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Original Article

NURSES AWARENESS REGARDING PREVENTION AND CONTROL OF NOSOCOMIAL INFECTION IN NICU

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ABSTRACT

Background: Nosocomial infections are one of the major causes of mortality and morbidity in hospitals. These infections have the most common frequency in pediatric hospitals- especially in neonatal wards second to the burn units. Therefore, present study aims to assess the knowledge of staff nurses regarding prevention and control of nosocomial infection in NICU.

Method: Quantitative descriptive research design was used to conduct study. A sample of 30 staff nurses were selected for the study using a convenient sampling technique from KRH Gwalior.

Results: The result revealed that 50% of the staff nurses had good knowledge level, 37% had average knowledge level and only 7% had poor knowledge regarding prevention and control of nosocomial infection in NICU. Overall mean score (31.96 ±3.86) which was 60% of the total score, reveals average knowledge of nurses regarding prevention and control of nosocomial infection. Approximately similar mean knowledge score was found in areas like neonate and neonatal mortality (65%), Gloving, gowning and disposal of NICU waste (65%), Sterilization and precautions in NICU (62%), Universal precaution & hand washing (59%). Less mean knowledge score was found in areas like common nosocomial infection and mode of transmission (57%), role of nurses in prevention and control of infection (55%) and nosocomial infection and causes (53%). Chi-square test was conducted to find out the association between knowledge score and demographic variables, which revealed that there was no significant association found between knowledge score and demographic variables.

Conclusion: Study concluded that continue nursing education regarding prevention and control of nosocomial infection is necessary for every clinical area.

Keywords: Knowledge, Staff nurses, NICU, Nosocomial infection, Prevention

INTRODUCTION

Nosocomial infections that develop during hospitalization and were not incubating or present at the time of admission to the hospital or infections developing in patients after hospitalization without prior indication before hospitalization[1,2]. Causes of nosocomial infections are invasive procedures, altered immune system, frequently used broad spectrum antibiotics, fail to use aseptic techniques, too many persons providing care to the patient, prolonged hospitalization and hospital environment.[3] NICU or neonatal intensive care unit is also known as an intensive care nursery, is an intensive care unit (ICU) specialized in the care of ill or premature newborn infants. Neonatal period refers to the first 28 days of life after birth. Neonatal care is also known as specialized intensive care of newborns, has been around since the 1960s.[4] Ill and preterm infants are especially vulnerable because they frequently undergo invasive treatments and rely on central catheters for nutrition and ventilators for respiratory support. Nosocomial infection prevention is a vital patient safety requirement that always necessitates a multidisciplinary approach. There are no short cuts. Hand hygiene before and after patient contact is the most

important measure, and yet, compliance with this simple measure can be unsatisfactory.[5] India accounts for one-fifth of all live births and a quarter of all neonatal deaths worldwide. In 2013, about 0.75 million neonates died in India, the greatest number of any country in the world. The NMR is currently 28 per 1000 live births.[6]Prevention of entry of microbes to NICU can be achieved by clean environment, hand hygiene and conducive infrastructure. Daily and weekly maintenance of equipment such as incubators, heaters, syringe pumps, ventilator filters, circuits, bag and mask can help to prevent microorganism multiplication in the NICU. Efficient bio-medical waste disposal is very important. Cord care, skin care and safety measures during various invasive procedures like venepuncture, endotracheal intubation and umbilical catheterization are essential. Early breast feeding, the use of colostrums, and early discharge all help to reduce neonatal morbidity.[7] **Dhanorkar N Mathew S (2016)** revealed that more than half of the nursing staff 56.7% were having good knowledge score, 38.3% were having excellent knowledge score. In terms of hand hygiene technique, 51.7% had excellent hand hygiene practises, whereas 45% had ordinary practises. Only 55% of people washed their hands after entering the unit, 30% washed hands before handling the baby, and 55% washed their hands after handling the baby, according to the findings. Despite high knowledge scores, the study found that practice was weak.[8]**Sodhi, Kanwalpreet et al (2013)** found that overall knowledge and awareness regarding different infection control practices were excellent (>90% positive responses) in 5% of the nursing professionals, good (80-90% positive responses) in 37%, average (70-80% positive responses) in 40% and less than average (<70% positive responses) in 18%. The infection control knowledge among the nurses was fairly good; however, there is still a wide scope of improvement with regular educational programs and in-house training.[9]The high incidences of Neonatal mortality rate and role of nosocomial infections in NICU as contributing factor provoked researcher to select the following topic for the study.

