

ASSESSMENT OF THE KNOWLEDGE LEVEL AND PRACTICES OF HEALTH CARE PROFESSIONALS (HCPS) REGARDING HAND HYGIENE IN THE MAJOR PUBLIC SECTOR TERTIARY CARE HOSPITALS OF PESHAWAR, KHYBER PAKHTUKHWA, PAKISTAN

Nasreen Ghani¹, Imran Khan², Ihsan Ullah³, Rehana Noureen⁴

ABSTRACT

OBJECTIVES: The objective of this study was to identify the knowledge level and practices of health care professionals (HCPs) regarding hand hygiene in the public sector tertiary care hospitals (TCHs) of Peshawar Khyber Pakhtunkhwa Pakistan.

METHODS: A descriptive cross-sectional study was conducted on 144 health care professionals in the major public sector tertiary care hospitals of Peshawar Khyber Pakhtunkhwa Pakistan in 2017. Data collection instrument was a self administered questionnaire. Data analysis was done through SPSS version 24 software while graphs were designed through MS-excel 2010.

RESULTS: Total 144 participants were recruited for the study. The response rate was 100%. 53.5% were male while 46.5% were female. 79.2% respondents had high level of knowledge while 61.1% had good practices of hand hygiene. 29.9% participants were washing hands before and 41% after contacting with patient. Analysis of date regarding practiced hand drying techniques showed that 63.2% allow hands to air for self-dry, 13.2% use disposable paper and 12.5% use common towel.

CONCLUSION: This study concluded that the overall knowledge of health care professionals regarding hand hygiene was high, while the practices were substandard because of poor hand drying technique.

KEYWORDS: Hand hygiene, Knowledge, Practices, Peshawar.

This article may be cited as: Ghani N, Khan I, Ullah I, Noureen R. Assessment of the Knowledge Level and Practices of Health Care Professionals (HCPs) Regarding Hand Hygiene in the Major Public Sector Tertiary Care Hospitals of Peshawar, Khyber Pakhtukhwa, Pakistan. *Ann Allied Health Sci.* 2018; 4(1):9-14.

INTRODUCTION

Centers for Disease Control (CDC) defined hand hygiene or hand washing is the procedure that eradicates and destroys germs or microbes on hands surfaces (1). Most of the hospital acquired infections are believed to be carried by the contaminated hands of health-care professionals (HCP) from one person to another or from a person to the reservoir of environment through direct contact(2). It is clearly known that hand cleaning is the simplest and cheapest way of reducing the transmission of contagious infection, proper hand washing can reduced the rate of nosocomial infection by 60% (3).

According to WHO 1.4 million hospitalized people are suffered anytime by nosocomial infections in both developed and developing countries (4). While CDC stated that 17 lack cases of acquired infections occur every year (5). The result of Magill et al. (5) showed that round about one out of twenty five hospitalized patients are suffered by healthcare associated infections every day in the U.S. hospitals. The prevalence rate of hospital acquired infection in developing countries is 40% (6). While in Pakistan 1170561 cases of nosocomial infections reported every year (7).

For infection prevention and control, the hand washing is considered to be a main

¹ Assistant Professor, Institute of Nursing Science, Khyber Medical University Peshawar

^{2,3,4} BSc nursing students, Institute of Nursing Science, Khyber Medical University Peshawar

Correspondence

Nasreen Ghani,
Assistant Professor,
Institute of Nursing Science,
Khyber Medical University Peshawar
E-mail: nasreen_shaheen@hotmail.com

pillar; while the compliance to hand hygiene is significantly low in spite of worldwide and nationwide recommendation on hand hygiene (8). Health care professionals (HCP) show poor compliance toward hand hygiene due to non-existence of wash basin, trouble in finding of cleaners like soap, shortage of time, individual poor attitude and sensitivity to cleaning agents, like detergent, and alcohol (9).

It is essential to measure the health care providers knowledge regarding hand hygiene; because it protects our lives from pathogenic micro-organisms (10). A study concluded that both doctors and nurses had adequate knowledge and practices about hand hygiene, and they need motivation through nonstop education and emphasis (10). Maheshwari, V(11) also reported that the Caregivers need repetitive knowledge about hand washing and behavioral alternation in attitudes and practices.

