A Study To Assess The Effectiveness Of Structured Teaching Programme Regarding Knowledge On Nosocomial Infections In Newborns Among The Staff Nurses Working In Labour And Paediatric Units Of Selected Hospitals In Tumkur District

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Abstract: **The purpose of this research article is to assess the effectiveness of a structured teaching program on knowledge regarding nosocomial infection in newborns among staff nurses working in paediatric and labour units of selected hospitals in Tumkur district. The author conducted a literature search on neonatal nosocomial infections followed by a quasi-experimental study among 60 staff nurses and thoroughly scrutinized the effectiveness of structured teaching programme regarding knowledge on nosocomial infections in newborns. The study also assessed the level of knowledge regarding nosocomial infection in newborns among staff nurses and determined the association between pre - test knowledge score on nosocomial infection in newborns with selected baseline characteristics. Analysis was made using various tolls like frequency and percentage, mean, standard deviation, paired 't' test, and chi- square test. The result showed that there is a significant difference with a (paired)'t' value of 23.413 at (p<0.001) levels and it reveals a significant gain in knowledge among staff nurses following the structured teaching programme on nosocomial infection in newborns. If the structured teaching program given effectively it would improve the skills of staff nurses in preventing hospital acquired infections, especially in newborns.**

Keywords: **Neonatal nosocomial infection; Effectiveness of structured teaching programme on HAI; Prevention and control of HAI.**

I.   INTRODUCTION

Nosocomial infections also called hospital – acquired infections, are infections that are not present in the patient at the time of admission to the hospital but develop during or as a result of hospitalization. This is an infection that first appears between 48 hours and four days after a patient is admitted to a hospital or other health care facility. Nosocomial infections can be caused by bacteria, viruses, fungi, or parasites. These microorganisms may already be present in the patient's body or may come from environment, contaminated hospital equipment, health care workers, or other patients.

Nosocomial infections are one of the most important problems faced by the neonates in the hospital. They form an important cause of neonatal morbidity or mortality. Large – scale use of medical devices, antimicrobial drugs and lack of maturation of immune system increases the chances of acquiring nosocomial infections among the new born. According to world health organization (WHO) estimates, there are about 5 million neonatal deaths a year, of which 98% occur in

developing countries. Out of these, 1.6 million deaths occur due to neonatal infections. The major portions of these are hospital acquired or health care associated infections (HAI).

The reported incidence of nosocomial infections in neonates from India ranges from 1.5% to 37%. However its reporting in India has not been uniform may be due to lack of surveillance and scanty studies. As per the National Perinatal Database (NNPD), in the year 2002-03, systemic infections (18.6%) were the second most common cause of neonatal deaths. Each year 20% of world's newborns are born in India and 30% of the 3.9 million neonatal deaths occur in India. Neonatal nosocomial infections have been the major cause of neonatal death in India and systemic infections have an incidence of 3.8% among the newborns of which sepsis account for 61.5% of cases. The Center for Disease Control and Prevention studied the epidemiology of neonatal nosocomial infections and developed the National Nosocomial Infections Surveillance (NNIS) system to bench mark nosocomial infection rate data for patient in the NICU and found 89% of the infant with perinatally acquired infections presented with symptoms in the first 48 hours of life. The National Nosocomial Infection Surveillance (NNIS) system reports a rate of 14.1% nosocomial infections per 1000 patient days in developing countries like India.

Nosocomial infections includes bloodstream infections, ventilator-acquired pneumonia, urinary tract infections, meningitis, secondary skin infections, and abscesses after skin breakdown or an invasive procedure and eye, ear, nose or throat infections. Causative organism can be bacterial, Viral or fungal in origin. The most common type of nosocomial infections are surgical wound infections, respiratory infections, genitourinary infections as well as gastrointestinal infections. The organisms that cause nosocomial infections are often drug- resistant. The regular use of antimicrobials for treatment therapy or prophylaxis promotes the development of resistance. Through antimicrobial- driven selection and exchange of genetic resistance elements, multi- drug resistant strains of bacteria emerge. Antimicrobial- sensitive microorganisms that are part of the endogenous flora are suppressed, while the resistant strains survive. Many strains of pneumococci, enterococci and tuberculosis are currently resistant to most or all antimicrobials which were once effective.

