



KNOWLEDGE AND PRACTICE AMONG NURSES REGARDING HOSPITAL ACQUIRED INFECTIONS (HAIS).

Afroja Khatun^{1*}, Foyzunnasa², and Most. Rahana Akter³

Nursing Instructor, Nursing & Midwifery College, Jashore, Bangladesh.

***Corresponding Author: Afroja Khatun**

Nursing Instructor, Nursing & Midwifery College, Jashore, Bangladesh.

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ABSTRACT

Background: Hospital-acquired infections (HAIs) remain a hazard despite improvements in the healthcare system. Hospitalized patients are still affected by HAIs, which raises costs as well as morbidity and mortality. Nurses in particular can play a crucial role in the prevention and management of HAIs. **Methods:** A descriptive cross-sectional study was conducted between November 2018 and January 2019 in the Jashore Medical College Hospital, Jashore, Bangladesh, aim to assess knowledge and practice among nurses regarding hospital-acquired infection, and a non-probability sample of 185 working nurses was selected as study participants. A 45-item questionnaire was used to assess knowledge and practices regarding Hospital-acquired infection control measures among the study subjects. **Results:** Majority (78%) of the nurse's level of knowledge of the different HAIs preventive method had fair however, (14%) of the nurse's level knowledge had poor, and only 8% of the nurse's level of knowledge of the different HAIs preventive method had good. The results also revealed that the majority (68%) of nurses' overall practices had fair, whereas (22%) of them established good practices and the rest of them (10%) stated poor practices on different infection prevention and control methods. **Conclusion:** The gaps in nurses' knowledge and practices regarding HAI control measures point to the necessity to develop an HAI-related health care policy and put in place a regular training program to update and refresh those practices.

KEYWORD: Nurses, knowledge and practice, Hospital-acquired infections, Bangladesh.

INTRODUCTION

Hospital-acquired infections (HAIs) continue to be the leading cause of morbidity and mortality in both individuals being treated in hospitals and in the medical field.^[1] HAIs happen 48 hours or more after a hospital stay or 30 days after being released.^[2] According to 2011 WHO research, the prevalence of HAI in Africa ranged from 2.5% to 14.8%, and its severity would be significantly greater than in industrialized nations.^[3] The most common HAIs are lower respiratory tract infections (LRTIs), surgical site infections, and urinary tract infections (UTIs).^[4] Due to occupational exposure, such as exposure to blood and body fluids, direct patient contact, or contact with contaminated ambient surfaces in the patient's environment, health care workers (HCWs) are at an increased risk of developing (HAIs).^[5] A large percentage of health care workers (65.9%) have been exposed to blood and bodily fluids, with needlestick injuries accounting for 29% of all exposures. The threat from HAIs persists despite improvements in the health care system because it goes beyond rising health care expenses to include the death of HCWs and hospitalized patients.^[6] HAIs are especially important in underdeveloped nations because there are few resources

available for use. They cause patients to stay in the hospital for longer periods of time, increasing the expense and the amount of time spent on patient care.^[7] The prevalence of HAIs among hospitalized patients and HCWs has significantly decreased as a result of nurses' adequate knowledge and practice.^[8] There are differences in nurses' understanding and application of the prevention of hospital-acquired infections, according to existing literature. Numerous studies have revealed that the majority of healthcare professionals lack the necessary training and experience.^[3] A Pakistani study revealed that a significant percentage of participants lacked adequate training in HAI prevention.^[9] A similar study conducted in Iran discovered that 43% of nurses lack the information necessary to avoid HAIs, while 42% use traditional methods.^[10] Another study conducted in India found that 57.5 percent of nurses practiced HAI prevention.^[11] According to research done in two tertiary hospitals in Nigeria, the median practice score was 50.8 percent.^[12] Additionally, a study in Ethiopia found that overall HCW practice in the prevention of HAIs was 54.2 percent.^[13] and in another study carried out in regional state referral hospitals in Ethiopia, nurses' overall knowledge and practice scores were 40.7 percent