Most of the government hospitals in Pakistan do not follow infection control practices(12). In 2005 to 2006 a study had been conducted in some of the main government sector hospitals which indicated that there is a lack of elementary amenities for hand cleanliness in most of the health-care settings; therefore, the health care providers were not performing hand hygiene (13).

A study was conducted in the major public sector hospitals of Pakistan, which recommended that further knowledge, attitude and practices (KAP) studies are needed on hand hygiene in all government as well as some private sector hospitals (14). The purpose of this study was to evaluate the level of knowledge and practices of health-care professionals to identify gap between the knowledge and practices of hand hygiene. The information generated from the study will help the hospitals management to include appropriate measures in hand hygiene policy for effective implementation, to safeguard patients and health care professionals from nosocomial infections.

METHODS

A descriptive cross sectional study was conducted among the health care professionals (doctors & nurses) in the major public sector tertiary care hospitals

(HMC, KTH & LRH) of Khyber Pakhtunkhwa Peshawar Pakistan. A total of 144 participants were selected through stratified simple random sampling technique. Equal number of volunteer register doctors and nurses were recruited from each of the stratum; while paramedic staff were excluded from the study sample. Data were collected from the participants during October 2017 by using a self administered questionnaire. Prior to data collection informed consent was taken from each of the selected participant. The collected data were analyzed through SPSS 24 version software; while graphs were designed through Microsoft excel 2010. Both knowledge and practice were scored and graded. The participant, who achieved a score above 50% in knowledge section were considered high, while below 50% were considered low level knowledge. Practice was assessed through a Likert

scale, consisted eight questions. The total score of eight questions were graded. The participant who got a score between 1-8, 9-24 and 25-32 were considered poor, fair and good practices respectively. Hand washing and hand drying methods were assessed separately from practice.

RESULTS

In this study 144 questionnaires were equally distributed among the three major public sector hospitals of Khyber Pakhtunkhwa. Filled questionnaires were returned from both the doctors and nurses on the spot. The response rate was 100%. Out of 144 participants 50%(N=72) were doctors and 50%(N=72) were register nurses. 53.5% participants were male while 46.5% were female. Majority of the participants were having age between 20 to 30 years (69.4%) (Table I).

Variables	Frequency (N)	Percentage (%)
Gender:		
a. Male	77	53.5
b. Female	67	46.5
Age: (in years)		
a. 20-30	100	69.4
b. 31-40	32	22.2
c. 41-50	11	7.6
d. 51-60	1	0.7
Designation:		
a. Doctor	72	50.0
b. Register Nurse	72	50.0
Language:		
Urdu	31	21.5
Pashto	107	74.3
Chitrali	6	4.2
Marital Status:		
a. Unmarried	77	53.5
b. Married	64	44.4
c. Divorced	3	2.1
d. Widowed	0	0
Religion:		
a. Islam	136	94.4
b. Christianity	8	5.6

Regarding Knowledge, 61.8% participants were formally trained of hand hygiene. Majority of the respondents

(94.4%) knew that contaminated hands act as a vehicle for the cross-transmission of infection. 66% participants reacted

that minimum thirty second times is needed for effective hand washing. Nearly half (43.8%) of the respondents

answered correctly that the germs present on the skin or inside the patient body is the utmost common cause for nosocomial infection. Greater proportion (61.1%) respondents showed the correct response that contaminated hands of the care givers is the principal way to transmit

infection from one patient to another in hospitals. 50.0% answered that nosocomial infections have high impacts on a patient clinical outcome. Approximately similar proportion (48.6%) of participants knew that hand hygiene have high effect in the prevention

of nosocomial infection. 41.0% respondents gave high importance to hand hygiene in their institutions. Overall, Majority of the participants (79.2%) had high level of knowledge regarding hand hygiene, followed by low level of knowledge (20.8%) (Table 2).

