



Infection Control Practices Among Nurses Working at Tertiary Care Hospitals of Quetta, Pakistan

Saima Batool¹*, Shabana Kousar², Khushboo Chandio³, Khalida Naz Memon⁴, Nasreen Rebecca Wilson⁵

¹Staff nurse at civil Hospital Quetta

²Head nurse at eye helper Hospital Quetta

³Lecturer at peoples nursing School, LUMHS Jamshoro

⁴Dean faculty of community Medicine and public health Sciences, LUMHS/Jamshoro

⁵Principle and head of Nursing, Isra University Hyderabad

ABSTRACT

Authors' Contributions

¹Conception & study design,

²Critical review.

⁴Data collection & processing

Article info.

Received: August 07, 2022

Accepted: Dec 26, 2022

Funding Source: Nil

Conflict of Interest: Nil

Cite this article: Batool S, Kousar S, Chandio S, Memon KN, Wilson NR. Infection Control Practices Among Nurses Working at Tertiary Care Hospitals of Quetta, Pakistan. RADS J. Pharm. Allied Health Sci. 2023; 1 (1):1-6.

*Address of Correspondence:

saimaawaan111@yahoo.com

Objective: To assess the infection control practice among registered nurses working at tertiary care Sandeman provincial Civil Hospital & Bolan Medical Complex Hospital Quetta.

Material and Methods: This was a cross-sectional study conducted in all departments of the Tertiary Care Sandeman Provincial Civil Hospital and Bolan Medical Complex Hospital in Quetta. All nursing professionals working at the tertiary care hospital in Quetta, where they were in direct contact with the patient admitted to the hospital for treatment, were included. All subjects were interviewed regarding their demographic characteristics and infection control practices. A questioner based proforma was used for the data collection, and SPSS version 26 was used for the purpose of analysis.

Results: A total of 138 nursing individuals were studied regarding infection control practice; their mean was 34.60±7.99 years and their work experience average was 13.45±8.21 years. Out of all, (99.3%) participants were using gloves, (97.8%) using masks, (84.8%) using plastic apron/ Gowns. (91.3%) discard gloves after single use and use fresh instruments for every patient; (89.1%) discard equipment and instruments. As an infection control measure, 66.7% of nurses agreed that nurses suffering from the common cold should be excused from work. As per the perceptions of nurses regarding infection control practice, the nurses should wear gloves and masks for all procedures; the key to infection prevention is hand hygiene; gloves should be used in cleaning extensive wounds and dressing forceps; and a lack of knowledge on the hazards of microorganisms is a major constraint in the prevention and control of infection. 66.7% said that nurses having common colds must be relieved of their duty, and 76.8% of nurses said the attitude, belief, and culture of our population have a positive influence on the spread of infection. Infection control practises were statistically insignificant according to age and work experience ($p > 0.05$).

Conclusion: It was concluded that; there was the good infection control practices and positive perceptions among registered nurses working at tertiary care Sandeman provincial Civil Hospital & Bolan Medical Complex Hospital Quetta.

Keywords: Infection prevention, nurses practice, perceptions.

INTRODUCTION

Every year, many lives are lost because of the spread of infections in hospitals. There in management of modern health services, infection control is a fundamental element of an operationally guiding principle that must be followed.¹ Transmission of

infectious diseases in clinics and hospitals can be controlled and prevented by applying basic precautionary measures for infection control that can be categorized into benchmark precautions that must always be implemented for each of the patient, irrespective of infection status or diagnosis, and further precautionary measures (based on

transmission) relevant to modes of transmission.² Health care workers not only face the possibility of acquired infection themselves but also of being a health risk to patients by spreading infection.³ Consequently, to prevent hospital-acquired infections from spreading or infecting the patient as well as the HCW, it is crucial to follow the recommended infection control practices.³ It is indicated that nurse's bags have the potential to act like a repository of bacteria, with 83.6% of bags testing positive for human pathogens, of which 15.9% were multidrug-resistant organisms.⁴ Nurses can cause the transmission of infections from one patient to another, assuming that nurses handle more than half of all home healthcare visits and perform intensive interventions like wound care and urine catheter placement.⁴ Most infections are spread through healthcare workers who don't follow best practices for infection prevention, like washing their hands or changing their gloves during client interactions.