and 48.7 percent, respectively.^[14] The most common barriers identified by nurses to knowledge and practice in the prevention of HAIs were years of experience, gender, educational status, poor adherence to standards, workload, and insufficient training.^[5&14] Although it is a multidisciplinary task, nurses typically play a significant part in preventing HAIs, and it is viewed as a crucial aspect of nursing care. Evidence regarding nurses' knowledge and practices regarding the prevention of HAIs is lacking in Bangladesh. This investigation was carried out to make up the gap to assess knowledge and practice among nurses regarding hospital-acquired infection and consequently produce pertinent data that program administrators and stakeholders can use to prevent HAIs.

MATERIALS AND METHODS

Research design: Descriptive cross-sectional study.

Study Setting: Jashore Medical College Hospital, Jashore, Bangladesh.

Study period: The study was conducted between November 2018 and January 2019 in the selected hospitals.

Sampling technique: The study participants were selected using a non-probability (purposive) sampling technique. In all, 200 nurses took part in the study and answered the questionnaire. Only 185 questionnaires, unfortunately, were fully completed and used in the analysis.

Study instrument

Based on the World Health Organization's (WHO) infection control recommendations, a structured questionnaire was created.^[15] The final survey had 45 questions covering knowledge and practice with HAI control methods. These questionnaire divided in to three parts.

Part 1 covers with participants' demographic data, including age, gender, education level, present position and length of employment, HAIs control course training, and work experience in HAI control measures.

Part 2 is related to knowledge and is divided into these two section.

1. Knowledge about using personal protective equipment (5 items), safe injection techniques (4 items), and five items of hand hygiene as preventative measures for person-to-person transmission.

Knowledge of the preventive methods of transmission from health care facilities environment, which involves Cleaning of hospital routinely (4 items), Disposal and handling of waste (4 items), Reprocessing patient care instruments (4 items), and Proper handling linen (4 items).

Part 3 has 15 items and is concerned with practices for HAI control measures. This part is separated into two sections: HAIs prevention actual actions (09items) and Precautions of HAIs prevention (6 items).

Scoring method

While the practices were evaluated using 15 scenario-based items with "Yes," "No," and "I don't know" alternatives, the 30 knowledge-related items were evaluated with "Correct," "Incorrect," and "I don't know" options. After correcting the reverse statement, each "incorrect" or "I don't know" response received a 0 score; each correct response received 01 depending on how many things are in each part, different maximum and minimum scores apply. Total scores for various infection control procedures were calculated using the correct responses. A score of less than 50% was considered poor, 50-79% fair, and 80% or higher was regarded as good.

Validity and reliability

Three infection control and prevention specialists from hospitals and academic institutes obtained the content validity. Their feedback was taken into account with regard to the scoring methodology, relevance, accuracy, and consistency of the tool as well as its appearance and presentation. Using the alpha Cronbach (α), test, the tool's item reliability was evaluated. Parts 2 and 3 of the tool had acceptable results of 0.81 and 0.79, respectively.

Statistical analysis: Data were processed and analyzed using computer software program SPSS version-25. Descriptive statistics was used (number and percent). A p value of ≤ 0.05 was taken as statistically significant.

Data presentation: The observation and findings of the investigation and statistical analysis were presented using appropriate charts, figures, tables, and diagrams. The mean, range, percentage, and standard deviation (SD) were utilized in the case of continuous variables. Cross table and composite graph were employed in the case of categorized variables.

Ethical considerations: This study was approved by the nursing department, Jashore Medical College Hospital. Approval from nurses were obtained. Several strategies were utilized to protect the nurse's rights who agreed to participate in this study. First, oral verbal consent of the nurses was obtained prior to the administration of the questionnaire. The nurses were informed of the purpose of the study, and that they had the right to refuse to participate. Also the voluntary nature of participation was stressed as well as confidentiality. Furthermore, the nurses were told that they can refrain from answering any questions and they can terminate at any time. Anonymity of the nurses was maintained at all times.