STATEMENT OF PROBLEM

"A study to assess the knowledge of staff nurses regarding prevention and control of nosocomial infection in NICU at selected hospital, (Madhya Pradesh)**".**

OBJECTIVES

1. To assess the knowledge of staff nurses regarding prevention and control of nosocomial infection in NICU.
2. To find out association between knowledge level regarding prevention and control of nosocomial infection in NICU with demographic variables.

Hypothesis (at 0.05 significance level)

H_1: There will be significant association between knowledge level regarding prevention and control of nosocomial infection in NICU with demographic variables.

Research Methodology

Research approach:- Quantitative approach.

Research Design:- Descriptive research design.

Research Setting: Study was conducted at KRH Gwalior.

Population:- Study population consisted of staff nurses working in KRH Gwalior, Madhya Pradesh.

Sampling technique and sample: 30 staff nurses selected through convenient sampling technique.

Research Tool: The tools selected for the present study divided into two sections.

Section I:- Demographic variables included 5 items such as age, gender, qualification, working experience in NICU and attended any inservice education regarding prevention and control of nosocomial infection in NICU.

Section II:- Structured knowledge questionnaire consists of 53 questions to assess the level of knowledge regarding prevention and control of nosocomial infection in NICU. The area included were knowledge on neonate and neonate mortality rate (5 questions), knowledge on nosocomial infections and causes (4 questions), Common nosocomial infections and mode of transmission (6 questions), Universal precaution and hand washing (9 questions), gloving, gowning and disposal of NICU waste (12 questions), sterilization and precautions in NICU (11 questions) and role of nurses in prevention and control of infection (6 questions).

Prior to tool administration, all subjects were given an information sheet, explaining the purpose and outcome of the study. Informed consent was taken from participants and self -explanatory tools were administered to participants. Permission for study was taken from concerned authorities.

RESULTS

According to **table 1**, majority of the participants, 90% (27) were in the age group of 20-25 years while 10% (03) were in the age group of 26-30 years, 80% (24) participants were female and rest 20% (06) were male. In view of professional qualification majority of the participants, 80% (24) had GNM diploma, 3.33% (01) each had B. Sc Nursing and P.B. B. Sc Nursing degree. Around 73.33% (22) participants were having 1 month to 2 years experience in NICU, 16.67% (05) had no experience, while 3.33% (01) participants were included in each group of 3-5 years, 6-7 years and 8 years and more experience in NICU. 43% participants had not attended in service education, 43% participants attended only one in service education, similar percentage of participants 6.67% (02) attended two, three & above in service education regarding prevention and control of infection in NICU.

The data given in **table 2**, area-wise distribution of knowledge score of nurses on prevention and control of infection in NICU shows that overall mean score (31.96± 3.86) which was 60% of total score reveals average score of nurses on prevention and control of infection in NICU. A Similar percentage (65%) of the mean knowledge score was found in areas of Neonate and neonatal mortality rate (3.27± 1.46) and Glowing, gowning and disposal of NICU waste (7.76± 2.96). 62% of mean knowledge score was obtained in area of Sterilization & precautions in NICU (6.83± 2.48), 59% of mean knowledge score was obtained in area of Universal precaution & hand washing (5.33± 1.88), 57% of mean knowledge score was obtained in area of Common nosocomial infection & mode of transmission (3.40± 1.40), 55% of mean knowledge score was obtained in area of Role of nurses in prevention & control of infection (3.27± 1.52) and 53% of mean knowledge score was obtained in area of Nosocomial infection and causes (2.1± 1.06).