Compliance with universal precautionary measures by healthcare professionals such as medical and nursing students has been regarded as an effective means of preventing and controlling related infectious diseases in healthcare.⁵ Hand washing is considered the most critical of the basic recommended precautionary measures. Other initiatives would include the proper usage of gloves, the implementation of safe management practices for needle sticks as well as other sharp objects. It is well recognized that ensuring that healthcare workers (HCWs) adhere to established precautions is an effective method for preventing and managing healthcare linked infections.⁶ Despite the high efficacy of these universal precautionary measures, though, what actual facts suggest is quite low adherence to these interventions; poor hospital sanitation has extensively been reported, including considerations regarding hospital protection among patients.⁷ The practitioners must conduct a risk analysis of the proposed action / procedure and choose PPE based on the complexity of the protocol, the exposure risk to body fluids, blood, damaged skin and mucous membranes, and the infection risk.⁸ In addition, the use of gloves does not reduce the necessity of HH. Before wearing gloves, hands must be washed, as well as hand sanitation must be done promptly following the removal of the glove. In the lower- and middle-income nations like Pakistan, the occurrence of health facility acquired infection rates is supported

by inadequate data of poor-quality quality.⁹ Healthcare professionals, especially nurses, contribute significantly in healthcare facilities to the control and prevention of infectious diseases.¹⁰ Each infection necessitates a vector for transmission, such as nurses and other patient care providers who can be infected as well as carriers of infection, particularly in clinical care if standardized antiseptic procedures are not followed. The likelihood of HAIs is higher if benchmark hygienic regulations that have been established to reduce the risk of infection transmission are avoided.¹¹ The purpose of this study was to evaluate the practice of infection control among nursing practitioners employed at Quetta tertiary care Hospital. In order to see a positive effect on the health of each patient in the hospitals, it is critical that all nursing staff understand HAIs and follow standard procedures to prevent infection transmission in any healthcare environment.

MATERIALS AND METHODS

This cross-sectional study was conducted in all departments of the Tertiary Care Sandeman Provincial Civil Hospital and Bolan Medical Complex Hospital in Quetta. All nursing professionals working at the tertiary care hospital in Quetta, where they were in direct contact with the patient admitted to the hospital, were included. All the nurses who did not agree to participate in the study were excluded. A verbal informed consent was obtained after explaining the purpose of the study. The study was conducted after approval from the ethical committee. All subjects were interviewed regarding their demographic characteristics, such as age, gender, educational status, and duration of experience. A questionnaire was developed according to previous published studies^{11,12} and used to assess the practice among registered nurses and attitude regarding infection control practice. All the information was collected on a predesigned Performa.

All data were recorded, and analysis was performed by SPSS version 23. Quantitative data (such as age) were described in terms of mean \pm S.D. Simple frequencies and percentages have been tabulated for categorical variables. Stratification with respect to effect modifier and outcome was done. The chi-square test was applied to assess the infection control practice according to the individual's age, work experience, and education, taking p- value of ≤ 0.05 as significant.

RESULTS

A total of 138 nursing individuals were studied regarding infection control practice. The mean age of participants was 34.60 ± 7.99 years, and their work experience average was 13.45 ± 8.21 years. Majority of the nurses 82% were resident of urban areas. According to their educational status, most of the participants 95% were midwifery trained. Over 88% of the respondents were married. According to the infection control practice almost all cases 99.3% using gloves, 97.8% using masks, 84.8% using plastic apron/ Gowns, 91.3% discard gloves after single use and use fresh instrument for every patient, 89.1% equipment and instruments, covered protect from aerosols, 99.3% used aseptic technique before intravenous cannulation, overall cases used disposable syringes, non-puncture resistant material containers, banding of needle before disposable, beds/ mattresses/ mackintoshes cleaned, disinfected after every patient, bedpans/ urinals/ sputum mugs cleaned, and disinfected/ sterilized after every patient and vials of medicine, bags, bottles or ampoules of IVs solutions are used for only single patient, results shown in Table I.