The risk of nosocomial infections in neonates is the direct consequence of severity of illness, prematurity, congenital defects, systemic diseases, level of invasive monitoring, unscientific use of antibiotics, lapse in sterilization, disinfection technique and the nature of the diagnostic procedures. These infections are often caused by breaches of infection control practices and procedures, unclean and non- sterile environment surfaces and ill employees. Nurses are the heart and hand of the health team and they are sensitive to the need of the clients that enable then to have a good nurse- client relationship by being more empathetic as well as rendering services in hands- on- manner. Nurse comprise the first line care providers to the patients, who apart from giving drugs or rendering routine care to patients, also perform sterilization and disinfection duties. This would mean constant contact and exposure with various nosocomial infections present in the hospital setting. It is the duty and responsibility of nurse to strive comply and to the hospital preventive measures against nosocomial infections and other infectious diseases. Furthermore, Nurse as the healthcare workers should be aware of the ways to slow down or prevent transmission of infectious diseases and be knowledgeable of its potential risk of to the client and hospital staff. There is a great need to assess and control on a periodic or timely basis. More than this, need of hour is to assess their practices regarding implementation of gained knowledge.

Adequate and well- trained nursing staff are essential for infection control. Education of the staff nurses about various infection control practices and procedure specific guidelines has an important role in reduction of nosocomial infections. The education program should be on a continuing basis with periodic evaluation of the knowledge and practice. During the clinical experience in the paediatric unit the researcher observed the occurrence of nosocomial infections and the practice of staff nurses. They were lacking knowledge and skill regarding prevention of nosocomial infections. There was a strong need to conduct a study which would help staff nurses to develop knowledge and practice in prevention of nosocomial infections. In view of the above context the present study is undertaken to assess the knowledge of staff nurses regarding the nosocomial infection in newborns.

II. REVIEW OF LITERATURE

Agaral M and Thomas P (2003) conducted studies on the level of knowledge and practice of prevention of hospital acquired infections among trained nurses in surgical wards. As well as the factors that hinders those practices. The findings revealed that 98% of the nurses have heard about nosocomial infections while 2% have not. About 78% of the respondents practice prevention of hospital acquired infections while 22% do not. About 94% of the respondents expressed that they have hindrances to the practice of prevention of nosocomial infections. The hindrances include poor

working environment among 26%, poor knowledge about prevention of nosocomial infection was 10%, and lack of water for hand washing and other material resources 58%. This study reveals that majority of the trained nurses in surgical wards have knowledge about the prevention of nosocomial infections but not all of them are practicing it due to lack of equipment and poor working environment.

Arslan U, et. al. (2009) conducted a study on nosocomial infections in a Dutch Neonatal Intensive Care Unit to measure the incidence of nosocomial infections and risk factors among 742 neonates. This study showed that bloodstream infection (N=138, 14.9/1000 patient-days) and pneumonia (N=69, 7.5/1000 patient-days) were the most common infection. Bloodstream infection was about 59% were caused by coagulase-negative staphylococci; in 21% of neonates, blood cultures remained negative.

Chia- Jung WW, et. al. (2009) conducted a quasi-experimental study among nursing students on the effectiveness of educational program in improving understanding and practice of infection control precaution. This study revealed that interventional group showed improvement in their knowledge of these precaution [$F_{(2, 180)} = 13.53$, $P < 0.001$] and confidence in resolving infection related issues [$F_{(1.79, 168.95)} = 3.24$] when compared with the control group.

Couto RC, et. al. (2007) conducted studies on a 10-year prospective surveillance of nosocomial infections in neonatal care units. The result of this study revealed that the most frequent nosocomial infections were primary bloodstream infection (PBSI;45.9%), conjunctivitis (12.1%), skin infections (9.6%), and pneumonia (6.8%).

Jyoti Bala (2007) conducted a study on knowledge and practices of staff nurses regarding infection control in MCH area of a selected hospital, Ludhiana, Punjab. The result revealed that the majority of staff nurses (56.66%) had adequate knowledge regarding infection control measures whereas staff nurses working in nursery had higher knowledge score (45.7%) than labour room and postnatal ward (39.97%) and most of the staff nurses had unsatisfactory practices (61.66%) regarding infection control measures.

Mireya UA, et.al. (2007) conducted a study on nosocomial infections in neonatal intensive care unit of university hospital in Barcelona. The result shows out of 121 patients admitted to the NICU, the incidence rate of nosocomial infection was 74.3 infections per 100 admission and 2.7 infections per 100 patients' days in the NICU. The study revealed that the bacteremia was the most frequent episode of nosocomial infection in NICU and the most common microorganisms isolated were Gram-positive bacteria 72.7%.