RESULTS

Table 1: Distribution of the nurses by demographic characteristics (n = 185).

Attributes	Characteristic	Frequency	Percent
Age (in years)	Less than 25 years	54	29.2
	More than 25 years	131	70.8
Gender	Male	23	12.2
	Female	162	87.8
Educational level	Diploma	104	56.0
	Bachelor degree	63	34.0
	Masters	18	10.0
Position	Senior staff nurse	173	93.3
	Nursing supervisor	12	6.7
Working experience	Less than 5 years	97	52.5
	More than 5 years	88	47.5
Infection control training	Yes	103	55.7
	No	82	44.3
Infection control experience	Yes	124	66.8
	No	61	33.2

Table 1 shows demographic characteristics of the Nurses. Out of 185 nurses (70.8%) age group were more than 25 years and maximum nurses were females (87.8%). Educational qualification of the nurses majority were diploma (56%) and minimum were masters

(10.0%). Of the nurses (93.3%) were senior staff nurse and (52.5%) working experience were less than 5 years. Regarding Infection control training (55.7%) nurses had attended on infection control training and (66.8%) of them had Infection control experience.

Table 2: Distribution of the Nurses' knowledge on infection transmission of person-to-person (n = 185).

Attributes	Knowledge level		
	Good	Fair	Poor
PPE (Personal protective Equipment)	59 (31.9%)	54 (29.2%)	72 (38.9%)
Hand hygiene	21 (11.4%)	113 (61.1%)	51 (27.5%)
Practices of safe injection	19 (10.3%)	62 (33.4%)	104 (56.3%)

Table 1 showed that highest number of nurses (38.9%) had poor level of knowledge on PPE as well as majority of the nurses (61.1%) had fair knowledge on hand

hygiene, while more than half of the nurses (56.3%) knowledge level had poor on practices of safe injection.

Table 3: Distribution of the Nurses' knowledge on transmission of infection from hospital environment (n = 185).

Attributes	Knowledge level		
	Good	Fair	Poor
Disposal and handling of waste	25 (13.7%)	141 (76.0)	19 (10.3)
Proper handling linen	23 (12.4)	58 (31.6)	104 (56.0%)
Reprocessing patient care instruments	21 (11.4)	140 (76.2)	24 (12.4)
Cleaning of hospital routinely	21 (11.4%)	63 (34.1)	101 (54.5)

Table 3 showed that majority of the nurse's (76.0%) knowledge level on disposal and handling of waste had fair as well as more than half (56.0%) of the nurse's knowledge level on proper handling linen had poor on the other hand maximum number of nurses (76.2%) knowledge level on reprocessing patient care instruments had fair and above half (54.5%) of the nurse's knowledge level on cleaning of hospital routinely had poor.

