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Hand washing knowledge and practice among nursing staff in Al Imam Al Hussein Medical City, Karbala

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Abstract

Infections Acquired in healthcare setups are among the major causes of death and increased morbidity among hospitalized patients especially in developing countries. Healthcare-Associated Infections (HAIs) significantly cause patient mortality and morbidity. Hand hygiene is one of the most effective, cheapest ways to prevent Nosocomial infection. Health care worker's hands are the most usual type of vehicle for transmission of healthcare-associated infections from patient to patient and within health care environment.

Aim: To determine the knowledge and practice levels among Al-Imam Al Hussein medical city nursing staff. **Materials and methods:** Cross-sectional study was conducted at Al-Imam Al Hussein medical city, Karbala from November 2022- March 2023, a total of 128 subjects were participated. The target population were nursing staff and collection of data was through structured and analyzed using a statistical package for social sciences.

Results: About 40.6% of nursing staff had good level of hand washing knowledge, 57% fair level and 2.3% poor level. Also, about 71.9% of the nursing staff had good level of hand washing practice and 28% had a fair level.

Conclusions: The hand washing knowledge and practice are improving among nursing staff at Al-Imam Al Hussein Medical City. We recommended continuous hand hygiene training programs, workshops and saving hand hygiene supplies.

Keywords: Hand hygiene, health care environment, hand washing, hand hygiene

Introduction

Infections Acquired in healthcare setups are among the major causes of death and increased morbidity among hospitalized patients especially in developing countries. Healthcare-Associated Infections (HAIs) are a significant cause of patient mortality and morbidity. These infections can be life-threatening and difficult to treat. Hand hygiene is one of the most effective, best and cheapest ways to prevent Nosocomial infection (Aring & Goyal, 2021) ^[1]. The increasing likelihood of occurrence of these infections is as high as 19% in developing nations and therefore presents a very serious challenge to healthcare workers (Otto & Luyi, 2022) ^[2]. Health care worker's hands are the most usual type of vehicle for transmission of healthcare-associated infections from patient to patient and within health care environment. Pathogenic microorganisms can stay for 2-60 minutes on health care worker's hands. (Anderson *et al.*, 2008) ^[3].

World Health Organization (WHO) introduced "My five moments for hand washing" to minimize problems related to hand washing. These five moments that call for the use of hand washing include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient's surroundings (Jemal, 2018) ^[4].

According to the WHO (2009a) ^[9], hand hygiene is defined as behavior of cleaning the hands with soap and water and by hand-rubbing using hand sanitizer without water (Borghi *et al.*, 2002) ^[5].

Research is clear that proper hand washing is the key to reduce occurrence of infectious diseases in many different types of communities, including the health care settings (Mbroh, 2019) ^[6]. Poor hand washing was significantly linked to higher incidence of infectious diseases, medical visits and absence from work (Prater *et al.*, 2016) ^[7].

Rationale

Hand washing knowledge and practice among nursing staff in Karbala city not well studied, so in this study we determine the level of knowledge, practice and gaps of hand washing.

Aims

Determine level of hand washing knowledge and practice among nursing staff in Al-Imam Al Hussein medical city.

Methodology

Study design: Cross Section Study.

Study area: Al Imam Al Hussein Medical City, Karbala, Iraq from (November 2022- March 2023). This medical city provides general health services for residents of Karbala as well as patients referred from other districts in vicinity.

Study population: Study subjects included all nursing staff who were available and interested in participation during data collection in different wards, those who refused to participate and those on evening duty were excluded from the study.

Sample size: Convenience sample

Operational definitions

Hand washing: Is washing hand with plain or antimicrobial soap and water (WHO, 2009) ^[9].

Infectious diseases: These are diseases caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi and can be spread, directly, from one person to another contact (WHO, 2018) ^[10].

Hand washing Knowledge: Is defined as having an adequate understanding about hand washing (Jemal, 2018) ^[4].

Hand washing practice: Is defined as an act of performing hand washing according to a set standard (Jemal, 2018) ^[4].

Data collection tools

The data were collected by the researcher's team through self-reported answers of nursing staff of different medical city wards to the questionnaire adapted by (Kudavidanage *et al.*, 2011) ^[8] and (Mbroh, 2019) ^[6] Which consist of:

- Demographic characteristics like age, gender, marital status, years of services, job title, education level, and work place.
- Questionnaire about knowledge of hand washing of nursing staff which consist of 11 statements answered by: yes, no and I do not know. Then, the knowledge asses by: good (more than 75%), fair (50-75%) and poor (less than 50%).
- Questionnaire about practice of hand washing of nursing staff which consist of 10 statements answered by: always, sometimes and never. Then, the practice asses by: good (more than 75%), fair (50-75%) and poor (less than 50%).

