

Short Research Article

ASSESS THE KNOWLEDGE, ATTITUDE AND PRACTICE OF HEALTHCARE WORKERS ABOUT HAND HYGIENE

ABSTRACT

Aims: The purpose this study was to assess the knowledge, attitude and practice of healthcare workers about hand hygiene.

Study design: A cross sectional study was used.

Place and Duration of Study: Memon Medical Institute Hospital, a tertiary care private hospital Karachi, Pakistan from November 2021 to December 2021.

Methodology: Non-random convenience sampling method was used in this study.

Results: Most participants have an acceptable level of knowledge of hand hygiene. The highest scores were in the infection control domain and the lowest scores defined the hand hygiene domain. Multivariate analysis showed that work experience and previous education were the most important predictors of participants' knowledge of hand hygiene.

Conclusion: Hand hygiene is the simplest yet effective way to stop the spread of germs non-invasive independent predictors for screening esophageal varices may decrease medical as well as financial burden, hence improving the management of cirrhotic patients. These predictors, however, need further work to validate reliability.

Keywords: Hand hygiene, nurses, healthcare workers, infection-prevention, knowledge, attitude, practice.

1. INTRODUCTION

Hand hygiene is the compliance of cleaning hands with cleaning soap and water or with antiseptic hand rub to remove temporary microorganisms from hands and preserve the circumstance of the skin⁽¹⁾. It is one of the most significant issues in the world and the chain of infection could be break by hand hygiene compliance and to decrease health related infections⁽²⁾. There would be lots of microorganisms in the hand during the dealing with patients unless the hand hygiene compliance following recommended guidelines^(3, 4). Morbidity, length of stay, and treatment cost increases with Healthcare associated infections (HAI), which can be reduced by following infection control guidelines⁽⁵⁾.

The mode of transmission mainly begins with healthcare provider's hands⁽⁶⁾. Infection control guideline should be followed to reduce hand related microorganisms spreading. The healthcare workers wash their hands properly before and after touching the patient to prevent HAI infections⁽⁶⁾. With the decrease in infection rates reported after better compliance with handwashing, it states to the professional practice of hand hygiene⁽⁷⁾.

Transmission of the pathogen among the patients can be potentially caused by the hands of healthcare workers (HCW). Manifestations of the hand hygiene programs reached a high standard in care for the patients and decrease healthcare-associated infections (HAIs) by about one infection per 1000 patients^(7, 8). 9% is the prevalence of HAI in Southeast Asia, between 2.5% and 14.8% in Africa^(9, 10). Whereas, 7.6% prevalence in diverged patient population in high-wages countries⁽¹¹⁾.

Patients admitted in ICUs have a higher rate of incidence of HAI. Though, in certain contexts, the frequency of patient contact may be too great to ensure 100% hand hygiene compliance among

HCWs^(12, 13). Invasive devices commonly utilized on ICU patients act as entrance points for virulent microorganisms, resulting in a higher risk of HAIs⁽¹⁴⁾.

The proper compliance with hand hygiene can decrease the spread of HAIs, length of stay in hospital HAIs related mortality and morbidity, healthcare expenses, and encourages the patient's health and safety which have been proved by the various studies^(15, 16). The practice of hand hygiene for HCWs have recommended by the international public health agencies including the World Health Organization (WHO). However, compliance remains low presently^(17, 18).

2. METHODOLOGY

A cross sectional method was conducted among healthcare providers at Memon Medical Institute Hospital in 2021. The sample was 209 healthcare workers. Sample size calculated by Open Epi software. They were invited to the study through non-random convenient sampling method. Inclusion criteria included Healthcare workers who have minimum 1-year clinical experience, Age 20 to 50, Doctors, nurses, midwives having valid PMDC or PNC License. Exclusion criteria consisted of non-clinical staff, not willing to be part of study.

The research tool was WHO questionnaire named as "HAND HYGIENE KNOWLEDGE QUESTIONNAIRE". The questionnaire consisted of two parts, first part covered demographic data and second part based on 9 questions for healthcare workers regarding to the knowledge of hand hygiene. In addition to questionnaire responses demographic detail was collected including participant's educational institution, age gender, and previous experience of working in the healthcare industry.