Table I: Infection Control Practices Among the Respondents (n=138)

General Practice	Frequency (%)
Used gloves	137 (99.30%)
Used mask	135 (97.80%)
Plastic apron/ Gowns	117 (84.80%)
Gloves discard after single use	126 (91.30%)
Use of fresh instrument for every patient	126 (91.30%)
Equipment and instruments, covered protect from aerosols	123 (89.10%)
Aseptic technique used before intravenous cannulation	137 (99.30%)
Use disposable syringes	138 (100.00%)
Use non-puncture resistant material containers	138 (100.00%)
Banding of needle before disposable	138 (100.00%)
Beds/ mattresses/ mackintoshes cleaned, disinfected after every patient	138 (100.00%)
Bedpans/ urinals/ sputum mugs cleaned, and disinfected/ sterilized after every patient	138 (100.00%)
Vials of medicine, bags, bottles or ampoules of IVs solutions are used for only single patient	137 (99.30%)

According to the perception of nurses regarding infection control practice, all the participants agreed that nurses should wear gloves and masks for all procedures; the key to infection prevention is hand hygiene, gloves should be used in cleaning extensive

wounds and dressing forceps; and a lack of knowledge on the hazards of microorganisms is a major constraint in the prevention and control of infection. 66.7% said that nurses with the common cold should be excused from duty. 99.3% agreed with septic procedure delays wound healing, 76.8% nurses said attitude, belief and culture of our population have a positive influence in spread of infection. (Table II)

Infection control practices were statistically insignificant according to age and work experience ($p = >0.05$), as shown in Tables III & IV

Table II: Nurses Perceptions Regarding Infection Control Practice (n=138)

Perceptions	N	%
Because of the insurgence of highly infectious diseases, nurses should wear glove and mask for all procedure	138	100.0
A key to infection prevention is hand hygiene	138	100.0
Gloves should be used in cleaning extensive wounds and dressing forceps	137	99.3
Nurses having common colds must be relieved from their duty	92	66.7
Nurses should wash their hands after each contact with the patient even when gloves are used	92	66.7
Shortage of staff prevent nurses from the practice of effective infection control	133	96.4
Lack of knowledge on hazards of microorganism is a major constraint in prevention and control of infection among our clients	138	100.0
Septic procedure delays wound healing	137	99.3
Attitude, belief and culture of our people have a positive influence in spread of infection	106	76.8

DISCUSSION

The spread of healthcare-associated infections, seems to be a widespread problem around the world, particularly in developing nations. In this study, the practices of the respondents regarding infection control were adequate. In the comparison of this study, Desta M et al¹² reported that 57.3% of health practitioners had good practices with regard to various infection control practices. On the other hand, Ezike OC et al¹³ inconsistently observed that the vast majority of the nurses did not effectively practice proper hand washing, but they did dispose of waste in an appropriate manner. Several other studies have reported factors involved in this non-compliance that include, shortage of means or time, forgetfulness, or low-risk patients. In our scenario, similar factors could possibly be involved in poor compliance with hand

hygiene. In another study conducted by Yamini Jain et al¹⁴, most nurses (85.8%) were conscious of the discarding practices for used syringes and needles in the containers designated for that purpose, however 55.7% were truly practicing it.