- Also finding gaps in knowledge and practice of hand washing that prevents nursing staff from good hand washing through answering a list of causes by yes or no.

Statistical analysis

Data were summarized by using suitable tables and graphs and analyzed by statistical package for social sciences (SPSS) version 22. P value <0.05 was considered as statistically significant.

Good knowledge level of hand washing: earning score of 75% and more on the knowledge questions indicating having sufficient amount of knowledge.

A fair level of hand washing earned a score of (50%-75%) on the knowledge questions.

Poor knowledge level of hand washing earning a score of less than 50% on the knowledge questions.

Ethical consideration

Ethical approval for this study was obtained from the training and human development centre in Karbala as well as from the medical city. The investigators visit the participants in medical city wards and explained the nature of the study and verbal consent obtained from nursing staff who agree to participate in the study.

Results

Table 1: Socio-demographic and some related characteristics of the included participants.

Characteristics		Total=128 No. (%)
Age in years	Mean ± SD	27.79±7.33
	Range	20- 56
Gender	Male	53 (41.4)
	Female	75 (58.6)
Years of service	≤ 2 years	75 (58.6)
	> 2 years	53 (41.4)
Educational level	preparatory school	31 (24.2)
	Institute	49 (38.3)
	University	48 (37.5)
Marital status	Unmarried	67 (52.3)
	Married	59 (46.1)
	Divorced	2 (1.6)
Job title	Skilled nurse	41 (32)
	Technical nurse	39 (30.5)
	University nurse	48 (37.5)
Workplace	Surgery	21 (16.4)
	CCU	20 (15.6)
	ICU	20 (15.6)
	EU	20 (15.6)
	Dialysis	20 (15.6)
	Medical word	18 (14.2)
Private word	9 (7)	

Comparison of socio-demographic characteristics in relation to knowledge level and practice of hand washing revealed that male gender had a significant higher knowledge level than female ($p=0.046$). Other socio-demographic characteristic had no significant difference in relation to knowledge level or practice of hand washing ($p> 0.05$).

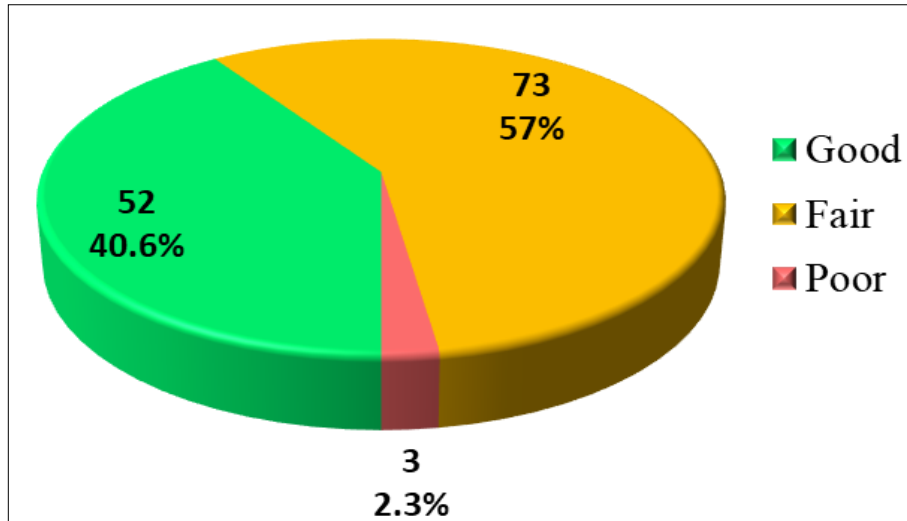


Fig 1: Frequencies and percentages of level of knowledge about hand washing among study participants.

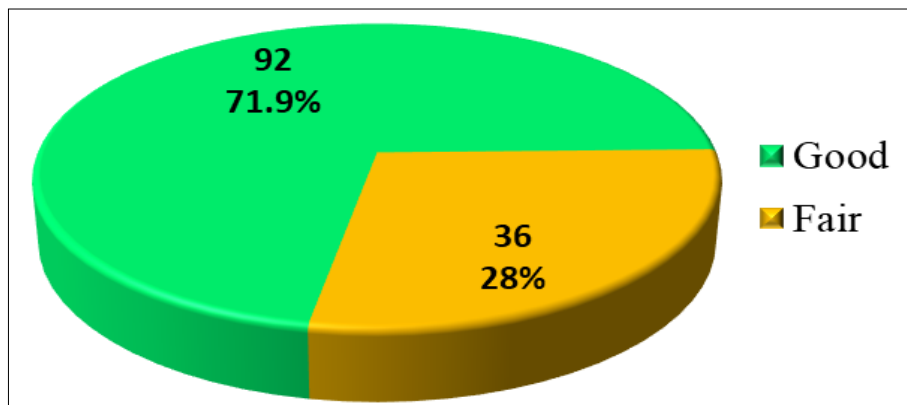


Fig 2: Frequencies and percentages of practice of hand washing among study participants.

