

KNOWLEDGE AND PERCEPTION OF HAND HYGIENE AMONG HEALTH CARE WORKERS OF A TERTIARY CARE MILITARY HOSPITAL: A DESCRIPTIVE STUDY

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ABSTRACT

Objective: To determine the knowledge and perception of doctors and paramedical staff about hand hygiene of a tertiary care military hospital.

Study Design: Cross sectional descriptive study.

Place and Duration of Study: Study was conducted at tertiary care military hospital, from Aug 2016 to Jan 2017.

Material and Methods: The sample size 196 was calculated using World Health Organization sample size calculator. Permission from administrative authorities was taken. Purposive sampling technique was used. World Health Organization's knowledge and perception structured self-administered questionnaire was used with minor amendments for the data collection. The percentage's in knowledge and perception domain of >75% determined good, 50-75% fair and <50% poor.

Results: There were 88 (45%) paramedical staff, 49 (25%) doctors and 59 (30%) nurses while overall 103 (52.5%) were male and 93(47.5%) female. The age of 160 (81.5%) study participants ranged 21-40 years. The overall mean score of knowledge was 64.1% and perception 72.5%. The paramedical staff presented with lowest mean score in knowledge 60.6% and perception 74.9%. While doctors scored highest 64.6% in knowledge domain and nurses scored highest in perception domain 82.2%. There was no statistical significant difference of knowledge and perception of hand hygiene between and within doctors, nurses and paramedical staff knowledge (p -value 0.799 and p -value 0.515 respectively).

Conclusion: The overall knowledge and perception of study participants about hand hygiene was fair. However, doctors and nurses' perception of hand hygiene was good.

Keywords: Doctor, Hand hygiene, Health care, Nurses, Paramedical personnel.

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INTRODUCTION

Health care associated infections (HAIs) are a threat to the health of people. The hands of health care workers (HCWs) are one of the most common vehicle for transmission of health care associated pathogens from patient to patient and within the healthcare environment. Hand hygiene is amongst, one of the key measure to ensure infection control in health care settings. It is also the most imperative determinant of not only patient but staff safety as well¹⁻³. The impact of HAIs could be distressing for patients and their families. It could increase the length of stay in the hospital, increase resistance of micro-organisms to antimicrobial agents and financial

burden. Devnani's study of tertiary care hospital also reported that "more than 1.4 million people around the world become seriously ill from HAIs at any given time. The studies conducted in developing countries and resource poor setting have reported HAI rates from 6-27%⁴. Other studies have found even 20-40% of HAIs causing cross infection through the hands of health care professionals in the hospital⁵⁻⁷. It is universally recognized that compliance with hand hygiene guidelines was low among hospital physicians and doctors⁸, 50.3%⁹ and Erasmus 40%¹⁰. Compliance vary among HCWs; Physicians and junior doctors ranged lowest 32-49.1% than nurses 48-52.2% and technicians 42.8%^{8,9}. It is reported that knowledge, beliefs, attitudes and socio economic factors impact the hand hygiene practices in health care settings. The knowledge is considered one of the most important

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determinants for using the hand hygiene guidelines in the daily patient related activities. Particularly, the knowledge of hand hygiene was reported as a significant element for increased compliance rates¹¹. Doctors, nurses and paramedical staff most frequently contact the patients in hospital. They put them selves and their patients at the risk of infection when they do not follow the hand hygiene in the health care settings. The objective of this study was to evaluate the knowledge and perception of doctors, nurses and paramedical staff about hand hygiene.

MATERIAL AND METHODS

The study was a descriptive cross sectional design. It was conducted at a tertiary care Military Hospital of northern Pakistan. The study was completed in a period of six months, from Aug 2016 to Jan 2017. Inclusion criteria comprised of doctors, nurses and paramedical staff appointed in the outpatient clinics, wards and intensive care units willing to participate in the study. The purpose of selection of these health care professionals was due to fact that they remain more frequently in contact with the patients. While, management staff, health care workers with active sick complaints, recently returning after having more than two week leaves were excluded from the study since remaining away from work could alter perceptions. The sample size 196 was calculated using the World Health Organization's sample size formula; $n = t^2 \times p(1 - p) / m^2$; $n = (1.96) \times 0.5(1 - 0.5) / (0.05)^2$; Confidence level at 95% (standard value of 1.96); estimated perception and knowledge of HCWs in hand hygiene practices 50% (0.50); margin of error at 5% absolute precision = 7%. The nonprobability purposive sampling technique was used. An open access World Health Organization¹² knowledge and perception structured self administered questionnaire was used for the data collection. The knowledge domain consists of 25 close ended questions and perception domain comprises of 11 close ended questions. The first part of questionnaire contain demographic variables to

develop inferences from knowledge and perception parts of the questionnaire. The self administered questionnaires were distributed among the doctors, nurses and paramedical staff to mark their responses on each item scale. The 196 completed questionnaires were included in the study. Permission from concerned administrative authorities was also taken. The participation in the study was voluntarily, no monetary or any other benefit was offered. The participants were free to withdraw from the study at any point before publication. The data were recorded anon-ymously. The questionnaires were kept in lock under the principal researcher's custody. The information was coded and entered in Microsoft Excel 2010 for data analysis. The descriptive statistics were run to obtain percentages, and mean score with 95% confidence interval calculation. The mean score of >75% was categorized as good, 50-70% as fair and <50% poor. The one way ANOVA was used to find difference of knowledge and perception among doctors, nurses and paramedical staff, the *p*-value of <0.05 was taken as statistically significant.