On the basis of scoring pattern of the tool, level of knowledge was categorize as below 201% and above as excellent % score as very poor, 21%-40% score as poor, 41%-60% as average, 61%-80% as Good and 81% and above as excellent knowledge level. As per **table no. 3**, half of the participants 50% (15) had good level of knowledge, 36.67% (11) had average level of knowledge, 6.67% had poor level of knowledge, 3.33% (01) had poor level of knowledge and only 3.33% (01) had excellent level of knowledge regarding prevention and control of infection in NICU.

According to **table 4**, Mean, SD and Mean percentage of knowledge score in relation to age shows that nurses in age group 26-30 years scored 69% mean score (36.66± 9.61) which was higher and good knowledge level than the nurses in age group 20-25 Years score 59% (31.44± 9.23) & average knowledge level, while the nurses in age group comprised 90% of the samples. Study found that female gender group nurses scored 63% mean score (33.33± 9.30) which was higher and good knowledge level than the nurses in male gender group score 53% (26.5± 9.33) & average knowledge level, while the nurses in female gender group comprised 80% of the samples. Participants with BSc. Nursing qualification scored 75% mean score which was higher comparing to participants with PB BSc. Nursing qualification 15% and participants with GNM qualification 61%. Participants with GNM qualification comprised more than 90% of samples which revealed good knowledge score of nurses. Comparison in view of working experience in NICU revealed that participants with 6-7 years and 8 years experience scored similar 79% mean score as good knowledge level, participants with no experience scored 71% (37.4± 6.30) as good knowledge level, participants with 1 month to 2 years scored 57% (30± 9.85) and participants with 3-5 years scored 53% mean score. Distribution of Mean, SD and Mean percentage of knowledge score in relation to their in service education attended regarding prevention and control of infection in NICU shows that nurses who attended two in service education scored highest mean percentage score 62% (34± 1.41) as good knowledge level comparing to one in service education 58% and nurses who had not attended any in service education 62%.

On the basis of chi square test there was no significant association found between the knowledge score regarding **prevention and control of infection in NICU** among nurses with demographic variables **age, gender, qualification working experience in NICU and in service education attended regarding prevention and control of infection in NICU.**

Table: 1. Distribution of samples according to socio demographic variables (N=30)

S. No.	Demographic Variables	Samples (n=40)	
		Freq.	%
1	Age		
a)	20-25 Year	27	90%
b)	26-30 Year	03	10%
2.	**Gender**		
a)	Male	06	20%
b)	Female	24	80%
3.	**Professional Qualification**		
a)	GNM	28	93.33%
b)	B. Sc Nursing	01	3.33%
c)	P.B. B. Sc Nursing	01	3.33%
4.	**Working experience in NICU**		
a)	1 month to 2 Years	22	73.33%
b)	3-5 Years	01	3.33%
c)	6-7 Years	01	3.33%
d)	8 and above years	01	3.33%
e)	No experience	05	16.67%
5.	**In-service education**		
a)	Not attended	13	43.33%
b)	1	13	43.33%
c)	2	02	6.67%
d)	3 above	02	6.67%

Table: 2- Area of knowledge score of nurses on prevention and control of infection in NICU.

Are of Knowledge	Max. Score	Knowledge Score		
		Mean	SD	Mean %
Neonate and neonatal mortality rate	5	3.27	1.46	65%
Nosocomial infection and causes	4	2.1	1.06	53%
Common nosocomial infection & mode of transmission	6	3.4	1.40	57%
Universal precaution & hand washing	9	5.33	1.88	59%
Glowing, gowning and disposal of NICU waste	12	7.76	2.96	65%
Sterilization & precautions in NICU	11	6.83	2.48	62%
Role of nurses in prevention & control of infection	6	3.27	1.52	55%
Total	53	31.96	9.55	60%

Table 3 Percentage wise distribution of nurses according to their level of knowledge on prevention and control of infection in NICU

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Level of knowledge on prevention and control of infection in NICU	Frequency	Percentage (%)
Very Poor	02	6.67%
Poor	01	3.33%
Average	11	36.67%
Good	15	50%
Excellent	01	3.33%