The analysis of data showed that there was significant statistical difference in knowledge level among participants in relation to workplace ($p=0.001$). Whereas there was no

significant statistical difference in relation to practice of washing hands and workplace ($p=0.103$) as shown in figure-3 below.

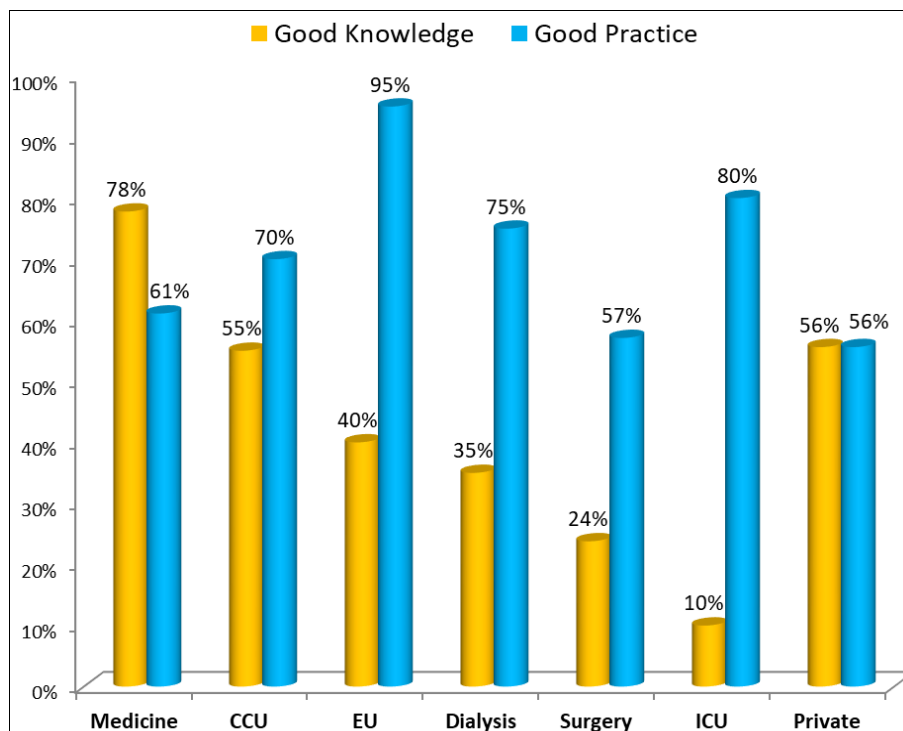


Fig 3: Comparison of Knowledge and Practice of hand washing among study participants.

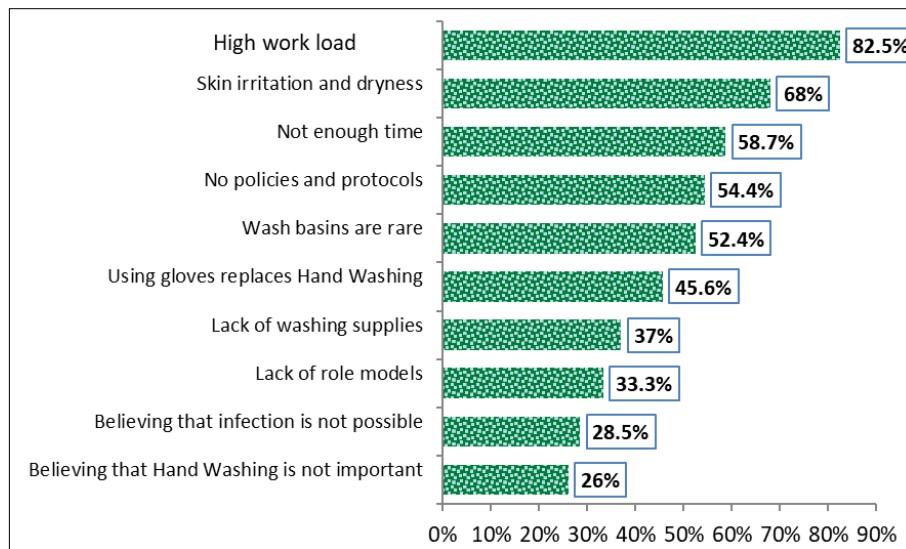


Fig 4: Causes that prevents workers in hospital from good hand hygiene.

