Knowledge, Attitude And Practice Of Nurses Regarding Infection Control In Operation Theater In Secondary Care Hospital

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Knowledge, Attitude and Practice of Nurses Regarding Infection Control in Operation Theater in Secondary Care Hospital

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Abstract

Aims: To assess knowledge, attitude and practice of nurses regarding infection control in operation theater at a secondary care hospital.

Settings and design: A descriptive cross-sectional study was conducted at Tehsil Head Quarter Hospital, Sarai-Alamgir, Pakistan from November 2023 to February 2024.

Patients and material: In this study, a self-designed questionnaire based on principles of infection control was provided to the nurses working in the operation theater to assess their knowledge and attitude toward infection control. One component of questionnaire was used to assess practice which was filled by the researcher by observing nurses practically applying principles of infection control.

Statistical analysis used: \( \chi^2 \) test and descriptive statistics.

Results: The mean age of study participants was 38.05 ± 5.24 years and all were female nurses. The mean duration of the experience was 8.06 ± 2.56 years. Based on this, 79 (55.24%) were senior and 64 (44.76%) were junior nurses. 114 (79.72%) nurses had ‘good knowledge’ regarding infection control, 113 (79.02%) had ‘positive attitude’ and 82 (57.34%) nurses had ‘adequate practice’ regarding measures of infection control in the operation theater.

Conclusion: Most of the nurses working in the operation theater had ‘good knowledge’ and ‘positive attitude’ but half of them had ‘poor practice’ regarding infection control in the operation theater.

Keywords: Attitude, Infection control, Knowledge, Nurses

1. Introduction

Nosocomial infections, often known as infections contracted during hospitalization, are infections that strike patients in healthcare facilities in settings where these does not pre-exist at the time when the patient is admitted [1]. There are several pathogenic microbes that are involved in the pathogenesis of this type of infection particularly ‘pseudomonas aeruginosa’, ‘staphylococcus species’ and ‘coagulase-negative staphylococci’ [2]. One of the important and most frequent sources of infection in the hospital setting is the operation theater where the skin barrier is penetrated and the body is exposed to acquire infection easily and, according to a study, ~30% of patients who undergo surgery develop postprocedural infection [3]. In clinical practice, the appropriate application of protocols that can effectively control the rate of infection in postoperative setting play a vital role in ‘infection control’ [4].

In this instance, healthcare providers, particularly nurses have a vital role in implementation of protocols that can reduce the rate of infection in the hospital setting, particularly in operation theaters [5]. Main reason for this is that they spend more time with the patient and are the primary person that ensures preoperative preparation of the patient which entitles then to appropriate administrative and logistic support to minimize rates of infection [6].
This entitlement, however, comes with a responsibility of having up-to-date knowledge, positive attitude, and high level of practical adherence to the measures that are cornerstone of reducing rate of microbial infections in patients undergoing surgical procedures [7]. Unfortunately, in resource-depleted regions of the world, the proportion of nursing staff that has adequate knowledge of ‘infection control protocols’ is quite low which results in inevitable increment in the rate of infection [8].

Pakistan is also a developing nation where healthcare facilities, unfortunately, lack facilities for appropriate provision of aseptic environments, particularly in the postoperative setting. Therefore, much more focus needs to be put on ensuring application of ‘infection control protocols’ in the peri-operative period. This study thus focuses on assessing the ‘knowledge’, ‘attitude’ and ‘practice’ of nurses regarding ‘infection control’ while patients is in the operation theater at a tertiary care hospital.

### 2. Patients and methods

This descriptive survey based cross-sectional study was conducted at ‘THQ Hospital Sarai-Alamgir, Pakistan’ from November 2023 to February 2024 after taking approval from the ethical committee of the institution (EC Reg #:EC-002/02/23.11.2023). Through the use of the WHO sample size calculator 1.1, ‘sample size estimation for single population proportion with specified absolute precision’ appropriate sample size required for the study was determined. Formula used to determine the sample size was [9]:

\[
\text{n} = \frac{Z^2_{1-\alpha/2} P (1 - P)}{d^2}
\]

This was done by assuming a ‘confidence level of 95\%’, ‘absolute precision of 8\%’ and an anticipated frequency of ‘good knowledge regarding infection control’ in nurses of 39\% [10]. Upon calculation, the sample size was 143.

