The calculated paired t test value of t = 33.352 was found to be statistically significant at p<0.001. Hence, information booklet on puerperal sepsis was found to be effective in improving the knowledge regarding puerperal sepsis and its prevention. There was significant association between pre-test knowledge regarding puerperal sepsis and its prevention and educational qualification.

Conclusions: Majority of the nurses gained knowledge after referring the information booklet. Hence, awareness program in regular period will help in improving knowledge regarding puerperal sepsis among nurses to provide quality health care for a healthy society.

Key Words: Knowledge, Information booklet, puerperal sepsis, prevention.

INTRODUCTION

Postpartum infection refers to any infection that occurs after delivery, mostly in the reproductive/genital tract. [1] One of the dangerous postpartum infections that is accounting for maternal mortality is puerperal sepsis. [2] If not treated properly in time it may leads to spectrum of severity, leading to septicaemia and eventually death.

According to World Health Organization (WHO), Puerperal sepsis is defined as infection of the genital tract occurring at any time between the onset of rupture of membranes or labour, and the 42nd day postpartum. [3] In 2016, WHO estimated that, about 810 women die from pregnancy or childbirth related complications around the world daily, and annually 15% of

maternal deaths were caused by puerperal sepsis. Globally, it is the 3rd most common cause of maternal death worldwide as a result of child birth after haemorrhage and abortion. [4] As per the estimates of

WHO in 2014, every year puerperal sepsis causes at least 75,000 maternal deaths; that mostly occurred in low-income countries. With an approximate distribution of about 11.6%, 9.7%, 7.7% and 13 % in Asia, Africa, Latin America, and Ethiopia, respectively. [5]

As per a cross-sectional study conducted by Ali J, Srivastava K, Patar J, (2017) at Guwahati Medical College and Hospital on clinical study on maternal and perinatal outcome in multiple pregnancies revealed that perinatal mortality was found in 16% cases. The prevalence of puerperal sepsis was 38.85%. Puerperal sepsis was seen in 5.55% women undergoing vaginal delivery and 33.3% in those women undergoing LSCS. Puerperal Pyrexia was found in 40.7% cases with Cesarean section and 11.1% with vaginal delivery. [6]

According to a retrospective case control study conducted by Ngonzi J, Mukasa PK, Kabakyenga J, et al. (2016) on Puerperal sepsis, the leading cause of maternal deaths at Uganda among pregnant women aged 15-49 years who were admitted to the Maternity unit between January 2011 and November 2014 showed that Puerperal sepsis (30.9 %) was the most frequent cause of maternal mortality, followed by obstetric hemorrhage (21.6 %), HTN in pregnancy (14.4 %), abortion complications (10.8 %). [7]

The predisposing factors that lead to puerperal sepsis include: anemia, suboptimal personal hygiene, birth at unhygienic conditions, low socio economic status, repeated vaginal examination, preterm labour, prolonged rupture of membranes, prolonged labour, postpartum haemorrhage, and caesarean delivery. [8] It occurs when bacteria such as Streptococci, E.coli, etc. colonized the genital tract or acquired nosocomially invade into the endometrium, lymphatic, adjacent structures, and blood stream. During postpartum, birth canal remains susceptible to invasion even for several days after delivery. Puerperal sepsis even causes various maternal complications (viz., septicaemia, endotoxic shock, and peritonitis or abscess) that leads to surgical intervention and compromising the possibility of fertility in future. It has been found to increase the incidence of maternal mortality due to the puerperal sepsis, if timely diagnosis and treatment is not carried out. [9]

Some preventive measures that will reduce the incidence of puerperal sepsis are: aseptic precautions, advances in investigation tools, improvement in MCH services, use of antibiotics, presence of skilled health care staff and trained birth attendants at deliveries, maintaining infection control practices during delivery, promoting institutional delivery, etc. [10]

In a descriptive study conducted by Fahmy NM, AI M, SH M A, et al.(2017) at Egypt on nurse's skills regarding prevention of postpartum infection among 50 nurses, (70%) of nurses had good knowledge about risk factor of postpartum infection and less than half (44%) of nurses had unsatisfactory practice regarding prevention of postpartum infection, (100%) of nurses had unsatisfactory practice regarding vaginal examination procedure, (64%) of nurses had a satisfactory practice regarding handwashing procedure. [11]

The nurses, who are on 24 hours with patient, have a very important role to play in prevention of puerperal sepsis. They are expected to have an adequate knowledge regarding puerperal sepsis, in order to promote good health care practices. Early recognition of complications and help in preventing patients from puerperal sepsis can reduce the maternal mortality as well as morbidity rate. Hence, the study was conducted, aimed at assessing the knowledge regarding puerperal sepsis and to impart knowledge regarding puerperal sepsis in the form of information booklet.