Data analyzed using SPSS version 21. Data collection was conducted in November 2021 after the ethical approval by IRB of Memon Medical Institute Hospital.

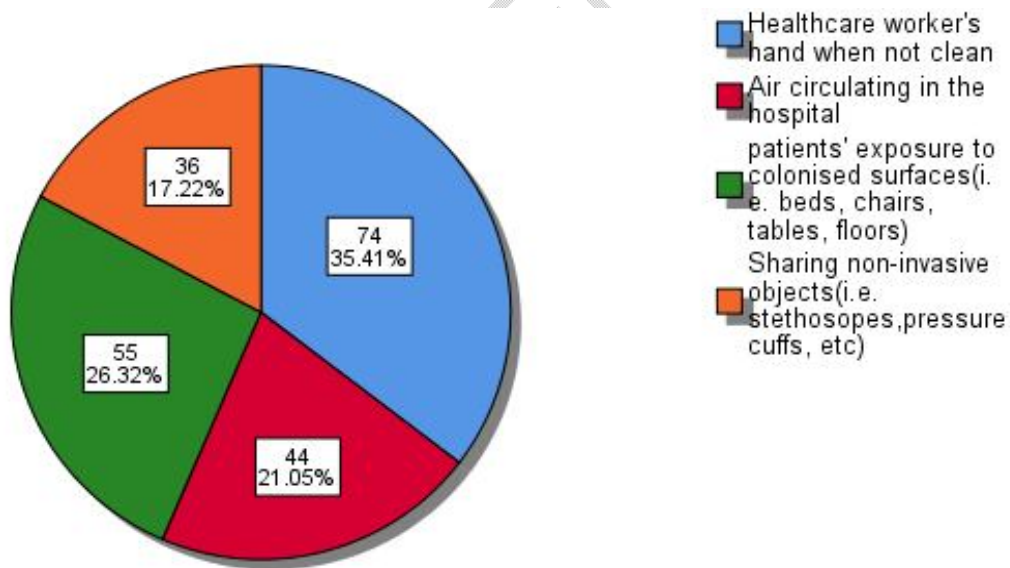
3. RESULTS

Table 1. showed the demographic data of the study participants out of 209 study participants majority were female 135 (64.6%) and 74 (35.4%) were male participants. Out of 209 participants' majority were 39.23% age group 20-25 years. Majority of participants 74.16%, had more than one-year experience. More than half participants were education Diploma in Nursing. 11% had BSN, 21.53% had MBBS, 9.09% had CMW, 4.3 % had Nursing Assistant, and 2.87% had DPT. Most of the participant were Nurses 134 (64.11%) while 23 (20/58%) were doctors, 14(6.69%) were midwives, 10 (4.78%) were Nursing Assistant, 2 (0.95%) were technician, and 6 (2.87%) therapist.

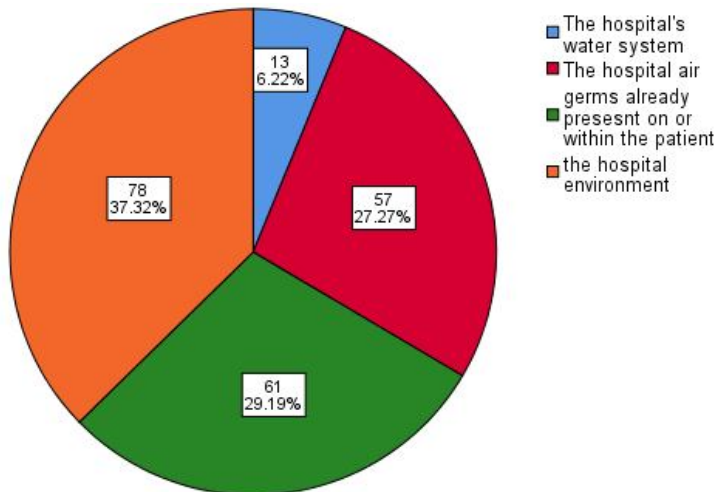
Table 1 Socio Demographic Characteristics of Study Participants

Characteristics	n	%
Age (years)		
20-25	82	39.23
26-30	77	36.84
31-35	43	20.57
36-40	6	2.87
41-45	1	0.47
Gender		
Male	74	35.4
Female	135	64.6
Marital Status		
Married	112	53.58
Unmarried	92	44.01

