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# KNOWLEDGE, ATTITUDE AND PRACTICE OF CRITICAL CARE NURSES REGARDING INFECTION CONTROL STANDARD MEASURES

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## Abstract

***Background:*** *Infection control is a essential aspect of healthcare delivery, mainly in critical care units where patients are often prone to infections due to their compromised immune system.* ***Aims.*** *The aim of the study was to assess the Knowledge Attitude and practices of critical care nurses regarding infection control standard measures.* ***Methodology****: A descriptive cross-sectional research study design was used. Study used purposive sampling technique. The study population was staff nurses and sample size was 143.* ***Results****. The study was descriptive cross-sectional. The study reported that the knowledge participants with low knowledge were 19 (13.3%), the participants with moderate knowledge were 54(37.8%) and participants with high knowledge were 70 (49.0%). The attitude of the participants with positive attitude was 89 (62.2%), and the participants with negative attitude were 54 (37.8%). The practice of the participants with poor practice were 36(25.2%) with moderate practice were 43(30.1%) and with good practice were 64(44.8%).* ***Conclusion:*** *The study concluded that the majority of nurses having high knowledge, positive attitude and good practice regarding infection control standard measures.*

## INTRODUCTION

Infection control is a crucial aspect of healthcare delivery, particularly in critical care units where patients are often susceptible to infections due to their compromised immune system(1). Critical care nurses play a critical role in preventing the spread of infections by adhering to infection control standard measures(2). However, the effectiveness of these measures largely depends on the knowledge, attitude, and practice of critical care nurses towards infection control(3).

Infection control in critical care units is critical in preventing the spread of infections, particularly those that are resistant to antibiotics(4). The Centers for Disease Control and Prevention (CDC) recommends a range of standard measures to prevent the spread of infections in healthcare settings, including critical care units(5). These measures include hand hygiene, use of personal protective equipment, environmental cleaning and disinfection, safe injection practices, and respiratory hygiene/cough etiquette (6).

Critical care nurses play a critical role in implementing these measures in the care of critically ill patients(7). They are often the first line of defense in preventing the spread of infections in critical care units, and their knowledge, attitude, and practice towards infection control are essential in ensuring that standard measures are adhered to(8).

Nurses play a vital role in transmitting NIs, and their compliance with infection control measures seems to be necessary for preventing and controlling infection. Accordingly, they should be aware of how to prevent

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transmission of NIs and be knowledgeable of its potential risk to patients, and other staff(9).

The prevalence of hospital infection is found to be very high in the developing countries (10.1%), as compare to the developed world (7.6%), which means that the developing countries need more attention to overcome the infection. A high number of nurses and doctors are at a greater risk of the most common hazard in the form of a serious threat of communicable diseases. Communicable diseases make the health professionals prone to serious effects. Hospital acquired infections occurs due to certain bacteria, viruses and fungi during treatment process at the hospital. Such infection at many times are devastating and life threatening(10).

'Universal Standard precautions', a set of some standard guidelines is applied for the protection of health care workers as well as patients to save them from potential infections caused by contact with infectious body substances like infected blood, and other infected body fluids such as feces and urine etc(11).

Standard precautions are a combination of few very important protective measures. Some measures include, proper hand washing before and after contact with client, to use some personal protective measures and equipment, safe practices of using sharps and appropriate disposal of them, have clean environment on regular basis, taking care of reusable medical instruments, taking care of respiratory hygiene, applying aseptic non-touch technique, appropriate hospital waste management and effective care of Intravenous or other lines management(12). Many hospitals in the world have applied the standard precautions such as hand washing, use of personal protective equipment (gloves, face mask, eye wear and gown), patients safe placement and precautions during handling of laboratory specimens(13).

With the help of standard precautions, the exposure to so many infectious materials can be reduced. As a result there will be a very high reduction in the rate of hospital and occupational acquired infection. Standard precautions at health care systems are considered as protective measures for health care professionals, the patients and society at large(14).The standard precautions following the principles of infection control such as effective hand washing, use of protective equipments and thus help the health care workers such as nurses and doctors to protect them from potentially infected materials of the patients such as their blood and other fluids(15).

Instead of so many available guidelines in the world, still the standard precaution are not well known and also not practiced by the health care professionals. The health professionals of developed and developing countries both are having insufficient knowledge regarding the universal standard precautions(16). Lack of consistency and correction in the application of standard precaution and thus may lead to negative consequences(17).