Pawa AK et. al. (1997) carried out a study on nosocomial infection profile and risk factors at neonatal unit of Maulana Azad Medical College and hospital in New Delhi. The result revealed that out of 134 neonates were enrolled in the cohort, the overall nosocomial infection rate was 16.8/1000 patients days and the device associated infection rate was 11.9/1000 devices days. This study pointed out that multidrug resistant 'Klegsiella' species was the commonest organism causing nosocomial septicemia and pneumonia followed by pseudomonas aeruginosa. The risk factors detected to be significantly associated with infection on multiple logistic regression analyses were a birth weight<1500g and assisted ventilation >72hours.

Rubina (2001) conducted a comparative study to assess the knowledge of nosocomial infection in student nurses at Mangalore. 100 samples were selected by using purposive sampling technique and the tool used was a structured questionnaire. The mean pre- test was 2.31 ± 1.25 by students whereas staff nurses mean score was 9.43 ± 2.18.

Saini R, Kaur N (2009) conducted a descriptive study to assess the knowledge and practice of staff nurses regarding the prevention of nosocomial infections. Forty staff nurses were selected from the areas of medical ward, surgical ward, labour room, and emergency ward of Guru Nanak Mission Hospital, Punjab, in January 2002. The major findings of the study were that mean knowledge score regarding prevention of hospital acquired infections (HAI) was significantly high among nurses; mean practice score regarding prevention of HAI was average (18.22). A low positive correlation (r=0.46) was found between knowledge and practice of staff nurses towards prevention of HAI.

Suchitra JB and Lakshmi Devi N (2006) conducted studies to assess the impact of education on knowledge, attitudes and practices among various categories of health care workers on nosocomial infections. A total of 150 health care workers, doctors (n=50), nurses (n=50) and ward aides (n=50) were included. The result of this study concluded that education has a positive impact on retention of knowledge, attitudes and practices in all the categories of staff and there is a need to develop a system of continuous education for all categories of staff in order to reduce the nosocomial infections.

III.   RESEARCH METHODOLOGY

The respondents were asked to select the best possible option and tick for the most appropriate answers for the structured questionnaire. The questionnaire included eight items of demographic variables such as age, gender, religion, years of experience and their previous knowledge of the topic and forty six items regarding meaning, causes, spread, prevention and complication of nosocomial infection in newborns. It was scored as one mark for each correct answer.

Objectives of the Study:

The main purpose of this study is to assess the effectiveness of structured teaching programme regarding knowledge on nosocomial infections in newborns among the staff nurses. The other objectives are:

- To assess the level of knowledge regarding nosocomial infection in newborns among staff nurses.

- To determine the association between pre- test knowledge score on nosocomial infections in newborns with selected baseline characteristics.

Scope of the Study:

- This research focuses the effectiveness of structured teaching program regarding knowledge on nosocomial infections in newborns among the staff nurses.

- This study also involves in identifying and analyzing the various factors that determine the nosocomial infections among the newborns.

Limitation of the Study:

- This study is limited to sixty (60) staff nurses working in the labour and paediatric units of selected hospitals in Tumkur district.

- This study is limited to the staff nurses who are qualified and registered as registered nurse and midwife in the nursing council.

- The duration of the study is for a period of six weeks.

Problem Statement:

A Quasi experimental study to assess the effectiveness of a structured teaching programme on knowledge regarding neonatal nosocomial infections in newborns among the staff nurses working in labour and paediatric units of selected hospitals of Tumkur district.

Research Approach:

The research approach used for the study was an explorative approach.

Research design:

The research design adopted for this study is quasi-experimental design. One group pre-test and post-test quasi experimental design was used to evaluate the effectiveness of structured teaching programme regarding knowledge on nosocomial infections in newborns among the staff nurses working in paediatric and labour units of selected Hospitals in Tumkur district.

Setting of the Study:

The present study was conducted at selected hospitals in Tumkur District.

Variables:

Independent variable:- In this study, the structured teaching programme on nosocomial infections in newborns is the independent variable.

Dependent variable: - In the present study, dependent variable is the knowledge of staff nurses on nosocomial infection in newborns.

*Demographic Variables:-*Age, gender, profession, total years of experience, area of experience and previous exposure to neonatal nosocomial infection information session are the demographical variables.

Population:

The population selected for the present study comprised of sixty (60) staff nurses working respectively from paediatric and labour units of selected hospitals of Tumkur district.