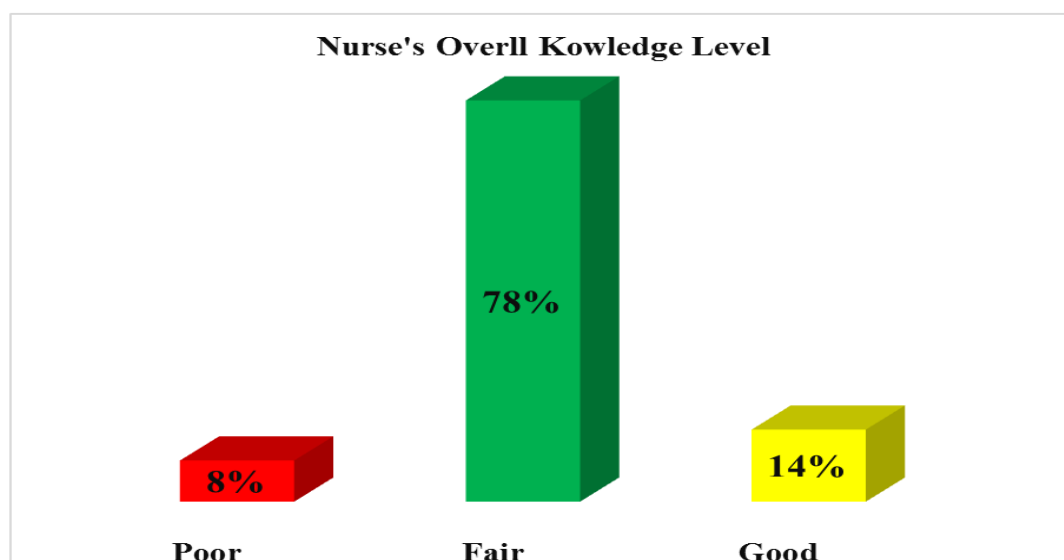


Figure 1: Nurses overall knowledge level on different HAIs control methods (n = 185).

Figure 1 revealed that the majority (78%) of the nurse's level of knowledge on the different HAIs preventive method had fair however, (14%) of the nurse's level of

knowledge had poor, and only 8% of the nurse's level of knowledge on the different HAIs preventive method had good.

Table 4: Distribution of the nurses' practices on HAIs control methods (n = 185).

Attributes	Knowledge level		
	Good	Fair	Poor
Precautions of HAIs prevention	39 (21.3%)	127 (68.6%)	19 (10.1%)
HAIs prevention actual actions	132 (71.1 %%)	38 (20.5%)	15 (8.4%)

Table 4 represents that practices level of nurses' of different HAIs control methods based on the outcomes of the research in, majority of the nurses (68.6%) of them

fair practices regarding precautions of HAIs prevention, while (71.1%) stated good practices on actual actions applied to prevent HAIs control methods.

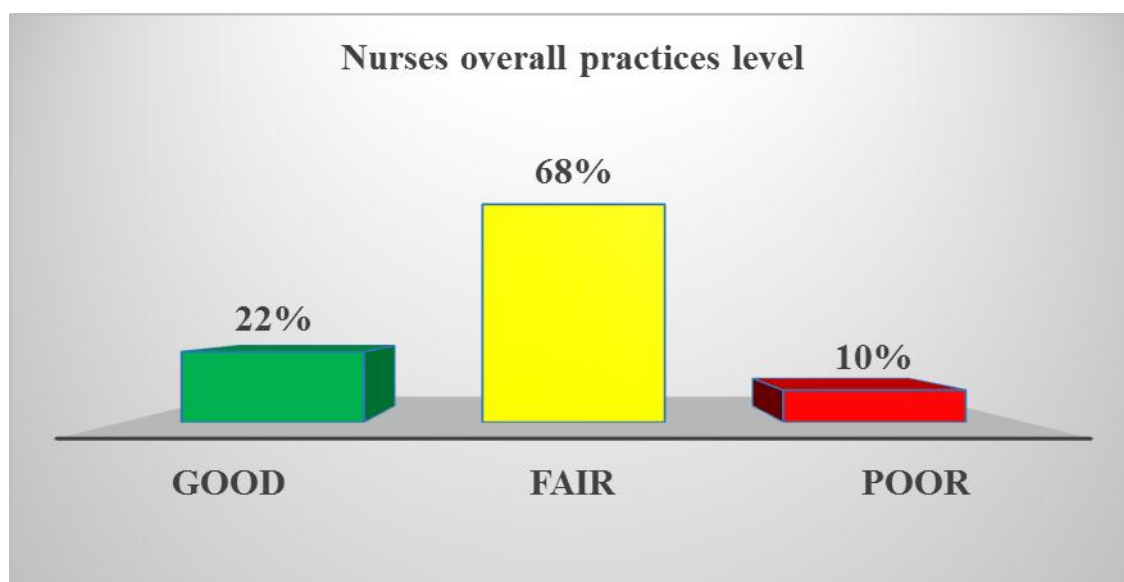


Figure 2: Nurses overall practices level on different HAIs control methods (n = 185).

