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Nurses in NICUs' views on nosocomial infection prevention

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Abstract:

BACKGROUND: Basic infection control measures are required in India's health-care setting in Neonatal Intensive Care Units (NICUs) to lower the prevalence of hospital-associated infections. The aim of the present study was to assess practices followed by nurses of NICUs for nosocomial infection prevention.

MATERIALS AND METHODS: From January to February 2020, a descriptive cross-sectional study was conducted. Participants in the study were chosen by total enumeration sampling technique, i.e., 60 nurses were included in this study who working in tertiary care institutions, India. The study respondents' knowledge and practice for nosocomial infection control strategies were assessed by using a 30-item and 27-item questionnaires, respectively. SPSS (version 23.0) was used to analyze the data collected.

RESULTS: Results showed that all nurses (100%) were females, belongs to the age group of 26–35 years (82%), hold professional qualifications (34%) in GNM as well as post basic BSc nursing, married (72%), had 1–5 years of professional experience (66%), and working in the NICUs for 1–3 years (74%). Most of nurses (55%) had never attended any session on nosocomial infection prevention. Nurses of NICUs (70%) had just a moderate degree of understanding on nosocomial infection prevention. Nurses' practice showed good practise (60%) for nosocomial infection prevention in NICUs.

CONCLUSIONS: The necessity to adopt health-care policy about nosocomial infections and execution of regular training program to upgrade and refresh nurses' knowledge and practices regarding for nosocomial infection control measures is indicated to fill gap among knowledge and practices concerning nosocomial infection control and prevention.

Keywords:

NICU, nosocomial infection, nurses, practices

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Introduction

World Health Organization stated that around 4 million newborns death occur worldwide every year.[1] Among approximately 98% deaths mainly occur in developing countries[2] and are main cause for this are either infections, asphyxia, complications of prematurity, or low birth weights.[3] The incidence of neonatal sepsis in the developing countries is 1–10 per 1000,[4] which is three times higher in developing countries as compared to developed countries.[5]

Neonatal intensive care units (NICU) are the unit specializing in caring of premature and ill newborn infants.[6] A newborn is an infant who is only hours, days, or up to a 4 weeks old or 28 days older after birth.[7] During these first 28 days of life, the child is at highest risk of dying because either infections, preterm, or birth asphyxia.[8]

Nosocomial infection term is used for any disease acquired by patient during medical care in hospital.[9] Mainly, it is an infection acquired by patient during their hospital stay.[10] National Nosocomial Infection Surveillance reported that nosocomial infection rate is about 14.1 infections per

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1000 patient days.[11] Risk of nosocomial infection in neonates is very higher due to severity in their prematurity, illness, systemic infections, congenital defects, invasive monitoring, no judiciary use of antibiotics, and gaps in sterilization and disinfection techniques and various diagnostic procedures.[12]

Nurses are the primary caregivers for infants in the NICU.[13] The hands of the nurse constitute a temporary mechanism of illness transmission in neonates. Handwashing inhibits the spread of the virus and slows it down.[14] Handwashing on a regular basis helps to reduce the spread of infection among newborns.[15] It immediately minimizes pathogenic colonization on hands and infection dissemination in the hospital, particularly in the newborn intensive care unit (NICU).[16]

Nurses working in the neonatal unit must be knowledgeable and skillful in prevention of neonatal infections.[17] If nurses failed to adopt the infection control techniques, it will further lead to septicemia and neonatal death. Hence, the aim of the present study was to assess nurse's knowledge and practices who are working in neonatal intensive care unit for nosocomial infections.

Materials and Methods

The study was a descriptive cross sectional study which was conducted in neonatal intensive care units at Pt. B. D. Sharma, PGIMS, Rohtak, Haryana, from January to February 2020.