Objectives:
1. To assess the knowledge regarding puerperal sepsis and its prevention, among nurses before and after the administration of information booklet.
2. To determine the effectiveness of information booklet on knowledge regarding puerperal sepsis and its prevention, among nurses.
3. To find out the association between pre-test knowledge with selected demographic variables such as age, gender, marital status, religion, educational qualification, working experiences and attended in service education on puerperal sepsis.

MATERIALS AND METHODS

For this study, a quantitative research approach with the pre experimental one group pre-test post-test design was adopted. It was conducted at four different hospitals, namely: Marwari Hospital, Ayursundra Hospital, Akanksha hospital, and Kuntal Goswami Memorial Trust hospital (KGMT), in Kamrup (M), Assam, India. The study was conducted among 100 nurses who were taking care for antenatal, intranatal and postnatal mothers. Non-probability convenience sampling technique was employed for selecting the samples; and only those who fulfilled the inclusion criteria and willing to participate were selected.

***Tools*:** The data was collected by using structured knowledge questionnaire. And the content validity of the tool was established by seven nursing and two Medical experts in the field of Obstetrics and Gynecology.

Description of the tool: The structure knowledge questionnaire comprised of 2 sections covering the following areas. Section I: Demographic data - It consists of age, gender, religion, marital status, educational status, working experiences, and attended in service education on puerperal sepsis. Section II: Structured knowledge questionnaire on puerperal sepsis and its prevention - consisting of total 26 questions.

The pilot study was conducted from 9th to 17th November 2020, among Ten (10) nurses; and the study was found to be feasible. The reliability of the tool was done by Split half method, and Karl's Pearson correlation coefficient formula was employed for the knowledge questionnaire. It was observed that the tool was reliable as reliability of the knowledge questionnaire was 0.94 to proceed with the main study.

Data collection: For conducting the main study, the data collection period was scheduled from 14th December 2020 to 10th January 2021. Ethical permission was obtained from medical superintendent of selected hospitals before starting the data collection. After obtaining permission from the selected hospitals, the nurses were asked for their willingness to participate in the study and informed consent was obtained. The nurses were then asked to fill the pre-test structured knowledge questionnaire; and the investigator collected back the tools. The approximate time taken by each respondent was 20-25 minutes. Then, administered the information booklet and explained about the information booklet to each respondent. After 7 days, post-test was conducted to the same nurses by using same structured knowledge questionnaire.

Statistical analysis: The data collected were grouped and analysed in terms of objectives of the study by using SPSS software, descriptive and inferential statistics such as mean, standard deviation, paired t-test, chi square etc. which are necessary to provide substantial summary of the results.

RESULTS
### Section I: Analysis of demographic characteristics of the nurses

It is observed that out of the total sample (nurses) majority i.e 51% nurses belong to age between 25-34 years, 98% of the nurses were female, 70% nurses were unmarried, 62% nurses were Hindu, 65% nurses had educational qualification of ANM, 66%) nurses had working experience of 0-5 years, and 100% nurses had not attended in-service education on puerperal sepsis (see Table 1).

It is revealed that majority of the nurses were unmarried female who had not attended any in-service education on puerperal sepsis.

Table 1: Distribution of frequency and percentage of demographic variables of nurses, n= 100

Demographic variables		Frequency (f)	Percentage (%)
Age	Below 25 years	35	35
	25 – 34 years	51	51
	35 – 44 years	8	8
	45 years and above	6	6
Gender	Male	2	2
	Female	98	98
Marital status	Married	29	29
	Unmarried	70	70
	Widow	1	1
	Divorce/ Separated	0	0
Religion	Hindu	62	62
	Muslim	17	17
	Christian	21	21
	Others	0	0
Educational qualification	ANM	65	65
	GNM	28	28
	Post Basic B.Sc. Nursing	2	2
	B.Sc. Nursing	5	5
	M.Sc. Nursing	0	0
Working experience	0-5 years	66	66
	6-10 years	24	24
	11-15 years	5	5
	>15 years	5	5
Attended in service education program on puerperal sepsis	Yes	0	0
	No	100	100

