

# Effect of Intervention Based Centers for Disease Control and Prevention Guidelines on Nurses Knowledge and Practices Regarding Aseptic Techniques in Operating Room

Nurses  
Knowledge and  
Practices  
Regarding  
Aseptic  
Techniques

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## ABSTRACT

**Objective:** To assess the outcome of intervention CDC guidelines on nurses knowledge and practices regarding aseptic techniques in operating room.

**Study Design:** Quasi experimental study

**Place and Duration of Study:** This study was conducted at the Bahawal Victoria Hospital Bahawalpur from 1<sup>st</sup> May 2022 to 30<sup>th</sup> September 2022.

**Materials and Methods:** Forty six male and female nurses working in the operating room, having experience in operating room more than six months and 25-50 years of age were included. Data for the current study was collected using a validated questionnaire consisting of three sections (1. socio-demographic profile, 2. Knowledge of nurses, 3. Practices of nurses regarding aseptic techniques). The nurses were given three-month intervention education regarding CDC guidelines knowledge and practices. The duration of each session ranged between 30-45 minutes per week. Each session was started from giving the brief summary of each topic to be studied and explaining the next session. After the completion of 16 weeks intervention, post interventional assessment test was conducted through the same questionnaire to see the effect of intervention plan on knowledge and practices of nurses regarding CDC guidelines.

**Results:** Thirty two (69.6%) were between the age group 25-35 years and 14(30.4%) were in the age between 36-50 years. Majority of the participants were females 41 (89.1%). 60.9% of the participants had diploma nursing, 30.4% did BSN while 8.7% did Post RN. The Mean experience was 6.26±3.01 years.

**Conclusion:** The educational intervention has significant impact on the nurse's knowledge and practice of aseptic technique. In order to improve the standard of nursing care in this area, hospital management must implement education and training initiatives to increase knowledge of SSI prevention.

**Key Words:** Knowledge, Practices, Aseptic technique, Nurses

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## INTRODUCTION

Using an aseptic approach involves taking precautions against pathogen contamination. The highest regulations must be followed in order to reduce the risk of infection. In operating rooms and other settings in the healthcare profession, nurses practice aseptic technique.<sup>1</sup>

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The number of major surgeries performed annually was estimated to be between 187 and 281 million, or roughly one procedure for every 25 people who were living at the time.<sup>2</sup>

Moreover, for the years 2005 to 2012, data were collected from a total of 194 World Health Organization Member States and stated that the number of operations increased from the 2004 estimate of 226.4 million operations to 312.9 million operations in 2012. Only 36.8% and 34.2% of the world's 7001 million people, or 6.3% and 23.1%, respectively, of operations, were conducted.<sup>3</sup> It is crucial to practice surgical safety in order to avoid serious complications that could result in patient morbidity and unnecessary loss of life. In order to lower the risk of such complications, the WHO has defined a set of 10 fundamental objectives and a surgical safety checklist that must be followed by all the staff in the operating theatre.<sup>4</sup> To ensure effective, safe, and standardised aseptic practise during every surgery, it is crucial that all physicians receive the

required education and training in aseptic technique and put the concepts into practise.<sup>5</sup>

The CDC guidelines produced 12 aseptic procedure recommendations for operating room personnel. In the operating room, surgical gowns, gloves, and draping should be worn, and sterile protocols should be followed when donning the gowns and drapes.<sup>6</sup> Instruments introduced into the aseptic field should be arranged and handled in such a way that sterility is maintained to the greatest extent. All operating room nurses should keep an eye on the aseptic field at all times.<sup>7</sup>

The technical skills and behaviours that define the nursing profession in general are included in the position of operating room nurses. The responsibilities of providing care for the patients in the operating room involve a combination of technical behaviours and skills, as well as critical thinking, which requires for knowledge, expertise, and experience.<sup>8</sup> Nurses' knowledge is critical for effective infection prevention and control. Barriers to IPC compliance include unfamiliarity with CDC standards, lack of awareness of preventive indications in routine patient care.<sup>9</sup> Lack of knowledge about the acceptability, effectiveness, and execution of IPC measures leads to poor compliance. To remove these obstacles, education and training are the cornerstones of IPC practise development. Nurses must understand that information is power.<sup>10</sup> It has been shown time and again that after education and training, people lack awareness of IPC measures. CDC guidelines are not followed in Pakistan. Therefore, it is necessary to give education on CDC guideline to improve the nurse's knowledge and practices about aseptic techniques. Therefore, the study was conducted to assess the outcome of intervention CDC guidelines on nurse's knowledge and practices regarding Aseptic techniques in operating room.

## MATERIALS AND METHODS

After the approval of Institutional Review Board of University of Lahore, a one group pretest post-test Quasi experimental study design was conducted in operation rooms of Bahawal Victoria Hospital Bahawalpur. Sample size of 46 cases was calculated with 95% CI, 7% ME and mean difference of pre-post knowledge scores as  $6.07 \pm 0.24$ .<sup>11</sup> All male and female nurses working in the operating room, having experience in operating room more than six months and 25-50 years of age were included in current study. Data for the current study was collected using a validated questionnaire developed by Pierre.<sup>8</sup> The questionnaire is consisting of three sections. Section "A" is consisting of eight questions related to the socio-demographic profile of the participants. Section "B" is consisting of 22 questions about the knowledge of nurses regarding sterile techniques. The knowledge score ranges from 0-29. Section "C" is consisting of 12 questions about

practices of nurses regarding aseptic techniques. The Practice score ranges from 0-12. Practices were assed as (Inadequate Practices  $= < 75\%$ , Adequate Practices  $= \geq 75\%$ ). The nurses were given three month intervention education regarding CDC guidelines knowledge and practices. The duration of each session ranged between 30-45 minutes per week. Each session was started from giving the brief summary of each topic to be studied and explaining the next session. A multimedia presentation was used. Brain storming exercise and group discussion were also used. After the completion of 16 weeks intervention, post interventional assessment test was be conducted through the same questionnaire to see the effect of intervention plan on knowledge and practices of nurses regarding CDC guidelines. Data was entered and analyzed in SPSS-24. To compare the effect of CDC guidelines on nurses' knowledge & practices regarding aseptic techniques in an operating room was compared by Wilcoxon test. P-values lower than 0.05 were regarded as statistically significant.