Variables regarding hand hygiene knowledge	Frequency (N)	Percentage (%)
Contaminated hands are the vehicles for infection transmission.		
a. Yes	136	94.4
b. No	8	5.6
Effective hand washing should last for at least 30 seconds.		
a. Yes	95	66.0
b. No	16	11.1
c. I don't know	33	22.9
Most frequent source of germs responsible for health care associated infection.		
a. Hospital water system.	14	9.7
b. The hospital air	3	2.1
c. Germs already present on or within the patient, (correct)	63	43.8
d. The hospital environment	64	44.4
Main route of cross transmission of potentially harmful germs between patients in a health care facility.		
a. Health care workers hands when not clean. (correct)	88	61.1
b. Air circulating in the hospital	15	10.4
c. Patient exposure to colonized surfaces (i.e. beds, chairs, etc.)	35	24.3
d. Sharing non-invasive objects (i.e. stethoscope, BP cuffs etc.) between patients.	6	4.2
Impacts of health care associated infection on a patient clinical outcome.		
a. Very low	10	6.9
b. Low	45	31.3
c. High	72	50.0
d. Very high	17	11.8
Effectiveness of hand hygiene in preventing hospital acquired infection.		
a. Very Low	7	4.9
b. Low	26	18.1
c. High	70	48.6
d. Very high	41	28.5
Among all patient safety issues, how important is hand hygiene at your institution?		
a. Low priority	13	9.0
b. Moderate priority	49	34.0
c. High priority	59	41.0
d. Very high priority	23	16.0
Overall knowledge of the respondents:		
a. High level of Knowledge	114	79.2
b. Low level of knowledge	30	20.8

Performing Hand Hygiene	Never	Sometim e	Most of the time	Always
	% (N)	% (N)	% (N)	% (N)
Before having direct contact with patient.	11.8 (17)	35.4 (51)	22.9 (33)	29.9 (43)
After having direct contact with patient.	4.9 (7)	19.4 (28)	34.7 (50)	41.0 (59)
If moving from a contaminated body site clean body site.	8.3 (12)	10.4 (15)	31.9 (46)	49.3 (71)
Before any non- surgical invasive procedure like inserting urinary or peripheral catheters.	5.6 (8)	9.7 (14)	34.7 (50)	50.0 (72)
After contact with any object in patient immediate surroundings.	8.3 (12)	27.8 (40)	28.5 (41)	35.4 (51)
After removing gloves.	9.0 (13)	11.8 (17)	27.1 (39)	52.1 (75)
If hands are visibly soiled with dirt, body fluid, excretion or blood.	4.2 (6)	9.7 (14)	14.6 (21)	71.5 (103)
When wearing gloves before potential contact with body fluids, mucous membrane and non-intact skin of the patient.	9.0 (13)	9.0 (13)	20.8 (30)	61.1 (88)
Overall practices of the respondents:	Frequency (N)		Percentage %	
a) Good practices	88		61.1	
b) Fair practices	56		38.8	
c) Poor practices	0		0	

Regarding practices of hand hygiene, 29.9% participants were performing hand hygiene always before touching the patient physically; while 41% were decontaminating their hands after touching the patient (Figure II & III). About half of the respondents (49.3%) clean their hands when approaching from a contaminated surface of the body uncontaminated surface. 50% participants always washed their hands before doing any non-incisional invasive

procedures like passing urinary catheter or Nasogastric tube. 35.4% HCPs were washing their hands after contact with patient surrounding objects. Majority of the respondents (71.5%) were always washing their hands, when their hands are noticeably grime with excretion, secretion and other body fluids of the patient. Overall, participants (61.1%) were performing good practices in hand hygiene (Table 3).

For hand washing the most common method was the use of running tap water with anti-septic soap (54.9%); while low proportion (2.1%) of participants were using alcohol based hand rub like alcohol hand sanitizer. In addition the most commonly practiced hand drying technique was allowing hands to natural air (63.2%) for self-drying due to the lack of hand drying facilities (Table 4).

Table 4: Methods use for hand washing and hand drying		
Methods for hand washing and hand drying	Frequency (N)	Percentage (%)
Method used for hand washing:		
a) Use of soapy water in the basin	43	29.9
b) Use of running tap water only	11	7.6
c) Use of running water and anti-septic soap	79	54.9
d) Use alcohol had rub only	3	2.1
e) Other	8	5.6
Method used for hand drying:		
a) Use of common towel	18	12.5
b) Allow hands to air dry	91	63.2
c) Use of disposable paper	19	13.2
d) Use of personal handkerchief	14	9.7
e) Use of hand dryer	2	1.4