Section II: Analysis of the nurses' pre-test knowledge score and post-test knowledge score. n=100
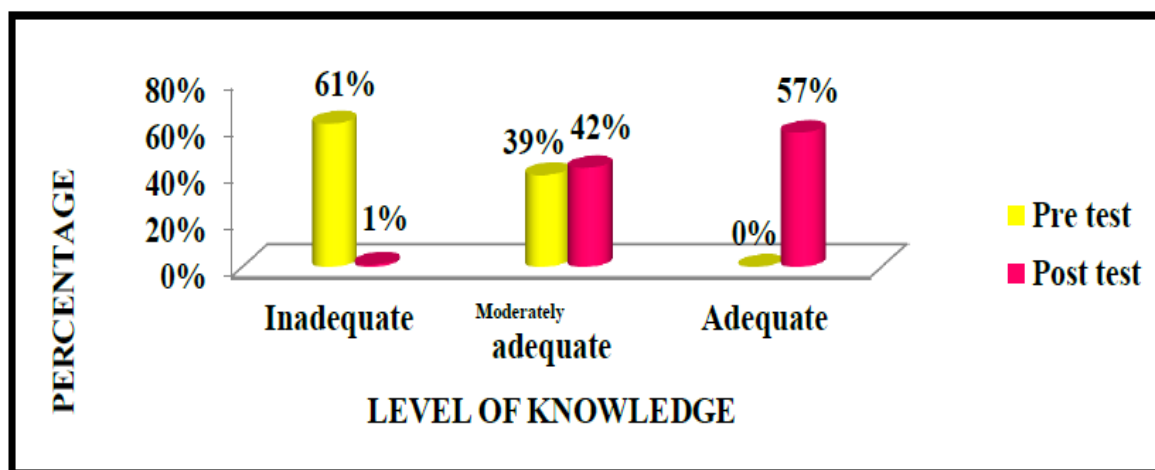
Figure 1: Percentage distribution of pre-test vs. post-test knowledge score for the nurses.

From Figure 1, it has been observed as follows, that out of the total sample (nurses):

In pre-test knowledge score - 61% and 39% had inadequate and moderately adequate knowledge, respectively. Further, observed that none of responder had adequate knowledge.

In post-test knowledge score - 1%, 42% and 57% had inadequate, moderately adequate and adequate knowledge, respectively. It has been found that the knowledge of nurses was enriched after providing the information booklet regarding puerperal sepsis. Hence, the study was effective.

Table 2: Evaluation of the effectiveness of information booklet on knowledge regarding puerperal sepsis and its prevention, n = 100

Knowledge	Mean	S.D	Mean%	Mean Diff. %	Paired 't' Testvalue
Pre-test	11.76	2.90	45.23	30.96	t = 33.352
Post-test	19.81	1.96	76.19		p = 0.0001, S***

***p<0.001, S – Significant

Table 2 depicts that the pre-test mean score of knowledge was 11.76±2.90 and the post-test mean score was 19.81±1.96. The pre-test mean % was 45.23 and the post-test mean % was 76.19. The mean difference % was 30.96; which reveals the effectiveness of providing information booklet regarding puerperal sepsis to the samples. The calculated paired "t" test value of t = 33.352 (see Table 2) was found to be significant at p<0.001 which clearly infers that information booklet on puerperal sepsis was found to be effective in improving the level of knowledge regarding puerperal sepsis and its prevention among nurses in the post-test.

Table 3: Association of pre-test knowledge with selected demographic variables, n= 100

Demographicvariables	Chi-square value		Df	p- value	Remarks
	Calculatedvalue	Tablevalue			
Age	1.849	16.266	3	0.626	Not Significant at p> 0.05
Gender	3.192	10.828	1	0.626	Not Significant at p> 0.05
Marital status	1.673	13.816	2	0.544	Not Significant at p> 0.05
Religion	2.270	13.816	2	0.334	Not Significant at p> 0.05
Educational qualification	28.35	16.266	3	0.0001	Significant at p <0.001
Working experience	3.391	16.266	3	0.368	Not Significant at p> 0.05

The data presented in the above table 3 depicts that there was significant association of pre- test knowledge regarding puerperal sepsis and its prevention, with educational qualification among nurses at p<0.001 with chi-square value of (χ^2=28.350, p = 0.0001) and there was no significant association of pre-test knowledge regarding puerperal sepsis and its prevention, among nurses with age, gender, religion, marital status and working experience.