Sampling Technique:

Random sampling is a probability sampling which involves a selection process in which each element in the population has an equal and independent chance of being selected. In the present study convenient sampling technique is adopted to collect the samples.

Sampling Size:

The researcher has taken sixty (60) samples from the staff nurses working in paediatric and labour units of selected hospitals of Tumkur district.

Sampling Criteria:

Sampling criteria listed the characteristics essential for membership in the target population. The samples were collected from the population that met the sampling criteria. They are as follows:

Inclusion Criteria:

- Staff nurses who are registered in nursing council and willing to participate in the study.
- Staff nurses working in paediatric and labour room of a selected hospitals in Tumkur district.
- Staff nurses available at the time of data collection.

Exclusion Criteria:

- Staff nurses who are not available at the time of data collection.
- Staff nurses who have attended educational programme on neonatal nosocomial infection within 6 months.
- Staff nurses who are not willing to participate in the study.

Conceptual Frame Work:

A conceptual framework is a tool, researchers use to guide their inquiry; it is a set of ideas used to structure the research, a sort of map that may include the research questions, the literature review, methods and data analysis. The conceptual frame selected for this study was based on Ernestine Wiednbach, "The Helping Art of Clinical Nursing". Wiedenbach's prescriptive theory may be described as a system of conceptualizing for a purpose. Prescriptive theory may be described as one that conceptualizes both the desired situations and the perception by which it is to be brought about as an outcome.

Content Validity of the Tool:

Content validity of tool was ascertained in consultation with nine experts of which seven experts had responded. Of the seven experts, six experts were from the field of paediatric nursing, and other expert was from the statistics department. The experts were requested to judge the items for accuracy, relevance, and appropriateness. As per the experts' advice changes were made related to the knowledge questions. The content validity index was 0.85.

Testing the Reliability of the Tool:

Reliability of a research instrument is defined as the extent to which the instrument yields the same result of repeated measure. In order to establish ratability of the tool the test reset method was used, the tool was administrated to nine samples. The ratability co-efficient of the tool was calculated by using the Karl Pearson's correlation co-efficient formula, the calculated value of 'r' was 0.80. The developed tool was found to be highly reliable.

Administration of Pre-test:

Keeping in mind the ethical aspects, prior permission was obtained from the head of selected hospitals. In addition to this informed consent was obtained from all the respondents. Pre- test was conducted prior to structure teaching programme.

Structured teaching Programme:

The investigator conducted forty five minutes of teaching programme regarding neonatal infections according to the lesson plan. A power point slide show was prepared as an audio visual aid. The structured teaching programme consisted of aspects like introduction of nosocomial infection, causes, risk factors, etiology, mode of transmission, common types of nosocomial infection, prevention and precautions.

Tools Used:

Data was analyzed by using descriptive and inferential statics in the following steps:

- Data was arranged in master sheet.

- Description of subject with respect to baseline characteristics was presented in the terms of frequency and percentage.

- Mean, standard deviation and mean percentage of knowledge score of staff nurses were used to determine the effectiveness of structured teaching programme, analyzed by using paired 't'test.

- Association between the knowledge score and selected baseline characteristics were analyzed by using Fisher's exact test or chi square test.

- Analyzed data was presented in tables, graphs and diagrams.

IV. ANALYSIS AND INTERPRETATION OF DATA

The analysis and interpretation of data of this study are based on data collected on knowledge of staff nurses working in paediatric and labour unit in view of the objectives of the study, one group pre-test and post- test; quasi experimental design was adopted to evaluate the effectiveness of the structured teaching programme. The data were collected from the respondents both before and after administration of structured teaching programme. The gathered data was then organized, tabulated, analyzed and interpreted using descriptive and inferential statistics.

Description of the subject with respect to baseline characteristics was analyzed in term of frequency and percentage, mean, standard deviation and mean percentage of the knowledge score of staff nurses were used to determine the effectiveness of structured teaching programme. Further statistical significance of the effectiveness of structured teaching programme was analyzed by using paired't' test. Association between the pre-test and post-test knowledge score and selected demographic variables were analyzed by chi-square test or fisher's exact test.

