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**Research Article** 

### THE AWARENESS AND ATTITUDE REGARDING HAND HYGIENE AMONG HEALTHCARE PROFESSIONALS AND STUDENTS IN SEVERAL MINISTRY OF HEALTH HOSPITALS IN JEDDAH, SAUDI ARABIA: A MULTICENTRIC STUDY

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#### Abstract:

**Background:** Infections caused by the health-care professionals (HCP) are considered one of the highest causes of morbidity and mortality of patients in the hospitals. The main cause of these infections is the poor compliance of the HCP to the measures of hand hygiene according to the guidelines provided by the World Health Organization (WHO). Our aim is to evaluate the awareness and attitudes regarding hand hygiene among the health-care professionals in multiple Ministry of Health (MOH) hospitals in Jeddah, Saudi Arabia.

**Methods:** This Cross-sectional descriptive study was conducted during the period of March 2018 to July 2018 in five ministry of health (MOH) hospitals in Jeddah Saudi Arabia. The study included Health care professionals and clinical year medical students. The tool used was a translated questionnaire version of the WHO Hand Hygiene Knowledge questionnaire. It included seven questions about the participants' demographic data, two questions about the education and compliance to hand rubbing and eleven questions to assess the participants' knowledge and attitude regarding the proper measures of hand hygiene. SPSS version 21 was used for statistical analysis. Descriptive and analytical statistics including Chi-square, ANOVA and independent t-test were used for qualitative variables in data analysis.

**Results:** This study was applied on total 295 after exclusion of uncompleted questionnaires. respondents including 24 (8.8 %) consultants, 25 (8.1%) specialists, 26 (8.4%) residents, 9 (2.9%) physicians, 77 (25%) Interns, 23 (7.5%) lab technicians, 58 (18.8%) nurses, 42 (13.6%) students. Overall, the studied group had a moderate knowledge of hand hygiene. 217 (73.3%) of the participants have received training in hand hygiene in the last 3 years. According to analysis, there is a significant difference in the knowledge between the participants who received training the last 3 years in hand hygiene and those who did not, using the one-way ANOVA test with p-value of (p=0.002).

**Conclusion:** In this study, we aimed to see the awareness of hand hygiene among the health-care professional and we found that receiving a training in proper hand hygiene has the most effect on the knowledge of HCPs and students. We found that there is poor knowledge among health care workers in most of the MOH hospitals in jeddah, SA. So, we need training programs aiming to educate the HCPs on hand hygiene and emphasis about the proper way of cleaning according to WHO guidelines. We also recommend engaging patients and other hospital visitors in the health education programs.

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#### **INTRODUCTION:**

Every year, millions of patients around the world are affected by infections that are transmitted by the health-care professionals (HCP). [1] Nosocomial or hospital-acquired infections are a major medical problem as they have a role in increasing patients' morbidity and mortality. They also increase the burden on the families and the community by increasing the medical care costs and prolonging the hospital stay. [7]

These infections can be prevented by general measures of infection control such as isolation, airborne precautions, droplet precautions, contact precautions and general precautions like wearing masks, gloves and gowns. [8] But most of these infections can be prevented through a simple precautionary measure of proper hand wash. [1] Hand hygiene was expected: Prior to contact with the patient or his or her environment, immediately prior to aseptic procedures, immediately after potential body fluid exposures and after contact with the patient or his/her environment. [2]. unfortunately, compliance with the hand hygiene guidelines provided by the World Health Organization (WHO) is usually poor among HCPs. Based on previous studies, some units are crowded like emergency room in ways that might contributes to lack of adherence to hand hygiene guidelines. [3] [4] Several studies has already been performed in several countries [3] [4] and they have showed that several factors will have its impact on the knowledge and attitude of HCP. A study conducted in 2005 in a Saudi Arabian military hospital for a one-year period included a total of 1382 patients who developed infection during hospital their hospital stay. 668 (48.3%) of them had hospitalacquired infection. [9]

Therefore, we aim in this paper to evaluate the awareness and attitudes regarding hand hygiene among the health-care professionals Jeddah-Saudi Arabia.

#### **MATERIAL AND METHODS:**

#### Study design

This Cross-sectional descriptive study was conducted during the period from March 2018 to July 2018 in five ministry of health (MOH) hospitals in Jeddah Saudi Arabia. The hospitals included: King Fahad hospital, King Abdulaziz hospital, East Jeddah hospital, King Abdullah Medical Complex, Maternity and Children hospital Almessadiyah.

#### **Inclusion criteria**

Health care workers including physicians, residents, interns, nurses, laboratory technicians and clinical year medical students were included in the study. Participants who refuse to fill or complete the questionnaire were excluded.

#### **Research instrument**

Data was collected using a translated questionnaire version of world Health Organization (revised 2009) the questionnaire contained seven questions about the participants' demographic data, two questions about the education and compliance to hand rubbing and eleven questions to assess the participants' knowledge and attitude regarding the proper measures of hand hygiene according to the WHO guidelines.

The participants who scored < 27.3% of the questions were considered to have (poor) knowledge. And who scored >27.3% and <63.63% had a (moderate) knowledge score. And >63.63% had a (good) score.