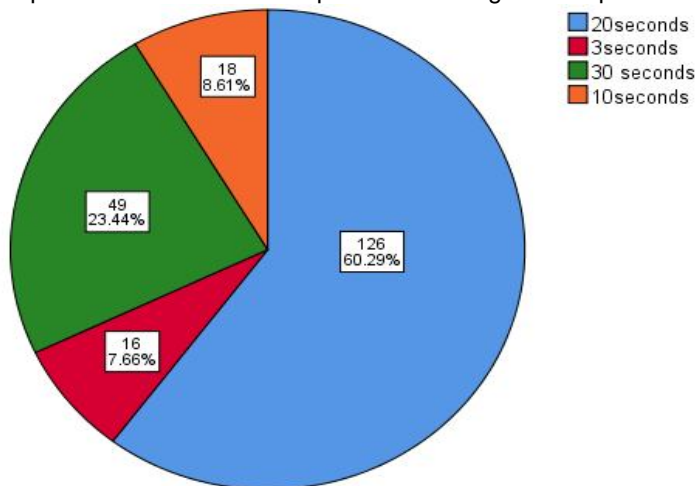
Divorced	5	2.39
Working Experience		
1-year	32	15.31
less than 1 year	22	10.52
more than 1 year	155	74.16
Education		
BSN	23	11
MBBS	45	21.53
CMW	19	9.09
Nursing Assistant	9	4.3
Diploma in Nursing	107	51.19
DPT	6	2.87
Designation		
Nurse	134	64.11
Healthcare assistant	10	4.78
Midwife	14	6.69
Doctor	43	20.574
Technician	2	0.95
Therapist	6	2.87



Graph 1. Main route of cross transmission of potentially harmful germs between patients in health care facility.



Graph 2. Shows the most frequent source of germs responsible for health care-associated infections



Graph 3. Shows minimal time needed for alcohol-based hand rub to kill most germs on hands

Graph 1 shows the Main route of cross-transmission of potentially harmful germs between patients in health care facilities. Most of participant 74 (35%) said health care workers' hands were not clean. While air circulation in hospital 44 (21.05%) and Patients exposure to colonized surfaces 55 (26.32%) and sharing noninvasive objectives are 36 (17%)

Graph 2 shows the most frequent source of germs responsible for health care associated infections most of the participants 78 (37.32%) answered that the hospital environment is most frequent source of germs responsible for health care associated infections.

Graph 3. shows the most minimal time needed for alcohol-based hand rub to kill most germs on hands most of the participants 128 (60.29%) said that minimal time needed for alcohol-based hand rub to kill most germs on hands is 20 seconds.

Table 2 shows the Practice of health care provider about HH. The study group categorized on the base of formal training received or not more than half the participants 110 (52.32%) received formal training for HH in the last three years. Most of the participants 179 (85%) said they use alcohol based hand rub for hand hygiene while 44 (21.05%) do not use alcohol based hand rub for hand hygiene.

Table 2. HAND HYGIENE PRACTICE QUESTIONNAIRE

Characteristics	n	%
Did you receive formal training in hand hygiene in the last three years?		
Yes	99	47.37
No	110	52.63
Do you routinely use an alcohol-based hand rub for hand hygiene?		
Yes	179	85.65
No	30	14.35

Table 3 shows the study participants knowledge about HH. Study group was categorized based on whether they believed that hand hygiene before touching the patients prevents transmission of germs, 204 (97.61%) said yes and 5(2.39%) no. When participants were questions about Whether Hand hygiene immediately before a clean/aseptic procedure prevents transmission of germs 203 (96.7%) said yes and 6 (2.87%) said no. When participants were asked about Whether Alcohol-based hand rub and handwashing with soap and water is true immediately after a risk of body fluid exposure 99% participants said yes and only 1% said no. When participants were asked about Whether Wearing jewelry should be avoided, as associated with increased likelihood of colonization of hands with harmful germs 201 (96.17%) said yes and 6 (3.87%) said no. When participants were asked about Whether Damaged skin should be avoided, as associated with increased likelihood of colonization of hands with harmful germs most of the participants 197 (97.26%) said yes and 12 (5.74%) said no. When participants were asked about Whether Artificial fingernails should be avoided, as associated with increased likelihood of colonization of hands with harmful germs most of the participants 180 (86.12%) said yes and 29 (13.88%) said no. When participants were asked about Whether Regular use of a hand cream should be avoided, as associated with increased likelihood of colonization of hands with harmful germs more than half of the participants 110 (52.63%) said yes and 99 (47.33%) said no.