Table 1: Description of Baseline Characteristics N=60

Baseline Characteristics	Frequency	Percentage
Gender		
Male	13	21.67
Female	47	78.33
Age		
21-30 years	13	21.66
31-40 years	11	18.33
41-50 years	19	31.66
Above 50 years	17	28.33
Experience		
0-1 years	09	15
2-5 years	04	6.66
6-10 years	13	21.66
11-15 years	17	28.33
More than 15 years	17	28.33
Previous Knowledge		
Yes	36	60
No	24	40
Sources of Information		
Awareness programme	32	53.33
Mass Media	15	25
Other sources	13	21.67

Out of 60 respondents surveyed 78.33% of the staff nurses were females and 21.67% of staff nurses were males. 21.66% of staff nurses were aged between 21-30 years, 18.33% were aged between 31-40 years, 31.66% were aged between 41-50 years and remaining 28.33% were aged above 50 years.

Among the experience categories, 15% of the staff nurses had 0-1 year of experience, 6.66% had 2-5 years, 21.66% had 6-10 years, 28.33% had 11-15 years and 28.33% had more than 15 years of experience. The knowledge wise classification showed that 60% had previous knowledge on nosocomial infections in newborns and 40% had no knowledge about it.

Source of knowledge wise classification revealed that 53.33% staff nurses were attended awareness programme, 21.67% had obtained it from other source like lectures and 25% were from mass media.

Table 2: Level of knowledge score of staff nurses

Level of knowledge (Score)	Number of respondents			
	Pre- test		Post- test	
	No.	%	No.	%
Poor (≤24%)	4	6.67	0	0
Average (25% - 49%)	24	40	1	1.67
Good (50% - 75%)	32	53.33	20	33.33
V. Good (76%- 100%)	0	0	39	65

The table 2 depicts the pre- test score where, 4 (6.67%) staff nurses had poor knowledge, 24 (40%) staff nurses had average knowledge, 32 (53.33%) staff nurses had good knowledge and one of the staff nurses had very good knowledge. In the post- test 39 (65%) staff nurses had gained very good level of knowledge, 20 (33.33%) staff nurses gained good level of knowledge, 1 (1.67%) staff nurses gained average level of knowledge, while none had poor knowledge regarding nosocomial infection in newborns.

Table 3: Area wise pre- test and post- test knowledge score on nosocomial infection in newborns

Sl No.	Knowledge Variables	Maximum possible score (46)	Subject knowledge					
			Mean		Standard Deviation		Mean Percentage Score	
			Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	Nosocomial infection	3	1.622	2.733	.931	.579	54.07	91.11
2	Causes of nosocomial infection	12	4.611	8.344	1.806	1.538	38.45	74.53
3	Spread of nosocomial infection	6	2.733	4.477	1.169	1.041	45.55	74.63
4	Prevention of nosocomial infection	24	12.144	18.567	3.255	2.417	46.70	77.36
5	Complication of nosocomial infection	1	.488	.744	.502	.438	48.88	74.44

Area wise mean percentage of knowledge score is depicted in the table 10. It shows that in pre-test and post-test the subjects obtained maximum score in the area related to nosocomial infections in newborns which were about 54.07% and 91.1% respectively. In the area of knowledge related to causes of nosocomial infection in newborns the pre mean percentage was 38.45% with an area wise mean $\pm$SD of 4.611 $\pm$1.806, whereas in post test 74.53% with area wise mean $\pm$SD of 10.70$\pm$1.216. Knowledge related to spread of hospital acquired infection in pretest was 45.55% with an area wise mean $\pm$SD of 2.733$\pm$1.169, whereas in posttest 74.63% with an area wise mean $\pm$SD of 4.477$\pm$1.041. In pretest knowledge related to prevention of hospital acquired infection was 46.70% with an area wise mean $\pm$SD of 12.14$\pm$3.255 whereas in post- test it was 77.36% with an area wise mean $\pm$SD of 18.56$\pm$2.417 .In the area of knowledge related to complications, the pre mean percentage was 48.88% with an area wise mean $\pm$SD of .488$\pm$.502 whereas the post mean percentage was 74.44% with an area wise mean $\pm$SD of .744$\pm$.438.

Table 4: Comparison of knowledge score among the respondents

Knowledge score	Mean	Mean difference	SD of mean difference	Paired 't' test value	df	Level of significance
Pre- test	21.11	-14.366	5.88	-23.413	89	0.000
Post- test	35.47					Sig

Sig. significant

The pre- test means score was 21.11 and the post- test mean was 35.47 with a mean difference of -14.366 with SD of 5.889. The paired 't' test value was -23.413 at df= 89, significant at 0.001 levels.