In our study, all the participants agreed that nurses should wear gloves and masks for all procedures; the key to infection prevention is hand hygiene, gloves should be used in cleaning extensive wounds and dressing forceps. 66.7% were agreed as nurses having common colds must be relieved from their duty and shortage of staff prevent nurses from the practice of effective infection control. Our results were similar to studies done by researchers elsewhere.¹⁵⁻¹⁷

In comparison to our results, a study conducted by Taneja J et al reported that the mean familiarity of nursing staff with infection control practices was 75.5%, however, the mean of re-counted infection control habits was 57.5%.¹⁸ The hand washing as an easy and basic procedure has been considered to be among the most vital measures of infection control, but the adherence and acquiescence rates among healthcare professionals regarding this measure have generally been reported as low level.¹⁹ Infection control strategies and practices are of immense significance in any healthcare scenario for health care association infections (HCAI) preventions. Hand hygiene remains the first basic step for effective and beneficial infection control within all health care systems.²⁰

Table III: Infection Control Practice According to Age (n=138)

Variables	Age group				p-value
	20-30 years	31-40 years	41-50 years	>50 years	
Use of gloves	52	59	25	1	0.65
Use of mask	51	58	25	1	0.73
Used of plastic apron	38	56	22	1	0.001
Gloves discard	46	54	25	1	0.27
Use of fresh instrument	46	54	25	1	0.27
Equipment and instrument covered	46	55	21	1	0.54
Aseptic technique used before IV cannula	52	59	25	1	0.65
Use disposable syringe	53	59	25	1	0.52
Use non puncture resistant material	53	59	25	1	0.09
Banding of needle before disposable	53	59	25	1	0.87
Beds/ mattresses/ mackintoshes cleaned, disinfected after every patient	53	59	25	1	0.98
Bedpans/ urinals/ sputum mugs cleaned, and disinfected/ sterilized after every patient	53	59	25	1	0.63
Vials of medicine, bags, bottles or ampoules of IVs solutions are used for only single patient	53	58	25	1	0.71

Table IV: Infection Control Practice According to Work Experience (n=138)

Variables	Working experiences				p-value
	1-5 years	6-10 years	>10 years	Total	
Use of gloves	50	61	26	137	0.42
Use of mask	49	60	26	135	0.49
Used of plastic apron	41	52	24	117	0.12
Gloves discard	46	54	25	126	0.27
Use of fresh instrument	44	57	25	126	0.25
Equipment and instrument covered	45	55	23	123	0.94
Aseptic technique used before IV cannula	51	60	26	137	0.53
Use disposable syringe	51	61	26	138	0.77
Use non puncture resistant material	52	61	25	138	0.45
Banding of needle before disposable	53	60	25	138	0.14
Beds/ mattresses/ mackintoshes cleaned, disinfected after every patient	50	62	26	138	0.89
Bedpans/ urinals/ sputum mugs cleaned, and disinfected/ sterilized after every patient	51	60	27	138	0.36
Vials of medicine, bags, bottles or ampoules of IVs solutions are used for only single patient	51	60	26	137	0.53

In this study almost all study participants were in favor and practicing as uses of plastic apron/ Gowns, use of fresh instrument and gloves discard after single use. Earlier studies claimed that prior to any intervention and patient contact, nurses washed their hands. A research outcome indicates a zero percent adherence to handwashing in clinical settings.²¹ The findings of our research are also comparable in that nurses remained 0.9 percent compliant with washing hands when conducting an aseptic function, and yet another research recorded 10.7 percent washing their hands when removing gloves.²² A self-reported compliance study in a Kuwaiti research revealed that 19.8 percent of respondents washed their hands following contact with a patient or removing gloves, indicating that the compliance by nurses with hand washing upon patient care is greater than before practice or intervention, which is similar to our findings.²³

Infection control practice according to age and working experiences were statistically insignificant; p-values were quite insignificant. On the other hand, Salem OA et al²⁴ stated that in comparison to nurses' knowledge of gloving, disinfection, and disposal, they all exhibited inadequate practices for washing their hands before and after patient care. Although, 60% of the nurses had a high level of awareness of infection control procedures, whereas 51.7%) had inadequate practices.²⁴ Fashafsheh I et al²⁵ conducted the study to evaluate the degree of knowledge in infection control amongst nurses working in Palestine's public hospitals, and 300 nurses who were working in these health settings were encouraged to take part in the study. Washing hands, taking basic precautions, transmitting precautions, and care packages for UTI, central line infections, and ventilator linked pneumonia are all part of the process of controlling infections. In terms of the implementation of infections preventive methods, most of the nurses had poor practices, including not washing their hands before and after the treatment and not wearing gloves.