Inclusion criteria: Nurses who worked in the operation theater, both males and females with minimum experience in work greater than or equal to 2 years were included in the study.

Exclusion criteria: Junior nurses having less than 2 years of experience and nurses involved in administrative work of operation theaters were excluded from the study.

Study participants were selected through non-probability convenience sampling technique. To assess the ‘knowledge’, ‘attitude’ and ‘practice’ of nurses regarding ‘infection control’ in operation theater, a two part questionnaire was devised by the infection control team of the institution comprising of researchers of present study. In the first part there was personal information to be filled including age, sex and years of experience were documented. The second part was designed based on ‘National Guidelines Infection Prevention and Control 2020, Pakistan [11]’ that assessed ‘knowledge’, ‘attitude’ and ‘practice’ of nurses regarding various aspects of ‘infection control’ and had three parts as follows:

(i) Part (a) assessed ‘knowledge’ that had seven questions regarding transmission modes of microbes, ‘five moments of hand hygiene’, hand washing procedure, disinfection of instruments, disinfection of operative surface, and types and purposes of antiseptic formulations greater than or equal to 5/7 correct answers were labelled as ‘good knowledge’ while less than 5/7 correct answers was labelled as ‘poor knowledge’.

(ii) Part (b) assessed ‘attitude’ and had five questions regarding attitude towards glove rupture, having a wound on own hand, handling of nonsterile instruments, handling of drapes and sheets, and handling spillage of body fluids/blood on the floor Greater than or equal to 3/5 correct answers were labeled as ‘positive attitude’ while less than 3/5 correct answers was labeled as ‘negative attitude’.

(iii) Part (c) assessed ‘practice’ and was scored by the researcher by observing the nurses’ technique of washing their hands, wearing gloves, donning their protective gowns, sterilization of work area, scrubbing, and cleaning surgical equipment. Each component was scored based on ‘Likert scale’: 1 = ‘not performed’, 2 = ‘inappropriate’, 3 = ‘appropriate’, 4 = ‘good’, and 5 = ‘completely accurate’. The total score was 30. Scoring greater than or equal to 22 was labelled as ‘adequate practice’.

Data was analyzed by using SPSS version 22 (IBM Corp. Armank, NY, USA). Quantitative data was represented using mean ± standard deviation (SD). Qualitative data was represented by using percentage and frequency. Data was represented in tabulated and graphical form. A P value of less than or equal to 0.05 was taken as significant.

### 3. Results

In this study, a total of 143 nurses were included. The mean age of study participants was 38.05 ± 5.24 years. All the study participants were female nurses. The mean duration of experience was 8.06 ± 2.56 years. Based on the duration of experience, 79...
(55.24%) were senior (>8 years of experience) nurses while 64 (44.76%) were junior (<8 years of experience) nurses. This data is summarized below in Table 1.

Among study participants, 114 (79.72%) nurses had ‘good knowledge’ regarding ‘infection control’ while 29 (20.28%) had ‘poor knowledge’. In terms of attitude, 113 (79.02%) had a ‘positive attitude’ while 30 (20.98%) had a ‘negative attitude’. In terms of practice, 82 (57.34%) nurses had ‘adequate practice’ while 61 (42.66%) had ‘inadequate practice’ regarding measures of infection control in the operation theater. This is graphically demonstrated below in Fig. 1:

Comparison of ‘knowledge’, ‘attitude’ and ‘practice’ between senior and junior nurses regarding ‘infection control’ in operation theater is demonstrated below in Table 2.

4. Discussion

Postoperative infections are the most prevalent and intricate infections acquired in hospitals, which can result in patient death and higher healthcare expenses [12,13]. In general, with the advancement and implementation of preventive protocols across the globe, the incidence of surgery related infections are considered to be decreasing. However, even in developed countries like China, the incidence of infection during the early postoperative period is still very high and is reported at 7.1–7.5% [14,15]. Some of the factors that are directly related to nosocomial infection in surgery patients correlate with ‘knowledge’, ‘attitude’ and ‘practice’ of nurses regarding maneuvers of controlling infection [16]. This study therefore focused on these aspects among the nursing staff at a tertiary care hospital.