DISCUSSION
Part A- Discussion of demographic characteristics:

The findings of the study revealed that majority 51% of the nurses were belongs to age between 25-34 years. This result is contradicted with the findings of study conducted by Benita D (2014) [12] that 50% of the nurses were more than 30 years of age.

Majority of nurses i.e. 98% were female, 70% were unmarried, 62% were Hindu. These findings were supported by study conducted by Tirivavi E (2019) [13] which revealed that majority 95.2 % midwives were female.

Corresponding to the educational qualification, 65% nurses were ANM, this result is in contrast with the findings of study conducted by Benita D (2014) [12] that 70 % of the nurses had educational qualification of GNM.

Most of the nurses i.e. 66% had working experience of 0-5 years and this result is in contrast to a study conducted by Qasim AS and Chyad SS (2020) [14] which revealed that majority 35 % of nurses had 11-15 years of services in nursing field.

The study finding showed that 100% of the total samples (nurses) had not attended any in-service education program on puerperal sepsis. This finding is agreed with the study findings of Tirivavi E (2019) [13] that majority 83 % nurses midwives had not attended training sessions. However, in a study conducted by Kaur R and Jairus R (2014) [15] observed that maximum 73.3 % had attended short term training.

Part B- Discussion of knowledge regarding puerperal sepsis and its prevention

The study also showed that out of 100 nurses, in pre-test knowledge, majority i.e. 61 (61%) had inadequate knowledge, 39

(39%) had moderately adequate knowledge and none of the respondent had adequate knowledge. In post-test knowledge, majority i.e. 57 (57%) had adequate knowledge, 42 (42%) had adequate knowledge and one (1%) had inadequate knowledge. This is comparable with a study conducted by Qasim AS, and Chyad SS (2020) [14] among nurses, where it was showed that in pre-test, majority 32 (53.3%) had low level of knowledge, 28 (46.7%) had moderate level of knowledge and none of them had high level of knowledge regarding preventive measures towards puerperal sepsis. In the post-test, majority 44 (73.3%) had high knowledge, whereas 16 (26.7%) had moderate knowledge. However, this is in contrast to a study conducted by Kaur B, and Kaur P (2016) [16] among staff nurses working in maternity wards, which depicted that out of 30 staff nurses 14 (46.66%) staff nurses had good knowledge regarding prevention of Puerperal sepsis and 16 (53.33%) staff nurses had average knowledge regarding prevention of Puerperal sepsis. The variation can be attributed to heterogeneity of the study samples.

Part C- Discussion of comparison of pre-test and post-test knowledge regarding puerperal sepsis and its prevention

The findings of the study also showed that the pre-test mean score of knowledge was 11.76±2.90 and the post-test mean score was 19.81±1.96. The calculated paired „t‟ test value of t = 33.352 was found to be significant at p<0.001 which clearly infers that information booklet on puerperal sepsis was found to be effective in improving the level of knowledge regarding puerperal sepsis and its prevention among nurses in the post-test. This is comparable with the study conducted by Kaur R, and Jairus R (2014) [15] among Female Health Workers, where it was showed that the mean pre-test knowledge score and SD of control groups and experimental groups was 21.10±3.72 and 21.97±4.27 respectively and 22.50±4.30 and 33.87±5.29 was mean post-test knowledge score respectively. The paired „t‟ test, t = 25.15 at p<0.05 was found significant.

Part D- Discussion of relationship between pre-test knowledge of nurses regarding puerperal sepsis and its prevention with their demographic variables:

In this study, there was significant association of pre-test knowledge regarding puerperal sepsis and its prevention with educational qualification among nurses at p<0.001 with chi- square value of (χ^2=28.350, p = 0.0001) and there was no significant association of pre-test knowledge regarding puerperal sepsis and its prevention among nurses with age, gender, religion, marital status and working experience. This is comparable with study conducted by Qasim AS, and Chyad SS (2020) [14] among nurses, which revealed that there was significant association between knowledge and the educational qualification of the nurse midwife at p value <0.05whereas there was no significant association between knowledge and demographic variable such as age, year of services and training session of the nurse midwife at p value >0.05.

CONCLUSION

Through this study, it has been concluded that none of the nurses had attended in service education on puerperal sepsis and majority of the nurses were not much aware about puerperal sepsis and its prevention. After referring the information booklet, there was a significant improvement in the knowledge, which implies the effectiveness of the information booklet on puerperal sepsis in improving nurses‟ knowledge regarding puerperal sepsis and its prevention. Hence, there should be more awareness programs related to puerperal sepsis regularly, among nurses and other health care workers to improve their knowledge, so that they will be able to identify and take necessary preventive actions in right time and in right way. There

is a saying that "prevention is better than cure", so health care workers having adequate knowledge can promote adequate practice which will help in the preventing from puerperal sepsis. This in turn can be a provision for nurses to provide quality health care for a healthy society.