RESULTS

The demographic results revealed 88 (45%) of the study participants were paramedical staff; 49 (25%) doctors and 59 (30%) nurses. The gender results showed 103 (52.5%) male and 93 (47.5%) female participants. All the nurses in the study sample was 59 (30%) female and all the paramedical staff 88 (45%) was male, while 34 (17.5%) doctors were female and 15 (7.7%) male. Most of the study participants 111 (56.6%) were from 21-30 years age group. Out of these, 62 (31.5%) were paramedical staff, 14 (7%) nurses and 35 (18%) doctors. Overall, 165 (84%) study participants were aged <40 years (table-I). The overall mean score of hand hygiene knowledge among doctors, nurses and paramedical staff was poor 64.1% and mean score of hand hygiene perception was 72.5% also poor. The lowest mean score 60.6% of hand hygiene knowledge was among paramedical staff while their perception mean score was comparatively higher 74.9%. The highest hand hygiene knowledge mean score 64.6% was

of doctors and their perception mean score was 77.6%. The mean score of nurses in knowledge domain was 62.1% and their perception mean score was higher 82.2% from doctors and paramedical staff (table-II).

The knowledge and perception domains were compared to find difference among and

of hand hygiene. There was also no significant difference in perception of hand hygiene among and between doctors, nurse and paramedical staff as determined by $p=0.515$ (table-II).

DISCUSSION

This study focused on the knowledge and perception of health care professionals regarding

Table-I: Demographic variables of study participants (n=196).

Profession	Doctors n (%)	AFNS/Nurses n (%)	Paramedical Staff n (%)	Total n (%)
	49 (25)	59 (30)	88 (45)	196 (100)
Gender				
Female	34 (17.5)	59 (30)	-	93 (47.5)
Male	15 (7.5)	-	88 (45)	103 (52.5)
Age				
<20	-	-	5 (2.5)	5 (2.5)
21-30	35 (18)	14 (7)	62 (31.5)	111 (56.5)
31-40	13 (6.5)	17 (8.5)	20 (10)	49 (25)
41-50	1 (0.5)	25 (12.5)	1 (0.5)	26 (13.5)
>50	-	4 (2)	1 (0.5)	5 (2.5)
Department				
Internal Medicine	3 (1.5)	5 (2.5)	2 (1)	10 (5)
Surgery	19 (9.5)	23 (11.5)	13 (6.5)	54 (27.5)
Intensive Care Unit	1 (0.5)	25 (12.5)	18 (9)	43 (22)
Emergency Unit	3 (1.5)	-	21 (10.5)	24 (12)
Obstetrics	6 (3)	4 (2)	7 (3.5)	17 (8.5)
Pediatrics	-	-	1 (0.5)	1 (0.5)
Outpatient Clinic	-	-	19 (9.5)	19 (9.5)
Other	18 (9)	3 (1.5)	9 (4.5)	29 (15)

Table-II: Knowledge and perception of hand hygiene among doctors, nurses and paramedical staffs (n=196).

Hand Hygiene		Mean	95% Confidence Level		p-value
			Lower	Upper	
Doctors	Knowledge	64.6	54.2	74.9	-
	Perception	77.6	67.8	87.3	-
Nurses	Knowledge	62.1	52.4	71.7	-
	Perception	82.2	71.3	93.1	-
Paramedical staffs	Knowledge	60.6	55.7	65.6	-
	Perception	74.9	66.8	83.0	-
Over all	Knowledge	64.1	57.9	70.3	0.799
	Perception	72.5	61.9	83.2	0.515

*Significance level p -value <0.05

between doctors, nurses and paramedical staff. There was no significant difference between and within doctors, nurses and paramedical staff as determined by $p=0.799$ in the knowledge domain

hand hygiene in a military run tertiary care hospital. The health care professionals selected for this study were doctors, nurses and paramedical staff. These health care professionals

have more frequent and direct contact with the patients in the military hospital. The descriptive analysis of profession's distribution revealed the highest 88 (45%) of paramedical staff in the study. Whereas, nurses were 59 (30%), less than the paramedical staff but greater than doctors 49 (25%). There were 103 (52.5%) male respondents. All the nurses were female and all the paramedical staff was male in the professional group. While 34 (17.5%) doctors were female and 15 (7.5%) male. Generally, there was greater population of female in the doctors and nurses group except the paramedical staff group. Analysis from age group discovered 160 (81.5%) study participants' ages ranged from 21-40 years; reflecting most of the young workforce in the hospital. The departmental distribution found 97 (49.5%) study participants from surgical and intensive care units and fewer from internal medicine 10 (5%) and pediatrics 1 (0.5%). Therefore, inferences from the study will predominantly reflect the knowledge and perception of hand hygiene from greater participation in the study though other departments of the hospital also participated but low in percentage.