Data collection tools

Data collection tools consist of three sections. Section I consists of item related to biodemographic variables, i.e., age, professional qualification, marital status, professional experience, experience in NICUs, and attended any workshop. Section II consists of 30 questionnaire to assess knowledge of nurses for nosocomial infection. Section III consists of 27 items to assess practice of nurses for nosocomial infection control.[18] Research tool validity was done by seven experts from field of neonatology and nursing with CVR (0.68) and CVI (0.88) scores. Reliability score of 0.9 shows excellent reliability in research tools, so tools were found reliable, clear, relevant and appropriate. Try out was conducted on 6 nurses working in NICUs to check feasibility of study.

Sample size and sampling method

The study's participants were chosen by using total enumeration sampling technique. A total of 60 nurses who were working in various NICU of tertiary care institutes were included in this study. Sample size for nurses has been calculated by using a 5% margin of error, 95% confidence level, 2% prevalence of infection rate in NICU, and 50% response distribution. Total 60 nurses were included in present study by using purposively sampling technique. Nurses who were working in various neonatal intensive care units (NICU) more than 6 months were included. Twenty-one nurses from MCH, NICU-I department, 21 nurses from MCH, NICU-II department, 9 nurses were from MCH, NICU-III department, 7 nurses were from MCH, NICU-IV department, and 2 nurses were from LR-NICU department were included in this study.

Data analysis

Data analysis was done by using IBM SPSS version 23.0. Descriptive statistics, i.e., frequency and percentage, was calculated for biodemographic variables, knowledge, and practices of nurses.

Ethical considerations

Ethical approval was obtained from institute ethical committee (PGIMS/IEC/2019/2064) on dated November 23, 2019, of Pt. B. D. Sharma PGIMS, Rohtak, Haryana. Written informed consent was obtained from each nurse participant before enrolling them in the present study.

Results

Out of 60 nurses, majority (82%) belongs to age group of 26–35 years, having professional qualified (34%) of GNM and post basic BSc nursing, female (100%), married (72%), having 1–5 years of professional experience (66%), and in which they have experience in NICU from 1 to 3 year (74%). Majority did not attend any workshop (55%) related to prevention of nosocomial infection anytime [Table 1].

Majority of nurses had only moderate level of knowledge (70%) for prevention of nosocomial infection. About 20% of nurses had inadequate knowledge for prevention of nosocomial infection and only 6% had adequate knowledge for nosocomial infection control in NICU [Table 2].

Practice scores of nurses showed that 60% nurses were following good practice for prevention of nosocomial infection in NICUs. About 22% of nurses were following excellent practice and only 18% nurses were following poor practice for prevention of nosocomial infection in NICUs [Table 3].

Discussion

Patients' morbidity, mortality, duration of stay in the hospital, and treatment costs all rise as a result of nosocomial infections. In order to avoid the occurrence of nosocomial infections in health and medical settings, infection prevention and control are essential.[19] It is therefore critical for nurses to understand and apply

Table 1: Biodemographic variables of nurses (*n*=60)

Variables	Options	Frequency (%)
Age (years)	<25	2 (3)
	26-35	49 (82)
	36-45	5 (8)
	>45	4 (7)
Professional qualification	GNM	20 (34)
	Post basic BSc nursing	20 (34)
	BSc nursing	17 (28)
	MSc nursing	3 (5)
Gender	Female	60 (100)
Marital status	Married	43 (72)
	Unmarried	17 (28)
Professional experience (years)	1-5	40 (66)
	5-10	14 (23)
	>10	6 (10)
Experience in ICU (years)	<1	5 (8)
	1-3	44 (74)
	3-5	3 (5)
	>5	8 (13)
Attended any workshop of nosocomial infection	Yes	27 (45)
	No	33 (55)

GNM=General nursing and midwifery, ICU=Intensive care unit

Table 2: Knowledge of nurses for prevention of nosocomial infection (*n*=60)

Knowledge score	Frequency (%)
Inadequate (0-10)	12 (20)
Moderate (11-20)	42 (70)
Adequate (21-30)	6 (10)

Table 3: Practices followed by nurses for prevention of nosocomial infection (*n*=60)

Level of practice	Frequency (%)
Poor (0-9)	11 (18)
Good (10-18)	36 (60)
Excellent (19-27)	13 (22)

infection prevention and control techniques while providing nursing care to patients.[20] The goal of this study was to find out how much nurses knew about nosocomial infections and how they used them.