Washing hands and the use of gloves seem to be the most simple and effective measures to prevent the transmitted infections from health care personnel to patients and for defending health care employees from obtaining infections from the infected surfaces and fluids of the bodies, or blood.²⁶

CONCLUSION

The study concluded that the nursing staff at tertiary care Sandeman Provincial Civil Hospital and Bolan Medical Complex Hospital Quetta has good general and infection control practices. Still, it is important to launch educational initiatives that aim to raise awareness among nurses and other health care providers and assist in making people's attitudes toward this matter more positive. However, patient counselling during admission and during the hospital stay, in addition to strict infection control monitoring, could lessen the burden of the rising rate of infection.

REFERENCES

1. Asuzu MC, Ofi B, Asuquo E, Basse P. Perception and Experiences of Infection Control Practices among Professional Nurses in Secondary Health Facilities in South-South Nigeria: A Qualitative Approach. *Int. J. Nurs. Midwifery*. 2017;3(4):18.
2. Mehta Y, Gupta A, Todi S, Myatra SN, Samaddar DP, Patil V, Bhattacharya PK, et al. Guidelines for prevention of hospital acquired infections. *Indian journal of critical care medicine: peer-reviewed, official publication of Indian Society of Critical Care Medicine*. 2014;18(3):149-63.
<https://doi.org/10.4103/0972-5229.128705>
3. Vos MC, Memish ZA. The healthcare worker as a source of transmission. Memish ZA. *Guide To Infection Control in the Healthcare Setting*. International Society for Infectious Diseases website. <https://isid.org/guide/infection-prevention/health-care-worker/>. Published. 2020.
4. Russell D, Dowding DW, McDonald MV, Adams V, Rosati RJ, Larson EL, Shang J. Factors for compliance with infection control practices in home healthcare: findings from a survey of nurses' knowledge and attitudes toward infection control. *AJIC* 2018;1;46(11):1211-7.
<https://doi.org/10.1016/j.ajic.2018.05.005>
5. Yakob E, Lamaro T, Henok A. Knowledge, attitude and practice towards infection control measures among Mizan-Aman general hospital workers, South West Ethiopia. *JCMHE* 2015;5:5:1-8
6. Abdulraheem IS, Amodu MO, Saka MJ. Knowledge, awareness and compliance with standard precautions among health workers in north eastern Nigeria. *JCMHE*. 2012;2(3):1-5.
7. Ojulung J, Mitonga KH, lipinge SN. Knowledge and attitudes of infection prevention and control among health sciences students at University of Namibia. *Afr Health Sci* 2013;13:1071-8
<https://doi.org/10.4314/ahs.v13i4.30>
8. Lemass H, McDonnell N, O'Connor N, Rochford S. *Infection prevention and control for primary care in Ireland: a guide for general practice*.2014;1-89
9. Shahab A, Shamsi TS, Afaq E, Mustafa O, Aman D, Khan O, Zaheer A, et al. A Comparative Study: Knowledge and Practices amongst Post-Operative Patients Regarding Hospital Acquired Infections (HAI) between Private and Public Tertiary Care Setup in