The overall mean score of knowledge was 64.1%; depicting fair knowledge of hand hygiene among doctors, nurses and paramedical staff in the inpatient and outpatient departments of the military hospital. The perception mean score was also fair 72.5%, but higher than knowledge domain. A mean score of >75% was determined as good but overall scores were low depicting a gap in the knowledge and perception domain about the hand hygiene among HCWs. The similar finding was also found from the Korean study¹³ reporting low knowledge and perception of hand hygiene among HCWs. Regardless of simple and common skill among HCWs, the knowledge and perception of hand hygiene reported low. The overall gap is a serious concern for the patient safety as HAIs keep rising. The knowledge mean score of doctors was fair 64.6% but perception was good 77.6%. Their knowledge is highest among nurses and paramedical staff but perception score lower to nurses. An Iranian

study¹⁴ represented moderate knowledge of residents concerning hand hygiene but overall poor attitude and practices. A Pakistani study¹⁵ also reported unsatisfactory hand hygiene knowledge of house officers. The attitude to wards communal hand hygiene practices is highlighted in a national study done in the eight major hospital reported that doctors were less compliant with the infection control guidelines in the inpatient and outpatient departments of the hospital¹⁶. As the doctors move from one to another patient, wards and department; they could become the vehicle of infection transmission as a result of their low knowledge. The nurse knowledge was also fair 62.1% but perception score was good 82.2% and highest among the doctors and paramedical staff. While a study¹⁷ demonstrated good knowledge of hand hygiene among nurses but a moderate knowledge in doctors¹⁸. Nurses spend more time with the patients as compared to other HCWs. Therefore their knowledge and perception of hand hygiene is critical for safety of the patients and prevention of infection. The knowledge of hand hygiene has been highlighted as a key determining factor for hand hygiene practices in the health care setting in the many studies worldwide¹⁹. Deficiency in knowledge would break the infection control chain and risk of infection transmission to the patient will increase. This could also add to infection of the patient. As a result, needless antibiotics would be administered to counteract infection and the economic burden to the patient and family will rise. The HAIs due to lack of hand hygiene practices at hospital result in prolonged hospital stay; more investigation are ordered to treat the infection, adding a substantial cost of health services delivery, and an economic burden on the patient and society at large²⁰. In addition to these issues, there are more grave concern reported HAIs causing a significant burden of morbidity and mortality from poor hand hygiene of health care workers²¹. Chiefly, these issues are escalating due to lower compliance rates of hand hygiene and knowledge is important determinant of it. Furthermore,

perception significantly affects the hand hygiene application in the hospital settings. Particularly, adherence with hand hygiene guidelines is also driven by the perception of high self-efficacy, rather than rationalizing about the influence of hand hygiene on the safety of patient and quality of care²². The few researchers also considered lack of hand hygiene, as an attitudinal problem⁵. The differences of knowledge and perception of hand hygiene among doctors, nurses and paramedical staff showing no statistical significant difference as ($p=0.799$) in the knowledge and perception ($p=0.515$) scores. The study¹³ also reported the similar results. The hand hygiene is a simple, easy and common skill amongst the all health care professional in the hospital. They all work together for the common goal of patient safety and high quality services. In addition to the low knowledge and perception of hand hygiene; other factors are also reported i.e. irritant hand sanitizers, increased work pressure, inappropriate infrastructure, hospital environment, lack of resources has led to low compliance rates^{4-6,22}. Whereas, the lack of awareness, and interest in patient care might also contribute to lower knowledge and perception of hand hygiene²³. Regardless of variety of interventions designed to increase the compliance rate of hand hygiene; the results up to date are disappointing. Therefore, there is need to develop a multimodal hand hygiene promotion program^{1,2,24} considering social marketing, staff involvement⁷, access to services and appropriate ergonomics²⁵. The strong religious faith and culture have a strong impact in our part of the world. Introducing these interventions can bring a positive change in hand hygiene behavior of staff working in hospital²⁶. A huge body of research has focused the compliant rates of hand hygiene in different health care setting. This study has evaluated the knowledge and perception of hand hygiene in the hospital among the health care professional who more frequently providing direct services to the patients, which, is the strength of this study. While, study from one institute limits the generalizability of the study.

CONCLUSION

The overall knowledge and perception of study participants about hand hygiene was fair. However, doctors and nurses' perception of hand hygiene was good.

RECOMMENDATION

The education and re-education, religious faith based interventions along with multimodal strategic approach can improve the hand hygiene knowledge and perception leading to improved patient safety.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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