According to the findings of this survey, the majority of Indian nurses that took part were 26–35 years old or older (97%). This conclusion is similar to other research study that found during review by researchers.[21] Furthermore, the findings revealed that 34% of the participants were females with a nursing diploma, which is supported by other study findings[22] regarding nursing diploma. Our findings are consistent with the gender of the participants in this earlier study, as another study also reported that[23] majority of the participants were females.

When it came to experience in the hospital, more than 80% of the nurses had fewer than 5 years of experience. This finding is consistent with research[24] who discovered that 44% of the participants had fewer than 5 years of job experience. As a result, young employees appear to be more cooperative than senior employees when it comes to participating in research. The majority of the participants (55%) in the current study did not attend annual infection control continuing education sessions. This finding is inconsistent with another research study who discovered that more than half of nurses participated in infection control and continuing education programs.[25] This conclusion, on the other hand, is inconsistent to the findings of one study, who found that the majority of nurses (64%) had received no nosocomial infection training.[26] This discrepancy in outcomes could be related to differences in setting and target group between studies. Another element that may contribute to this disparity is the gap in in-service training policies.

The majority of nurses have a basic understanding of the subject (70%). However, the current study's degree of knowledge is lower than that discovered by this research[10] which found 87%. Such disparities in knowledge among nurses in these studies could be attributable to the lack of infection prevention and control training education, as nurses who attended in-service training courses scored highly on knowledge tests. The findings underlined the need for an in-service training course on infection control measures, with a greater emphasis on safe injection techniques and safe linen handling due to nurses' lack of understanding in these areas.

In general, the survey found that the majority of participants (60%) had a good overall good level of practices, while 18% had exceptional poor practices in terms of various nosocomial infection prevention and control. This conclusion is similar to that of study findings[27] who found that the amount of practice was >58%. However, it is lower than the 74% discovered by research evidence,[10] but it is greater than many other studies, which revealed that this level of practice accounted for 52%[28] and 58%,[29] respectively. This gap in results could be attributable to individuals' differing views toward using infection control measures. It could also be because of differences in the operational definition of good practice from one study to the next, or because of differences in the nurses' knowledge of infection prevention, and control. Furthermore, the nurses demonstrated a good level of practices in the real actions as a strategy to prevent nosocomial infections during everyday activities, while having a fair level of practices about the measures that should be utilized to prevent nosocomial infections. This could be an indicator of the existing gap between theory and practice, highlighting the necessity to connect theoretical and practical parts of infection control curricula.

There are few limitations in our study that should be addressed in future research, as study was limited to public hospitals and their nurses. As a result, the results' generalizability must be approached with caution. Selection bias could possibly be present in this study. Furthermore, while our study identified self-reported habits, it has to be shown how nurses translate these practices into actual clinical practice.

Limitation and recommendation

The study only had one limitation, i.e., it was limited to one tertiary care center. To increase the universality of study findings, a similar study can be undertaken in many centers. The study also recommended that nurses participate in in-service programs to renew and update their understanding of guidelines, principles, and evidence-based practices.

Conclusions

The majority of Indian nurses have a moderate grasp of nosocomial infection control methods and follow outstanding practices, according to the findings of this study. More and more future research should be focused on assessment and improvement of nurses' knowledge and practices by different training session i.e., basic training or in-service refresher courses. After each training session, evaluation of their knowledge and practices must be done to check its effectiveness. It is also recommended that further study be conducted in both public and private hospitals.

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Conflicts of interest

There are no conflicts of interest.

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