REFERENCES
1. Bharkar N. Midwifery and obstetrical nursing. 3rd Edition. West of Chord Road, Bangalore: EMMESS Medical Publishers; 2019. 561–565 p
2. Belgundkar B, Heikham G. Effectiveness of nurses intervention program on knowledge regarding prevention of puerperal infection among postnatal mothers in KLE Prabhakar Kore Hospital at Belagavi Karnatak; Int J Nurs Educ [Internet]. 2021;13 NO. 1. Available from: https://medicopublication.com
3. Silva DYKDe, Fernando A, Gange VP, et al. Management of Puerperal Sepsis [Internet]. SLCOG National Guidelines. 2010. p. 64–81. Available from: https://www.gfmer.ch/SRH-Course-2010/national-guidelines/pdf/Management-Puerperal-Sepsis-SLCOG.pdf
4. Rastogi DA. Puerperal sepsis. In: National Health Portal [Internet]. Deepak Chandra; Available from: https://www.nhp.gov.in/disease/gynaecology-and- obstetrics/puerperal-sepsis#:~:text=It is the third most,the 500000 maternal deaths annually
5. Berhan Y, Berhan A. The causes of maternal mortality in Ethiopia: A significant decline in abortion related death. Ethiop J Health Sci [Internet]. 24:15–28. Available from: https://pubmed.ncbi.nlm.nih.gov
6. Ali J, Patar J, Srivastava K. Clinical study on maternal and perinatal outcome in multiple pregnancies Sch J Appl Med Sci [Internet]. 2017;5(11A):4377–80. Available from: https://pubmed.ncbi.nlm.nih.gov/16125707/
7. Ngonzi J, Tornes YF, Mukasa PK, et al. Puerperal sepsis, the leading cause of maternal deaths at a Tertiary University Teaching Hospital in Uganda. BMC pregnancy and childbirth. 2016 Dec;16(1):1-7.
8. Dutta DC. Text-Book of gynecology. 6 Edition. Konar H, editor. Jaypee Brothers Medical Publishers (P) ltd. New Delhi; 2013. 145, 432–435 p.
9. Shamshad, Shamsher S, Rauf B. Puerperal sepsis--still a major threat for parturient. J Ayub Med Coll Abbottabad [Internet]. 2010;22(3):18–21. Available from: https://www.ayubmed.edu.pk/JAMC/PAST/22-3/Shamshad.pdf
10. Bale J, Stoll B, Lucas A. Reducing Maternal Mortality and Morbidity: Improving Birth Outcomes: Meeting the Challenge in the developing world [Internet]. 2003. Available from: https://www.ncbi.nlm.nih.gov/books/NBK222105/
11. Fahmy NM, AI M, SH M A, et al. Nurse`s Skills Regarding Prevention of Postpartum Infection. Egypt J Heal Care [Internet]. 2017;8(2):52–60. Available from: https://ejhc.journals.ekb.eg/article_44921.html
12. Benita D. Effectiveness of Infection Control Standards on Practice among Health Care Personnel Working in Labour Unit. Semant Sch [Internet]. 2014; 1(4):9–115. Available from: http://repository-tnmgrmu.ac.in/1596/
13. Tirivavi E. Infection Control Practices Associated with Puerperal Sepsis in Harare City Maternity Units. Cent African J Public Heal [Internet]. 2019: 5(1):31–5. Available from: http://www.sciencepublishinggroup.com/j/cajph
14. Qasim AS, Chyad SS. Effectiveness of educational program on nurse midwives" preventive measures about Puerperal sepsis at Maternity Hospitals, Baghdad .

Indian J Forensic Med Toxicol [Internet]. 2020;14(4):770–6. Available from: https://medicopublication.com/index.php/ijfmt/

15. Kaur R, Jairus R. Enhancement of knowledge regarding puerperal sepsis among FHW Int J Sci Res [Internet]. 3(10):977–9. Available from: https://www.indianjournals.com/

16. Kaur B, Kaur P. A study to assess the knowledge and practices regarding prevention of puerperal sepsis among staff nurses working in maternity wards of selected hospital. IDC Int J [Internet]. 3(3):2395–3365. Available from: http://idcinternationaljournal.com

******