- Pakistan. National Journal of Health Sciences. 2020 Nov 4;5(2):71-8.
<https://doi.org/10.21089/njhs.52.0071>
10. Ghalya HA, Ibrahim Y. Knowledge, attitudes and sources of information among nursing students toward infection control and standard precautions. Life Science Journal. 2014;11(9):249-60
 11. Ehsani SR, Cheraghi MA, Nejati A, Salari A, Esmailpoor AH, Nejad EM. Medication errors of nurses in the emergency department. J Med Ethics Hist Med. 2013; 6:11;5-7
 12. Desta M, Ayenew T, Sitotaw N, Tegegne N, Dires M, Getie M. Knowledge, practice and associated factors of infection prevention among healthcare workers in Debre Markos referral hospital, Northwest Ethiopia. BMC health services research. 2018;18(1):1-0.
<https://doi.org/10.1186/s12913-018-3277-5>
 13. Ezike OC, Nwaneri AC, Odikpo LC, Onyia EN, Makata NE, Irodi CC, Ndubuisi I. Infection control practices among nurses working in neonatal intensive care units (NICU) of two selected tertiary hospitals in Enugu, Nigeria. IJANS. 2021;1;15:100344.
 14. Jain A, Mandelia C, Jayaram S. Perception and practice regarding infection control measures amongst healthcare workers in district government hospitals of Mangalore, India. Int. j. health allied sci. 2012;1(2):68-73.
<https://doi.org/10.4103/2278-344X.101668>
 15. Netsing S, Nielsin TL, Nielsen JO. Noncompliance with universal precautions and associated risk of mucocutaneous blood exposure among Danish physicians. Infect Cont Hosp Epidemiol. 1997;18:692-8.
<https://doi.org/10.2307/30141509>
 16. Knight VM, Bodsworth NJ. Perceptions and practice of universal blood and body and fluid precautions by registered nurses at a major Sydney teaching hospital. J Adv Nurs 1998;27:746-51.
<https://doi.org/10.1046/j.1365-2648.1998.00600.x>
 17. Erbay B, Korkmaz M, Öztoprak N, Colgan A, Akýncý E. Evaluation of injuries related to blood and body fluids for health care workers in Ankara Education and Research Hospital. 2002;42-3.
 18. Taneja J., BibhaBati M., Aradhana B, Poonam L, Vinita D. and Archana, T. Evaluation of knowledge and practice amongst nursing staff toward infection control measures in a tertiary care hospital in India. Infect. Control Can. 2009;24(2):104-107.
 19. Allegranzi B, Bagheri Nejad S, Combescure C, Graafmans W, Attar H, Donald Soul et al. Burden of endemic health care associated infection in developing countries: Systematic review and metaanalysis. Lancet. 2011;377 (9761): 228-41.
[https://doi.org/10.1016/S0140-6736\(10\)61458-4](https://doi.org/10.1016/S0140-6736(10)61458-4)
 20. Anwar K, Anwar B, Tabassum Z. KAP Survey of Hand Hygiene Practices in Doctors of Jinnah Hospital, Lahore. PJMHS. 2018 Apr 1;12(2):684-6.
 21. Abubakar SM, Haruna H, Teryila KR, hamina D, Ahmadu I, Babaji M, et al. Assessment of knowledge and practice of standard precautions among nurses working at Federal Medical Centre Gombe, Nigeria. DRJHP. 2015; 3(1):1-11.
 22. Amoran O, Onwube O. Infection control and practice of standard precautions among healthcare workers in northern Nigeria. JGID 2013;5(4):15663
<https://doi.org/10.4103/0974-777X.122010>
 23. Al Wazzan B, Salmeen Y, Al Amiri E, Abul A, Bouhaimed M, Al -Tair A. Hand hygiene practices among nursing staff in public secondary care hospitals in Kuwait: self-report and direct observation. Med Princ Pract. 2015; 20(4): 326-31.
<https://doi.org/10.1159/000324545>
 24. Salem OA. Knowledge and Practices of Nurses in Infection Prevention and Control within a Tertiary Care Hospital. Ann Med Health Sci Res. 2019;9:422-425.
 25. Fashafsheh I, Ayed A, Eqtaif F, Harazneh L. Knowledge and Practice of Nursing Staff towards Infection Control Measures in the Palestinian Hospitals. J. educ. pract. 2015;6(4):79-90.
 26. Allegranzi B, Pittet D. Role of hand hygiene in healthcare-associated infection prevention. J Hosp Infect. 2009;73(4):305-15.
<https://doi.org/10.1016/j.jhin.2009.04.019>



This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.