It is believed that the knowledge of standard precautions have some effect on their implementations in the health care systems(18). Centre for disease control also recommends that application and adherence to standard precautions are very essential for health of the professionals and safety of the clients. In some countries like Brazilian Ministry of Health the adherence of standard precautions are used compulsory and the occupational exposure to Biological hospital waste Material which are Potentially Contaminated, is minimized(11).

Here knowledge refers to the remembering of information which is required for behavioral change. According to cognitive behavioral theory knowledge is interlinked with behavior change(19). It is believed that the knowledge is necessary to bring behavioral change in an individual which might not be sufficient at occasion to influence nurses and health care professionals behavior(20). So, with efficient knowledge their attitudes always remains positive and that will lead to good practice.

## METHODOLOGY

The descriptive cross sectional study design was conducted to assess Knowledge, attitude and practice of critical care nurses regarding infection control standard measures.

The purposive sampling technique was used. The study population was staff nurses of surgical and medical wards and ICU of Jinnah hospital Lahore. The setting of the study was Jinnah hospital Lahore. The duration of this study was 9 months. The study sample was 143 calculated through slovin's formula. The study was included all the nurses who have at

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least more than two-year experience. Data was collected by adopted questionnaire of knowledge, attitude and practice of critical care nurses regarding infection control standard measure**.** After collecting data, the data was computed analyze by software program (SPSS) version (22). The ethical consideration was followed which is organize by the superior university department of nursing**.** The participant all the confidentiality was ensure any participant who are not willing to participate can be withdraw from the study at any time. There will be no potential harm and potential benefits for the study.

**ANALYSIS**

The table no 1 show that the total no of participants who respond in this study with the age group 21-25 were 46(32.2) and 26-30 were 50(35.0%) and 31-35 were 43 (23.8%) and 36-40 were 13(9.1%). The males were 21(14.7%) and female were 122 (85.3%). Single were 75(52.4.%) and married 68(47.6%). Participants who had diploma in nursing were 62(43.4%), post RN were 69(48.3%)and BSN were 12 (8.4%).

**Table no.1: Demographic Analysis**

| | **Frequency** | **Cumulative percentage** |
|---|---|---|
| **Age** | | |
| 21-25 years | 46(32.2) | 32.2 |
| 26-30 years | 50(35.0) | 67.1 |
| 31-35 years | 43(23.8) | 90.9 |
| 36-40 years | 13(9.1) | 100.0 |
| **Gender** | | |
| Male | 21(14.7) | 14.7 |
| Female | 122(85.3) | 100.0 |
| **Marital status** | | |
| Single | 75(52.4) | 52.4 |
| Married | 68(47.6) | 100.0 |
| **Qualification** | | |
| Diploma in general nursing | 62(43.4) | 43.3 |
| Post RN | 69(48.3) | 91.6 |
| BSN | 12(8.4) | 100.0 |

Table no2: shows the participant who respond to "Hospital Acquired are the result of self-infection, cross infection and environmental infections" 'no were 21(14.7%)and yes were 122(85.3%). "The single most important measure for preventing hospital acquired Infections is hand hygiene" no were 11(7.7%) and yes were 132(92.3%). "The single most important measure for preventing hospital acquired Infections is hand hygiene" no were 11(7.7%) and yes were 132(92.3%). "following a procedure, Hand washing is necessary after removing gloves" no were 13(9.1%) and yes were 130(90.9%). "Standard precautions apply only to all body fluid" no were 108(75.5%) and yes were 35(24.5%).

**Table no.2: knowledge of participants regarding infection control standard measures**

| | **Frequency** | **Cumulative percentage** |
|---|---|---|
| **Hospital acquired infections are the result of self-infection, cross-infection &environmental infection** | | |
| No | 21(14.7) | 14.7 |
| Yes | 122(85.3) | 100.0 |
| **The single most important measure for preventing Hospital Acquired Infections is hand hygiene** | | |
| No | 11(7.7) | 7.7 |

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| | | |
|---|---|---|
| Yes | 132(92.3) | 100.0 |
| **Patients receiving immunosuppressive therapy are more susceptible to Hospital Acquired Infections** | | |
| No | 14(9.8) | 9.8 |
| Yes | 129(90.2) | 100.0 |
| **Following a procedure, hand washing is necessary after removing gloves.** | | |
| No | 13(9.1) | 9.1 |
| Yes | 130(90.9) | 100.0 |
| **Standard precautions apply only to all body fluids** | | |
| No | 108(75.5) | 75.5 |
| Yes | 35(24.5) | 100.0 |