Table 5: Association of pre- test knowledge score with their demographic variables

Sl. No.	Demographic variables	Knowledge level		Df	Fisher's exact value	Chi- square value	Inference
		<40% Inadequate	>40% Adequate				
1	**Age in years** 21- 30 31-40 41-50 Above 50 years	12 3 3 0	12 20 8 2	3	14.341 P=.002		<0.05 *s
2	**Gender** Male Female	0 17	2 31	1		.831 P=.362	>0.05 NS
3	**Year of Experience** 0-1 year 2-5 years 6-10 year 11-15 year Above 15 year	6 6 2 5 5	14 9 5 4 4	2		1.082 P=.582	>0.05 NS
4	**Previous knowledge** Yes No	9 17	23 11	1		11.855 P=.001	<0.05 *S

*S- significant   NS- non- significant

Table 5 depicts the association of age with pretest knowledge levels at df= 3, $\chi2$= 14.341 and p=.002, which is significant at <0.05 levels. Associating the gender with the pretest knowledge levels at df=1, $\chi2$ = .831 and p=.362, which is not significant at >0.05 levels. Associating course of study with the pretest knowledge score had a df=2, $\chi2$ = 1.082 and p=.582, not significant at >0.05 levels. Associating previous knowledge regarding infection control with pretest knowledge score was df=1, $\chi2$ =11.85 and p=.001, which is significant at <0.05 levels.

V. NURSING IMPLICATIONS

The results of this study have implication on nursing practice, nursing administration, nursing education and nursing research.

Nursing Practice:

▪ Nurses are the back bone of the health care set up of any country.

▪ The expanded role of professional nurse emphasizes the activities, which includes promotive, preventive, curative and rehabilitative aspects.

▪ Nurses play an important role in disease prevention and health promotion.

▪ Health information and knowledge on infection control can be imparted through various methods like mass media, lecture and structured teaching programme.

▪ Study findings show that nurses need to update their in knowledge relating to hospital acquired infection focusing on aspects like causes, spread of infection, prevention and complications. This will enable them to utilize standard practices like standard precaution, hand washing, disinfection and sterilization, biomedical waste management on day to day basis.

▪ The outcome of such practices can be checked in terms of parameters like prevalence of ventilator associated pneumonia, urinary tract infection, blood stream infection and surgical wound infections.

Nursing Education:

• One of the leading functions of nursing is imparting education with newer knowledge.

• Nurse educators can make use of this structured teaching programme, to orient their new recruits.

• The study findings reveal that structured teaching program was beneficial in improving knowledge. So such programs should be included in the introductory sections of the curriculum of nursing students. So that they will get a prior knowledge on infection control before they are expose to the clinical area. This will help them to practice it on daily basis and to provide a quality based nursing care to patients.

Nursing Administration:

• Hospital is an organization which provides a higher level of care especially nurses and the growing nursing students.

• Based on the study findings it is necessary to include such programs as induction classes for newly joined staff nurses. This will improve their knowledge and adhere these aspects to their practical area. Even such teaching programs can be in cooperated to in-service and continuing nursing education so that they will update their knowledge.

Nursing Research:

Study findings have added to the body of knowledge regarding knowledge levels of nurses in HAI. The prepared tool can be tested in various settings.

VI. CONCLUSION

This research article highlights the effectiveness of a structured teaching programme on knowledge regarding nosocomial infection in newborns among the staff nurses working in paediatric and labour unit of selected hospitals in Tumkur district. During the pre-test it was found that majority 4 (6.67%) respondent had poor knowledge, 24(40%) respondents had average knowledge, 32(53.33%) respondents had good knowledge and none of the respondents had very good knowledge, whereas in a post-test 39 (65%) respondents had gained very good level of knowledge, 20 (40%) respondents gained good level of knowledge,1 (1.6%) respondents gained average level of knowledge, while none had poor knowledge regarding infection control . Paired't' test shows a significant increase in the knowledge score (t=-23.413) at 0.001 level of significance. It can be concluded that the association of demographic variables namely age, previous knowledge regarding nosocomial infections innewborns with pre-test knowledge is significant while variables like gender and course of study showed no significant association as justified statistically using fisher's exact or $\chi 2$ values. It can be inferred that the knowledge score of the respondents regarding nosocomial infections in newborns was inadequate in the

pre-test mean (21.11) than in the post-test, mean (35.47). From this it is concluded that the structured teaching programme was considerably effective in increasing the knowledge on nosocomial infections in newborns among staff nurses.

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