DISCUSSION

Effective hand hygiene can play a key role in the prevention and controlling of health care associated infections. So, basic knowledge about hand hygiene is very necessary for all care givers to practice hand hygiene in effective and efficient manner. In this study majority of the respondents knew that contaminated hands act as a vehicles for the transmission of pathogenic microorganism. This finding is almost similar to the finding reported in a published Nigerian Study (2). Nearly half of the participants reported that the germs present inside or on the body of a patient is the most frequent source for hospital acquired infection. this finding is much better than the finding (27.4%) of a study conducted on health-care providers in a teaching hospital in Ghana(15). Greater proportion of the population believed that the paramount way to transmit the infections between

hospitalized patients is the hands of health-care worker, when contaminated. This finding is supported by other published studies (4, 15). This study shows that majority of health care professionals (doctors and nurses) in the major public sector tertiary care hospitals of Peshawar Khyber Pakhtunkhwa had a high level of knowledge regarding hand hygiene. This finding consistent with Lagos University Teaching hospital of South-West Nigerian study (2). Another similar study conducted by Rao et al., (14) also reported approximately the same result (87.3%). The finding of this study is also supported by a study conducted in Jubilee Mission Medical College and Research Institute, which reported 63.3% good knowledge (16).

Regarding hand hygiene practices, this study show that low proportion of participants were cleaning hands before and after touching the patient physically. These findings show greater conflict with

other studies, like a study done in Nigeria, which reported that 61.1% respondents washed their hands before touching the patient (2). Another similar study conducted in the major public sector hospitals of Pakistan, which stated that 60.1% participants performed hand hygiene before and 66.9% after physically assessing the patient (14). However these findings of this study are much better than the findings of a study conducted by Anwar, et al. (17). In this study the overall practices of the respondents were identified good. This finding is almost consistent with the finding of a study conducted by Ekwere & Okafor (2), which reported that 69.5% respondents were performing good practices of hand hygiene.

Cleaning hands with soapy water is essential, when the hands are visibly stained or dirty with patient excretion, secretion or blood; but, when contamination are not visible than

alcoholic rub is the chosen method for hand hygiene; because of its effectiveness and faster action than water and soap (18). Majority of the respondents in this study reported that for washing hands, they usually use running tap water and antiseptic soap, while a small proportion use alcohol based hand rub. The reason for this small proportion was lack of hand sanitizers in most of the wards; however, the hand sanitizers were present in some critical wards but all of them were empty. This finding is consistent with a study done in the major public sector hospitals of Pakistan, which reported 70% use of water and soap and 6% alcohol rub only (14). Another study also reported the similar result (2). Gulilat (19) also stated in the study result that 98% respondents were using water and soap and 8.8% alcohol based solution for hand hygiene.

Huang et al. (20) described that it is essential to properly dry hands after washing hands. In this study more than half of the participants responded that they allow their hands to natural air for self-dry after hand washing while the remaining population were using other hand drying methods like disposable paper and common towel. This finding is consistent with South West Nigerian study (2). The most common poor practice identified in this study is allowing wet hands to natural air. Dust particles in the hospital air are usually contaminated with pathogens, and they can easily stick to wet surfaces than dry surfaces, so wet hands can provide a medium for such attachment of pathogens and may increase the rate of hospital acquired infections. Therefore this method needs to be discouraged; because it may compromise the overall good practices of hand washing. Many studies suggested that the use of disposable papers can efficiently dry hands and effectively remove bacterial contamination (20). If disposable papers are provided to all wards in the hospitals then it will greatly

improve hand washing practices among health care professionals.

CONCLUSION

This study concluded that the overall knowledge of the participants regarding hand hygiene was high. Hand hygiene practices were also identified good but poor hand washing practices were observed before and after contacting with patient. Poor hand drying techniques were also observed, which greatly influence the overall effectiveness of hand hygiene. This study recommends proper seminars on hand hygiene to further boost the knowledge of hand hygiene among the health care professionals. It also suggests to the concerned institutions to strictly implement WHO five moments of hand hygiene as to improve hand washing practice before as well as after patient physical assessment. In addition, the study also recommends the provision of disposable paper to every ward in the hospital for hand drying; it will significantly increase the effectiveness of hand hygiene.