Knowledge refers to ‘information, facts, and skills acquired through experience or education; the theoretical or practical understanding of measures of infection control’ [17]. Attitude refers to the ‘way the person thinks, feels and behaves about circumstances of infection control’ [17]. Practice refers to ‘doing something regularly as part of normal behavior to control infection’ [17].

Table 1. Baseline characteristics of study participants (n = 143).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>38.05 ± 5.24 years</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0</td>
</tr>
<tr>
<td>Female</td>
<td>143 (100)</td>
</tr>
<tr>
<td>Mean duration of experience</td>
<td>8.06 ± 2.56 years</td>
</tr>
<tr>
<td>Seniority</td>
<td></td>
</tr>
<tr>
<td>Senior nurse</td>
<td>79 (55.24)</td>
</tr>
<tr>
<td>Junior nurse</td>
<td>64 (44.76)</td>
</tr>
</tbody>
</table>

Table 2. Comparison of ‘knowledge’, ‘attitude’ and ‘practice’ between senior and junior nurses regarding infection control (n = 143).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Study groups</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Senior nurses (n = 79)</td>
<td>Junior nurses (n = 64)</td>
</tr>
<tr>
<td>Knowledge, n (%)</td>
<td>Good (64 (81.01))</td>
<td>50 (78.12)</td>
</tr>
<tr>
<td></td>
<td>Poor (15 (18.99))</td>
<td>14 (21.88)</td>
</tr>
<tr>
<td>Attitude, n (%)</td>
<td>Positive (66 (83.54))</td>
<td>47 (73.44)</td>
</tr>
<tr>
<td></td>
<td>Negative (13 (16.46))</td>
<td>17 (26.56)</td>
</tr>
<tr>
<td>Practice, n (%)</td>
<td>Adequate (48 (60.76))</td>
<td>34 (53.12)</td>
</tr>
<tr>
<td></td>
<td>Inadequate (31 (39.24))</td>
<td>30 (46.88)</td>
</tr>
</tbody>
</table>

Fig. 1. ‘Knowledge’, ‘attitude’ and ‘practice’ of nurses regarding infection control.
In the current study, experienced nurses were made part of the study. When assessed it was observed that in terms of knowledge, 79.72% of the nurses had ‘good knowledge’ regarding measures of ‘infection control’. This was much higher as compared with a study conducted by Feng et al. [10] who reported this proportion to be only 39% and Al-Ahmari et al. [18] who reported a level of ‘good knowledge’ at 68.4%. Quite similar to results of current study, Mohammed Wahba et al. [19] reported that proportion of nurses who had ‘good knowledge’ regarding measures of infection control was 80%. Contrary to the current study, Omer et al. [20] reported that 95% of nurses had ‘good knowledge’ regarding measures of infection control. In terms of ‘attitude’, 79.02% of nurses in this study had ‘positive attitude’. This was comparable with the findings of Al-Ahmari et al. [18] and Omer et al. [20] who reported this proportion of ‘positive attitude’ at 82.2% and 78.57%, respectively, while it was much higher as compared with results of Feng et al. [10] and Mohammed Wahba et al. [19] who reported this proportion of ‘positive attitude’ of nurses at 60% and 30%, respectively. In terms of ‘practice’, only 57.34% of nurses had adequate infection control practices. This was comparable to the findings of Mohammed Wahba et al. [19] and Al-Ahmari et al. [18] who reported this proportion to be at 48% and 50.5% while it was much lower as compared with Omer et al. [20] and Feng et al. [10] who reported this proportion of ‘adequate practice’ at 66.67% and 76%, respectively.

Current study shows that despite a good level of knowledge of nurses and positive attitude, still a large proportion of nurses do not have adequate level of practices regarding measures of infection control in the operating rooms. This suggests that regular hands-on workshops should be held so that this practice adequacy level can be increased among nurses which will subsequently reduce the rate of infection in surgical patients and its related morbidity and mortality.

4.1. Conclusion

In conclusion, although nurses who participated in this study had ‘good knowledge’ and ‘positive attitude’ regarding measures of infection control yet nearly half of them had ‘inadequate practice’ regarding infection control in operating rooms.

Ethics information

Ethical approval was obtained from institutional ethical committee (EC-002/02/23.11.2023).

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Conflicts of interest

There are no conflicts of interest.

References