Table 3. HAND HYGIENE KNOWLEDGE QUESTIONNAIRE

Characteristics	n	%
Hand hygiene before touching the patient prevents transmission of germs		
Yes	204	97.61
No	5	2.39
Hand hygiene Immediately after a risk of body fluid exposure prevents transmission of germs		
Yes	203	97.13
No	6	2.87
Hand hygiene Immediately before a clean/aseptic procedure prevents transmission of germs		
Yes	201	96.17
No	8	3.83
Hand hygiene after exposure to the immediate surroundings of a patient prevents transmission of germs		
Yes	209	100.00
No	0	0.00
Alcohol-based hand rub and handwashing with soap and water are true after touching a patient		
Yes	204	97.61

No	5	2.39
Alcohol-based hand rub and handwashing with soap and water are true immediately after a risk of body fluid exposure		
Yes	209	100
No	0	0
Alcohol-based hand rub and handwashing with soap and water are true after exposure to the immediate surroundings of a patient		
Yes	207	99.00
No	2	1.00
Hand rubbing is more rapid for hand cleansing than handwashing		
Yes	192	91.90
No	17	8.10
Hand rubbing causes skin dryness more than handwashing		
Yes	202	96.70
No	7	3.30
Wearing jewelry should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?		
Yes	201	96.17
No	8	3.83
Damaged skin should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?		
Yes	197	94.26
No	12	5.74
Artificial fingernails should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?		
Yes	180	86.12
No	29	13.88
Regular use of a hand cream should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?		
Yes	110	52.63
No	99	47.37

DISCUSSION

This study showed that the most participants had good knowledge about hand hygiene. ---% participants were aware of knowledge about hand hygiene through which the rate of nosocomial infection is also low in MMIH. Comparatively India have reported HH compliance ranging from 20–85.5%.¹⁹ In Qassim Saudi Arabia, 58% of healthcare workers have moderate knowledge of suggested hand hygiene.²⁰ Other similar studies have shown the influence of multiple variables on nurses' knowledge of hand hygiene.²¹

Work experience and occupational type were significantly associated with nurses' knowledge of hand hygiene. Perhaps as nurses gain more practical experience in clinical settings and determine their employment patterns, they will be more motivated to learn more and comply with the latest guidelines.

Jang et al. discussed this issue in a different way, noting that as long as health care workers practice hand hygiene for self-protection, education on this has little impact. And found that educating caregivers on good communication patterns, teamwork, and how to adhere to hand hygiene guidelines are important factors despite heavy workloads.²²

Variations in knowledge among the hospitals surveyed, particularly with regard to hand hygiene definitions, were attributed to differences in hospital policies, differences in teaching methods, and differences in the conditions of selected neonatal wards (number of new-borns, needing a ventilator, etc.). Number of new-borns, or prior care, number of stations, equipment availability, and management style).²²

4. CONCLUSION

Continue to implement structured, regular and ongoing training programs in a variety of effective ways to maintain and strengthen caregiver knowledge of hand hygiene and reduce and eliminate knowledge gaps; we need to increase accuracy and supervision. There is also a need to identify factors that promote nurses' positive perceptions and attitudes towards hand hygiene.

ETHICAL APPROVAL

This research has been conducted after ethically approved by IRB committee of Memon Medical Institute Hospital.

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APPENDIX

QUESTIONNAIRE

- Tick **only one answer** to each question.
- Please read the questions carefully before answering. Your answers will be kept confidential.