Table: 4 Comparison of mean, SD and mean percentage of knowledge score with socio demographic variables

Socio Demographic variable		No. of parti-cipants	Knowledge Score		
			Mean	SD	Mean %
Age in years	20-25 Years	27	31.44	9.61	59%
	26-30Years	03	36.66	9.23	69%
Gender	Male	06	26.5	9.33	53%
	Female	24	33.33	9.30	63%
Qualification	GNM	28	32.53	8.60	61%
	PB BSc. Nursing	01	8	-	15%
	BSc. Nursing	01	40	-	75%
Working experience in NICU	1 month to 2 years	22	30	9.85	57%
	3-5 Years	01	28	-	53%
	6-7 years	01	42	-	79%
	8 years more	01	42	-	79%
	No experience	05	37.4	6.30	71%
In service education attended	Not attended	13	32.84	8.85	62%
	One	13	30.69	11.12	58%
	Two	02	34	1.41	64%
	Three & more	02	32.5	13.43	61%

DISCUSSION

As per **table 1**, our study revealed that majority of the nurses (90%) was in age group of 20-25 years and lowest in the age group of 31-35 years. Our findings supported by a study conducted by **Khanam S. (2017)**[10] with similar result in age groups. According to gender we found majority of females (80%) in our study, our result supported by a study conducted by **Naregal PM et al (2015)**[11] in which they found approximately similar results. In our study most of the nurses 43% attended only one in service education regarding prevention and control of nosocomial infection in NICU. Our findings were consistent with the study conducted by **Tak HK et al (2021).**[12]

As per Table 2, area wise knowledge score of nurses on prevention and control of infection in NICU shows that overall mean score (31.96± 3.86) which was 60% of total score reveals average score of nurses on prevention and

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control of infection in NICU. Highest mean knowledge score 65 % was in the area of **Neonate and neonatal mortality rate** (3.27± 1.46) **and Glowing, gowning and disposal of NICU waste** (7.76± 2.96) and lowest mean knowledge score 53 % was in the area of **Nosocomial infection and causes** (2.1± 1.06). Our findings supported with the similar results by a study conducted by **Moro M.L et al. (2004)**[13]. **Purushottam A Giri et al (2016)**[14] also revealed similar findings.

As per **table no. 3**, half of the participants 50% (15) had good level of knowledge, 36.67% (11) had average level of knowledge, 6.67% had poor level of knowledge. These findings were consistent with the findings of **Alrubaiee, G et al**. **(2017)**[15], who stated that all nurses posses good knowledge and experience. **Bhore N. (2015)**[16] also revealed similar findings in her study.

According to **table 4**, Mean, SD and Mean percentage of knowledge score in relation to qualification, participants with BSc. Nursing qualification scored 75% mean score which was higher comparing to participants with PB BSc. Nursing qualification 15% and participants with GNM qualification 61%. Comparison in view of working experience in NICU revealed that participants with 6-7 years and 8 years experience scored similar 79% mean score as good knowledge level, participants with no experience scored 71% (37.4± 6.30) as good knowledge level. These findings consistent with the results of study conducted by **Fashafsheh I et al (2015)**[17]**.**

There was no significant association found between the knowledge score regarding prevention and control of infection in NICU among nurses with demographic variables age, gender, qualification working experience in NICU and in service education attended regarding prevention and control of infection in NICU. These findings supported with the findings of **Gupta R et al**. **(2020)**[18]**.**

Conclusion:- Findings of our study strongly recommend the need for conducting nursing education program to increase the knowledge on prevention and control of infection in NICU among nurses. Educating nurses and providing them correct information can help them to reduce infection chances in NICU.

Limitations: The small size (30) of the sample made it difficult to draw generalization. A structured questionnaire was used for data collection which restricts the amount of information that can be obtained from the respondents, only knowledge was assessed; no attempt was made to assess their attitudes and practice due to time shortage and less resources.

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Conflict of Interest: There was no conflict of interest involved while conducting the present study.

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