## RESULTS

Thirty two (69.6%) were between the age group 25-35 years and 14 (30.4%) were in the age between 36-50 years. Results revealed that majority of the participants were females 41 (89.1%). 60.9% of the participants had diploma nursing, 30.4% did BSN while 8.7% did Post RN. The mean experience was  $6.26 \pm 3.01$  years. There was a significant difference between the pre and the post interventional knowledge and practice core among study participants regarding the aseptic techniques in operating room ( $p < 0.001$ ) [Table 1].

The overall pre-interventional median knowledge scores among study participants regarding aseptic techniques in operating room was 6.00 while, the post-interventional median knowledge's scores were increased to 11.00. There was a significant difference between the pre and the post interventional knowledge's score among study participants regarding the aseptic techniques in operating room as evident by ( $p$  value  $< 0.001$ ) and there was a significant increase in the median knowledge scores, after the intervention with median difference was 5.00 from the pre-scores (Table 2).

The overall pre-interventional median of practice scores among study participants was 6.00. While, the post-interventional median of practice scores was increased to 12.00. The results revealed a significant difference between pre and post interventional practice scores as evident by ( $p$ -value  $< 0.001$ ). Moreover, there was a significant improvement in the practice regarding aseptic techniques in operating room among participants after the intervention with median difference was 6.00 from the pre-scores (Table 3).

**Table No.1: Demographic features of participants**

Variable	No.	%
<b>Age (years)</b>		
25 – 35	32	69.6
36 – 50	14	30.4
<b>Gender</b>		
Male	5	10.9
Female	41	89.1
<b>Education</b>		
Diploma	28	60.9
BSN	14	30.4
Post RN	4	8.7

**Table No.2: Comparison of pre- and post-intervention median knowledge scores among participants regarding aseptic techniques in operating room**

Variable	Pre-Inter- vention Median	Post- Inter- vention Median	z-value	P value
Knowledge scores	6.00	11.00	-5.924	<0.001

**Table No.3: Comparison of pre- and post-intervention median practice scores among participants regarding aseptic techniques in operating room**

Variable	Pre- Intervention Median	Post- Intervention Median	z- value	P value
Practice scores	6.00	12.00	- 5.796	<0.001

## DISCUSSION

The aseptic technique is practiced in operating rooms. The aseptic technique includes the usage of sterilized equipment's, gloves and gowns. The prevention of infection which sometimes leads to unnecessary complication arising from surgery the aseptic technique is very vital.<sup>12</sup> It is impossible to exaggerate the value of keeping dust and filth out of the air, surfaces, and floors. For the safety of patients, preventing and minimizing the most common reasons for utilizing the aseptic approach during invasive procedures and surgeries is critical.<sup>13</sup> It has been shown time and again that after education and training, people lack awareness of IPC measures. Therefore, it is necessary to give education on CDC guideline to improve the nurse's knowledge and practices about aseptic techniques.

The results of current study revealed that the majority of participants were females and diploma holders. The findings showed that there was a significant difference between the pre and the post interventional knowledge and practice core among study participants regarding the aseptic techniques in operating room as evident by ( $p < 0.001$ ). These findings were comparable by a quasi-study reported that the knowledge-related research

variables before and after the educational programme showed significant differences. Following the training on surgical hygiene techniques, there were significant differences in attitude and practices in the study subjects ( $p = 0.001$ ).<sup>14</sup>

However the current study results were also in accordance to a study that was conducted to evaluate the knowledge, attitudes, and practises of infection control among Nepalese healthcare professionals. 158 physicians and 166 nurses in all took part, with 27% of them having received infection control training. Only 16%, 14%, and 0.3% of the respondents, respectively, received the highest marks on the knowledge, attitude, and practise categories. According to the results of logistic regression, markers of infection control knowledge, attitudes, and practise were substantially predicted by career, age, and having studied abroad.<sup>15</sup>

The results of current study revealed that the mean experience was  $6.26 \pm 3.01$  years. These findings were compared with a multi-country survey was conducted in a European region of 22 countries. Nursing staff knowledge of CDC recommendations for infection prevention was extremely low. Nurses with more experience performed significantly better than those with less experience. Significantly fewer nurses from larger ICUs performed well than nurses from smaller units. The results show a wide range of practises and inconsistent adherence to CDC recommendations.<sup>16</sup>

Similarly, another study was carried out to explore the knowledge and practice of nurses regarding sterilization in the operation room. Overall, 56 participants were included in the study. According to the data, 62.5 percent of respondents had a high level of knowledge about sterilization, 37.5 percent had an average level of knowledge, and none of the respondents had a low level of knowledge about sterilization.<sup>17</sup>

## CONCLUSION

The educational intervention has significant impact on the nurse's knowledge and practice of aseptic technique. In order to improve the standard of nursing care in this area, hospital management must implement education and training initiatives to increase knowledge of SSI prevention.

### Author's Contribution:

Concept & Design of Study:	Zahida Tabassum
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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