PART 1 DEMOGRAPHICAL INFORMATION

1. **Name:** _____ (optional)

2. **Age**

- a) 20-25
- b) 26-30

- c) 31-35
- d) 36-40

- e) 41-45
- f) 45-50

3. **Gender**

a. Male

b. Female

4. **Marital status**

a. Married

b. Un married

c. Divorced

5. **Working experience**

a. 1-year

b. Less than
1-year

c. More than
1-year

6. **Education**

a. BSN

d. Nursing assistant

b. MBBS

e. RN diploma

c. Midwifery

7. **Profession**

a. Nurse

d. Medical doctor

b. Healthcare assistant

e. Technician

c. Midwife

f. Therapist

8. **Department**

a. Emergency

b. Gynea/ LR

c. OPD

d. IPD

e. Private/ Semi Private

f. ICU

g. Paediatric Ward

PART 2 HAND HYGIENE KNOWLEDGE QUESTIONNAIRE

1. Did you receive formal training in hand hygiene in the last three years?

Yes No

2. Do you routinely use an alcohol-based hand rub for hand hygiene?

Yes No

3. Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a health-care facility? (tick one answer only)

- a. Health-care workers' hands when not clean
- b. Air circulating in the hospital
- c. Patients' exposure to colonised surfaces (i.e., beds, chairs, tables, floors)
- d. Sharing non-invasive objects (i.e., stethoscopes, pressure cuffs, etc.) between patients

4. What is the most frequent source of germs responsible for health care-associated infections? (tick one answer only)

- a. The hospital's water system
- b. The hospital air
- c. Germs already present on or within the patient
- d. The hospital environment (surfaces)

Which of the following hand hygiene actions prevents transmission of germs to the patient?

- e. Before touching a patient Yes No
- f. Immediately after a risk of body fluid exposure Yes No
- g. Immediately before a clean/aseptic procedure Yes No
- h. After exposure to the immediate surroundings of a patient Yes No

5. Which of the following statements on alcohol-based hand rub and handwashing with soap and water are true?

- i. After touching a patient Yes No
- j. Immediately after a risk of body fluid exposure Yes No
- k. Immediately before a clean/aseptic procedure Yes No
- l. After exposure to the immediate surroundings of a patient Yes No

6. Which of the following statements on alcohol-based hand rub and handwashing with soap and water are true?

- m. Hand rubbing is more rapid for hand cleansing than handwashing True False
- n. Hand rubbing causes skin dryness more than handwashing True False
- o. Hand rubbing is more effective against germs than handwashing True False
- p. Handwashing and hand rubbing are recommended to be performed in sequence True False

7. What is the minimal time needed for alcohol-based handrub to kill most germs on your hands? (tick one answer only)

- q. 20 seconds
- r. 3 seconds
- s. 30 seconds
- t. 10 seconds

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8. Which type of hand hygiene method is required in the following situations?

- u. Before palpation of the abdomen Rubbing Washing None
- v. Before giving an injection Rubbing Washing None
- w. After emptying a bedpan Rubbing Washing None
- x. After removing examination gloves Rubbing Washing None
- y. After making a patient's bed Rubbing Washing None
- z. After visible exposure to blood Rubbing Washing None

9. Which of the following should be avoided, as associated with increased likelihood of colonisation of hands with harmful germs?

- aa. Wearing jewellery Yes No
- bb. Damaged skin Yes No
- cc. Artificial fingernails Yes No
- dd. Regular use of a hand cream Yes No

Thank you very much for your time!

UNDER PEER REVIEW

Appendix B

INFORMED CONSENT FORM

This is Mehwish Aqeel student at Memon College of Nursing conducting the study for the requirement of Bachelor of Science of Nursing Degree. You are invited to participate in this study

By signing in in this form you have voluntarily agreed to participate in a research study entitled: "Assess the Knowledge, Attitude and Practice of Healthcare Workers about Hand Hygiene"

To be under supervision of Principal Investigator.

The purpose of the research study on topic "Assess the Knowledge, Attitude and Practice of Healthcare Workers about Hand Hygiene" is to determine the hand hygiene compliance of healthcare team.

You will be requested to fill the questionnaire consist of demographic information and hand hygiene knowledge There will be no risk.

The study research records will be kept confidential and you will not be identified in any verbal or written reports the research records related to this study will be kept in a secure password protected computer file.

You will not be charged for procedures performed that are purely related to your participation in this study.

Your only 1hour will be needed in this participation and for any information you can call the supervisor of this study.

Your participation in this study is voluntary. You may be a participant in it only for your wish and you can withdraw from this study at any time.

Name of Participant: _____ **Signature** _____

Researcher Name: XXXXXXXXXX **Signature** _____