Discussion

Present study included nursing staff due to nurses interact with patients 24 hour a day, and this connection has a potential to raise the risk of infections transmission to patients. Analysis of data on knowledge of hand washing indicated that nursing staff have 40.6% good knowledge, 57% have fair level of knowledge and 2.3% have poor knowledge. Good/fair level of nursing staff hand washing knowledge in our study may be due to increase level of awareness, regular training programs and workshops conducted by hospital. This increasing of good/fair level of nursing staff hand washing from previous assessment done by WHO may be due to continuous efforts of infection control team in medical city.

The outcome is in line with that reported among health workers (Aring & Goyal, 2021) [1] however, in contrast, to the work done at Dubti Referral hospital on hand washing by health professionals with results showing 65.9% good knowledge (Jemal, 2018) [4] and work done at private hospital in Ijebu ODE (Otto & Luyi, 2022) [2] on hand washing by health care practitioners with the results showing 96.9% good knowledge. Our results better than in study done at two teaching hospitals in Mashhad on hand washing knowledge among health care workers with results showing 21% poor and 10.6% good knowledge (Zakeri *et al.*, 2017) [11].

The findings show knowledge level among nursing staff is significant in relation to workplace, this is consistent with findings of study done in Anuradhapuru teaching hospital among intensive care unit staff (Kudavidnange *et al.*, 2011) [8] and it may be due to lack of infection prevention guidelines and five moments of hand hygiene in intensive care unit, dialysis, emergency unit so our study suggest that we should design our education programs to target more high risk wards where health associated infections result in more serious consequences. Although our study reveals good practice and poor knowledge of hand washing in high risk wards and there is no available explanation. In contrast, other studies found no significant relation between knowledge and ward of work place (Goodarzi *et al.*, 2020 and Zakeri *et al.*, 2017) [12, 11].

Our study revealed that male gender has significantly higher knowledge level than female, this may be due to that males in our hospital have more effective participation in

educational activities and workshops. This results similar to study done at psychiatric hospital (Bimerew & Muhawenimana, 2022) [13]. Other studies revealed no significant relation between knowledge and gender (Goodarzi *et al.*, 2020 and Zakeri *et al.*, 2017) [12, 11].

Further analysis of data on hand washing practice by the nursing staff in present study revealed good practice with 71.9% similar results in study done in private hospitals in Ijebu ODE (Otto & Luyi, 2022) [2], it is believed that knowledge of proper hand washing by nursing staff may have significantly influenced their overall hand washing practice and due to their training in public campaign on hand washing in the country as a result of recent covid infection. In contrast, numerous researchers had reported fair results, and the findings of present research are comparatively inconsistent with the works carried out by (Gulilat & Tiruneh, 2014) [14], (Alemu *et al.*, 2015) [15], and (Ekwere and Okafor 2013) [16], all which were 69%, 68.8%, and 69.5% respectively.

In our present study no significant relation between hand washing practice and work place in contrast to study done at Taif, Saudi arabia among health workers at armed forces military hospitals in which health care workers in intensive care unit showed better significant hand hygiene practice (AL-Sofiani *et al.*, 2015) [17].

In present study no significant relation between health workers practice and sociodemographic characteristics similar to study (Bimerew & Muhawenima, 2022) [13] in contrast, to study (Esther 2022) [18] in which there was a significant relation between hand washing practice and gender.

The most common barriers that prevents workers in hospital from good hand washing reported by nursing staff were high work load (82.5%) followed by skin irritation and dryness(68%), and not enough time(58.7%) these three main causes similar to same causes in study done at three hospitals in Iraq, Marjan Teaching Hospital, Al-Hilla surgical hospital and Imam Sadiq hospital in Babylon governorate in Iraq but our results lower than their results (93%, 85.4%, 76.2%)respectively (Alwatifi &Hattab, 2022) [19] one of the reasons can be the nursing shortage and large numbers of patients in hospital.

Limitations of study

The evaluation of the practice of hand washing were not observed or verified by researcher's team since they were self-reported.

Conclusions

Hand washing is improving, knowledge and practice of handwashing among nursing staff not evenly distributed in our medical city.

Recommendations

- Conducting continuous hand hygiene training programs using the teaching materials from WHO and making the nursing staff knowledgeable on hand hygiene.
- It is also important to encourage the infection control team to play a more active role in hand hygiene awareness and training in the hospital, especially high-risk wards, they should encourage to interact with staff members and there by exert a positive influence on their knowledge on hand hygiene.
- Introduction of infection prevention guidelines and five moments of hand hygiene to high risk wards especially ICU, dialysis and surgery possible to increase hand hygiene knowledge among nursing staff.
- Fellow up studies are needed to investigate the practices of nursing staff toward hand hygiene.
- The necessity continuity of saving hand washing supplies (basins, liquid soap and alcohol solutions) to all wards of medical city.

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