Figure 2 revealed that the majority (68%) of nurses overall practices had fair, whereas (22%) of them established good practices and rest of them (10%) stated poor practices on different infection prevention and control methods.

DISCUSSION

Patients' morbidity, mortality, duration of hospital stay, and cost of medical care all increase significantly of HAIs.^[16] Therefore, HAIs must be eliminated in healthcare and hospital settings through infection

prevention and control. Thus, it is crucial for nurses of being knowledgeable of and use the proper infection prevention and control techniques when providing nursing care to patients.

On the basis of nurses' level of knowledge on different infection transmission preventive methods for person-to-person, our study revealed that the majority (61.1%) of the nurses' level of knowledge had fair Hand hygiene. Nearly two-thirds of the nurses were identified to have fair (29.2%) and good (31.9%) knowledge levels on PPE (personal protective equipment). Furthermore, the results established that there existed above half (56.3%) of the nurse's knowledge level had poor whereas (33.4%) of the nurses had fair and (10.3%) of the nurses' knowledge level had good practices of safe injection. Nurses' knowledge on transmission of infection from the hospital environment, it was established that above half (54.5%) of the nurses' knowledge level had good on cleaning of hospital routinely and the maximum (76.0% and 76.2%) knowledge level had fair on Disposal and handling of waste and reprocessing patient care instruments, respectively. However, more than half of the nurses' (56.0%) knowledge level had poor of proper handling linen. In general, concerning the nurses' overall knowledge level of different HAIs control methods, it was established as fair (78.0%). It exceeded the results of Abdulraheem et al.^[17], study in Northern Nigeria, Shamaa and Talaat's^[18] study in Egypt, and Isara and Ofili's^[19] study at the Federal Medical Center. These studies' knowledge levels were 12.9%, 10%, and 37.7% respectively. The level of knowledge in the current study, which accounted for 90 and 897 %, respectively, is lower than that discovered by Vaz et al.^[20]

Concerning the practices level of nurses of different HAIs control methods based on the outcomes of the research in, the majority of the nurses (68.6%) of them fair practices regarding precautions of HAIs prevention, while (71.1%) stated good practices on actual actions applied to prevent HAIs control methods. In general, the study revealed that the majority (68%) of nurses' overall practices had fair, whereas (22%) of them established good practices and the rest of them (10%) stated poor practices in different infection prevention and control methods. This outcome is comparable to that of Eskander et al.^[21] This indicated that the level of practice exceeded (75%). However, it is more than what was discovered in much other research^[22, 23] since this level of practice accounted for 20, 48.7, 55.3, and 57.5 percent, respectively. Fashafsheh et al.^[24] obtained 91.14 percent, which is less than what was reported here. This difference in the results can be the result of participants' differing attitudes regarding using infection control measure techniques. It might also be because nurses have different levels of knowledge about infection prevention and control or because operational definitions of good practice vary from study to study. Additionally, the nurses indicated a good level of practice in the actual steps taken to prevent HAIs during everyday activities,

even though they only displayed a reasonable level of practice regarding the precautions that should be employed to prevent HAIs. This could be an indicator of the contrast between theory and practice currently present, which highlights the necessity for a curriculum addressing infection control strategies to relate theory to practical components.

CONCLUSION

According to the study's findings, the majority of nurses had adequate knowledge about and habits related to HAI management methods. Future study should therefore concentrate on enhancing nurses' knowledge and practices by educational intervention, either during their in-service refresher courses or training courses, by evaluating their knowledge and practices prior to and following the intervention.

Compliance with ethical standards

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Disclosure of conflict of interest

None to declare.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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