Table no 3 shows that participant who respond to "Do you believe using PPE is important**?**" strongly disagree were 2(1.4%) disagree were 16(11.2%)neutral 31(21.7%) agree 61(42.7%) strongly agree 33 were (23.1%). "Washing hands before and after contact with patients**"** strongly disagree were 2(1.4%)disagree were 11(7.7%)neutral 28(19.6%)agree 51(35.7%) and strongly agree 53(37.1%)."Do you believe needles should be recapped after use?" strongly disagree were 41(28.7%)disagree were 43(30.1%) neutral 33(23.1%)agree 19(13.3%) and strongly agree 7(4.9%). **"**Do you believe that nosocomial infection can pose serious outcome?" strongly disagree were 8(5.6%)disagree were 10(7.0%) neutral 55(38.5%)agree 41(28.7%) and strongly agree 29(20.3%). "Do you agree that recapping is the cause for needle prick injury?" strongly disagree were 8(5.6%)disagree were 5(3.5%) neutral 34(23.8%) agree 58(40.6%) and strongly agree 38(26.6%)

**Table no. 3: Attitude of participants regarding infection control standard measure**

| | **Frequency** | **Cumulative frequency** |
|---|---|---|
| **Do you believe using PPE is important ?** | | |
| Strongly disagree | 2(1.4) | 1.4 |
| Disagree | 16(11.2) | 12.6 |
| Neutral | 31(21.7) | 34.3 |
| Agree | 61(42.7) | 76.9 |
| Strongly agree | 33(23.1) | 100.0 |
| **Washing hands before and after contact with patients** | | |
| Disagree | 11(7.7) | 7.7 |
| Neutral | 28(19.6) | 27.3 |
| Agree | 51(35.7) | 62.9 |
| Strongly agree | 53(37.1) | 100.0 |
| **Do you believe needle should be recapped after use?** | | |
| Strongly disagree | 41(28.7) | 28.7 |
| Disagree | 43(30.1) | 58.7 |
| Neutral | 33(23.1) | 81.8 |
| Agree | 19(13.3) | 95.1 |
| Strongly agree | 7(4.9) | 100.0 |
| **Do you believe that nosocomial infection can pose serious outcome?** | | |
| Strongly disagree | 8(5.6) | 5.6 |
| Disagree | 10(7.0) | 12.6 |
| Neutral | 55(38.5) | 51.0 |

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| | | |
|---|---|---|
| Agree | 41(28.7) | 79.7 |
| Strongly agree | 29(20.3) | 100.0 |
| **Do you agree that recapping is the cause for needle prick injury?** | | |
| Strongly disagree | 8(5.6) | 5.6 |
| Disagree | 5(3.5) | 9.1 |
| Neutral | 34(23.8) | 32.9 |
| Agree | 58(40.6) | 73.4 |
| Strongly agree | 38(26.6) | 100.0 |

Table no: 4 shows participant who respond to "Washing hands before examining patients?" Always were 57(39.9%) Often were 33(23.1%) sometimes 36(25.2%)rarely 15(10.5%) and never 2(1.4%)."Using gloves while examining all patients?" Always were 50(35.0%) Often were 23(16.1%) sometimes 39(27.3%)rarely 20(14.0%) and never 11(7.7%). "using face mask while examining possible infective patients?" Always were 37(25.9%)Often were 41(28.7%)sometimes 36(25.2%) rarely 20(14.0%) and never 9(6.3%)."wearing medical gown during procedure?" Always were 26(18.2%) Often were 44(30.2%) sometimes 48(33.6%)rarely 17(11.6%) and never 8(5.6%).

**Table no. 4: practice of participants regarding infection control standard measure**

| | Frequency | Cumulative frequency |
|---|---|---|
| **Washing hands before examining patients** | | |
| Always | 57(39.9) | 39.9 |
| Often | 33(23.1) | 62.9 |
| Sometimes | 36(25.2) | 88.1 |
| Rarely | 15(10.5) | 98.6 |
| Never | 2(1.4) | 100.0 |
| **Using gloves while examining all patients** | | |
| Always | 50(35.0) | 35.0 |
| Often | 23(16.1) | 51.0 |
| Sometimes | 39(27.3) | 78.3 |
| Rarely | 20(14.0) | 92.3 |
| Never | 11(7.7) | 100.0 |
| **Using face mask while examining possibly infective patients** | | |
| Always | 37(25.9) | 25.9 |
| Often | 41(28.7) | 54.5 |
| Sometimes | 36(25.2) | 79.7 |
| Rarely | 20(14.0) | 93.7 |
| Never | 9(6.3) | 100.0 |
| **Wearing medical gown during procedures** | | |
| Always | 26(18.2) | 18.2 |
| Often | 44(30.8) | 49.0 |
| Sometimes | 48(33.6) | 82.5 |
| Rarely | 17(11.9) | 94.4 |
| Never | 8(5.6) | 100.0 |