REFERENCES

1. Center for Disease Control and Prevention. (2009, July 20). *Vessel Sanitation Program: General information on Hand Hygiene*. Retrieved from https://www.cdc.gov/nceh/vsp/cruiselines/hand_hygiene_general.htm#
2. Ekwere TA, Okafor IP. Hand hygiene knowledge and practices among healthcare providers in a tertiary hospital, south west, Nigeria. *Int J Infect Control*. 2013;9(4):1-10.
3. Sallami ZA. Assessment of Hand Hygiene Attitude, Knowledge and Practice among Health Science Students in Aden University. *J Biosci Med*. 2016;4:25-32.
4. Mohesh G, Dandapani A. ISSN 2347-5579 *Unique Journal of Medical and Dental Sciences Knowledge* ,

Attitude and Practice of Hand Hygiene Among Medical Students-A Questionnaire Based Survey. 2014;2(3):127-31.

5. Magill, S. S., Edwards, J. R., Bamberg, W., Beldavs, Z. G., Dumyati, G., Kainer, M. A., ... & Ray, S. M. (2014). Multistate point-prevalence survey of health care-associated infections. *New England Journal of Medicine*, 370(13), 1198-1208.
6. Asadollahi M, Bostanabad MA, Jebraili M, Mahallei M, Rasooli AS, Abdolalipour M. Nurses' Knowledge Regarding Hand Hygiene and Its Individual and Organizational Predictors. *J Caring Sci [Internet]*. 2015;4(1):45-53.
7. Atif Mahmood & Abira Aftab. Hospital acquired infections: HAI. *Pa Nurse*. 2014; 3(4):9-13.
8. Scheithauer S, Lemmen SW. How can compliance with hand hygiene be improved in specialized areas of a university hospital? *Journal of Hospital Infection*. 2013 Feb 1;83: S17-22.
9. Squires JE, Suh KN, Linklater S, Bruce N, Gartke K, Graham ID, et al. Improving physician hand hygiene compliance using behavioural theories: A study protocol. *Implement Sci*. 2013;8(1):1-9.
10. Mu'taz MD, Alrimawi I, Saifan AR, Batiha A-M. Hand Hygiene Knowledge, Practices and Attitudes among Nurses and Physicians. *Health (Irvine Calif)*. 2016;8(5):456-462.
11. Maheshwari V, Kaore NCM, Ramnani VK, Gupta SK, Borle A, Rituja K. A study to assess knowledge and attitude regarding hand hygiene amongst residents and nursing staff in a tertiary health care setting of Bhopal city. *J Clin Diagnostic Res*. 2014;8(8):4-7.

12. Baqi S, Damani NN, Shah SA, Khanani R. Infection Control at a Government Hospital in Pakistan. *Int J Infect Control*. 2009;5(1):1–7.
13. Iqbal R, Shabbir I, Tabassum MN, Kausar N, Waseem T, Hassan SS, Bashir S, Khokhar I, Tehseen M, Tareen S, Rahman F. Knowledge, attitude and practice patterns of handwashing in major public sector hospitals of Karachi. *Pak J Med Res*. 2006 Oct;45(4):96-100.
14. Rao MH, Arain GM, Khan MI, Taseer I, Talreja L, Ali G, et al. Assessment of Knowledge , Attitude and Practices Pattern of Hand Washing in Some Major Public Sector. 2012;51(3):76–83.
15. Amissah I, Salia S, Craymah JP. A Study to Assess Hand Hygiene Knowledge and Practices among Health Care Workers in a Teaching Hospital in Ghana. *Int J Sci Res [Internet]*. 2016;5(8):301–307.
16. Jose GE, Valsan C. A study to assess the knowledge, attitude and practices of hand hygiene in a health-care setting. *Journal of the Academy of Clinical Microbiologists*. 2017 Jul 1;19(2):93-100
17. Anwar MA, Rabbi S, Masroor M, Majeed F, Andrades M, Baqi S. Self-reported practices of hand hygiene among the trainees of a teaching hospital in a resource limited country. *J Pak Med Assoc*. 2009;59(9):631–634
18. World Health Organization. Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings, with Focus on Ebola. *World Heal Organ*. 2014;(August):1–27
19. Gulilat K. Assessment of Knowledge, Attitude And Practice of Health Care Workers on Infection Prevention in Health Institution Bahir Dar City Administration. *Sci J Public Heal [Internet]*. 2014;2(5):384-393
20. Huang C, Ma W, Stack S. The hygienic efficacy of different hand-drying methods: a review of the evidence. In *Mayo Clinic Proceedings* 2012 Aug 31 (Vol. 87, No. 8, pp. 791-798). Elsevier.