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**Discussion and conclusion**

The current study was aimed to describe the knowledge attitude and practices of critical care nurses regarding infection control standard measures. the study was descriptive cross sectional and used descriptive statistics, distribution was applied data normality was checked, the data reliability and validity was checked.

participants who respond in this study with the age group 21-25 were 46(32.2) and 26-30 were 50(35.0%) and 31-35 were 43 (23.8%) and 36-40 were 13(9.1%). The males were 21(14.7%) and female were 122 (85.3%). Single were 75(52.4.%) and married 68(47.6%). Participants who had diploma in nursing were 62(43.4%), post RN were 69(48.3%)and BSN were 12 (8.4%). "Hospital Acquired are the result of self-infection, cross infection and environmental infections" 'no were 21(14.7%)and yes were 122(85.3%). "The single most important measure for preventing hospital acquired Infections is hand hygiene" no were 11(7.7%) and yes were 132(92.3%). "The single most important measure for preventing hospital acquired Infections is hand hygiene" no were 11(7.7%) and yes were 132(92.3%). "following a procedure, Hand washing is necessary after removing gloves" no were 13(9.1%) and yes were 130(90.9%). "Standard precautions apply only to all body fluid" no were 108(75.5%) and yes were 35(24.5%). "Do you believe using PPE is important**?**" strongly disagree were 2(1.4%) disagree were 16(11.2%)neutral 31(21.7%) agree 61(42.7%) strongly agree 33 were (23.1%). "Washing hands before and after contact with patients**"** strongly disagree were 2(1.4%)disagree were 11(7.7%)neutral 28(19.6%)agree 51(35.7%) and strongly agree 53(37.1%)."Do you believe needles should be recapped after use?" strongly disagree were 41(28.7%)disagree were 43(30.1%) neutral 33(23.1%)agree 19(13.3%) and strongly agree 7(4.9%). **"**Do you believe that nosocomial infection can pose serious outcome?" strongly disagree were 8(5.6%)disagree were 10(7.0%) neutral 55(38.5%)agree 41(28.7%) and strongly agree 29(20.3%). "Do you agree that recapping is the cause for needle prick injury?" strongly disagree were 8(5.6%)disagree were 5(3.5%) neutral 34(23.8%) agree 58(40.6%) and strongly agree 38(26.6%)."Washing hands before examining patients?" Always were 57(39.9%) Often were 33(23.1%) sometimes 36(25.2%)rarely 15(10.5%) and never 2(1.4%)."Using gloves while examining all patients?" Always were 50(35.0%) Often were 23(16.1%) sometimes 39(27.3%)rarely 20(14.0%) and never 11(7.7%). "using face mask while examining possible infective patients?" Always were 37(25.9%)Often were 41(28.7%)sometimes 36(25.2%) rarely 20(14.0%) and never 9(6.3%)."wearing medical gown during procedure?" Always were 26(18.2%) Often were 44(30.2%) sometimes 48(33.6%)rarely 17(11.6%) and never 8(5.6%).

The study results are consistent with the results of the previous study

**5.1 CONCLUSION**

The current study concluded that the nurses have Good knowledge positive attitude and good practices regarding infection control standard measures. It plays a crucial role in maintaining a safe healthcare environment. Overall, their understanding of these measures directly impacts patient outcomes. Continuous education and reinforcement of infection control protocols are essential to ensure adherence and minimize the risk of nosocomial infections in critical care settings. Regular assessments and updates on emerging best practices are recommended to enhance the effectiveness of infection prevention strategies among critical care nurses.

**5.2 LIMITATION**

**1.**The current study used cross- sectional study design to identify knowledge attitude and practices of critical care nurses regarding infection control standard measures

**2.**The study is only focus to assess nurse's knowledge attitude and practices of critical care nurses regarding infection control standard measures

**3.**The study sample was too small to generalize the study finding.

**5.3 RECOMENDATION**

The current study investigates the level of knowledge attitude and practices of critical care nurses regarding infection control standard measure. The future research can work on the enhancement of

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knowledge, attitude and practices to conducted experimental study by which they can assess knowledge attitude and practices to give the intervention for enhancement of knowledge and attitude and practices towards caring of elderly among nurses

The future researchers can play a part to implement education programs and familiar about regarding the correct care of elderly through workshop, training programs, seminar lecture and research.

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