#### Statistical analysis

Data was collected using soft copies and entered into Microsoft excel version 16.16. Sample size and the margin of error were calculated according to the following equations:

- x = Z(c/100)2r(100-r)
- n = N x/((N-1)E2 + x)
- E = Sqrt[(N n)x/n(N-1)]

Where "n" is the sample size, "E" is the margin of Error, "N" is the population size, "r" is the fraction of responses of the HCPs and "Z(c/100)" is the critical value for the confidence level "c".

Our sample size was 287 with a 5% margin of error and a 90% confident interval.

SPSS version 21 was used for statistical analysis. Descriptive and analytical statistics including Chisquare, ANOVA and independent t-test were used for qualitative variables in data analysis.

#### **RESULTS:**

Demographic information of the respondents

This study was applied on total 295 after exclusion of uncompleted questionnaires. Including 24 (8.8%) consultants, 25 (8.1%) specialists, 26 (8.4%) residents, 9 (2.9%) general practitioners, 77 (25%) interns, 23 (7.5%) lab technicians, 58 (18.8%) nurses, 42 (13.6%) students.

The overall level of knowledge of the studied sample was moderate. Table.1 shows the level of knowledge according to the demographic data of the participants.

Table.1	l					
			POOR	MODERATE	GOOD	TOTAL
-	Gender	Male	40 13.6%	57 19.3%	5 1.7%	102 34.6%
		Female	81 27.5%	104 35.3%	7 2.4%	193 65.4%
		21-25	50 16.9%	71 24.0%	6 2.0%	127 43.1%
		26-30	42 14.2%	41 13.9%	2 0.7%	86 29.2%
		31-35	19 6.4%	28 9.5%	2 0.7%	49 16.6%
	Age	36-40	2 0.7%	7 2.4%	2 0.7%	11 3.7%
		41-45	2 0.7%	7 2.4%	0 0.0%	9 3.1%
		46-50	1 0.3%	3 1.0%	0 0.0%	4 1.4%
		More than 50	5 1.7%	4 1.4%	0 0.0%	9 3.1%
	Marital	Single	42 14.2%	64 21.7%	4 1.4%	184 62.4%
	status	Married	75 26.8 %	97 32.9%	8 2.7 %	111 37.6%
		Low	30 10.2%	43 14.6%	5 1.7%	84 28.5%
	Class	Moderate	50 16.9%	79 26.8%	3 1%	133 45.1%
		High	41 13.9%	39 13.2%	4 1.4%	78 26.4%

#### Level of knowledge according to the profession

Table.2 demonstrating that most good levels of knowledge were scored by physicians, specifically specialists. Where most poor levels of knowledge were scored by nurses. According to statistical analysis, there was no significant difference between the level of knowledge and the profession of the participants with P-value of (p=0.509).

		POOR	MODERATE	GOOD
CONSULTANTS	24	6	16	2
	8.1%	25%	66.7%	8.3%
RESIDENTS	26	11	15	0
	8.8% 57	42.3%	57.7% 20	0%
NURSES	10.3%	20 45.6%	29 50.0%	1 80/
	19.370	45.0%	13	1.070
SPECIALISTS	8.1%	33 3%	54.2%	12 5%
	9	4	5	0
PHYSICIANS	3%	44 4%	55 6%	0%
	75	33	37	5
INTERNS	25.4%	44%	49.3%	6.7%
	23	9	14	0
LABRATORISTS	7.8%	39.1%	60.9%	0%
OTUDENTO	37	15	21	1
SIUDENIS	12.5%	40.5%	56.8%	2.7%
OTHER	20	9	11	0
SPECIALTIES	6.8%	45%	55%	0%
	a 1.90- 1.80- 1.70- 1.60- 1.50- Consultation of knowledge	-Physician -Physician -Specialist -Resident	-Other -Student	
	-	Professio	on <sup>2</sup>	
				Moone Plot 1

Table.2

#### Level of knowledge according to the facility

When comparing between facilities, there is not much difference in knowledge of the studied participants with a p-value of p=0.591

Table.3 showing the level of knowledge of each facility, it shows a moderate level of knowledge in all facilities. But Almahjar and East Jeddah hospitals have scored the highest scores, and Almessadiyah hospital have scored the lowest scores.

POOR	MODERATE	GOOD
20 (6.8 %)	26 (8.8%)	2 (0.7%)
16 (5.4%)	27 (9.2%)	4 (1.4%)
25 (8.5%)	27 (9.2%)	4 (1.4 %)
20 (6.8%)	26 (8.8%)	0 (0.0%)
23 (7.8%)	26 (8.8%)	1 (16.9%)
17 (5.8%)	29 (9.8%)	1 (0.3%)
	POOR   20 (6.8 %)   16 (5.4%)   25 (8.5%)   20 (6.8%)   23 (7.8%)   17 (5.8%)	POORMODERATE20 (6.8 %)26 (8.8%)16 (5.4%)27 (9.2%)25 (8.5%)27 (9.2%)20 (6.8%)26 (8.8%)23 (7.8%)26 (8.8%)17 (5.8%)29 (9.8%)

#### Level of knowledge according to the department

In this study, we found that most of the respondents working in the Emergency department (54.2%) have showed poor knowledge in comparison to other departments. On the other hand, the respondents from the surgery department had only few respondents (1.6%) with good knowledge. There was no statistical difference between the level of knowledge and the departments included (p=0.986). Graph.1 showing the level of knowledge according to the departments of the respondents.



#### Training effect

According to the analysis, 217 (73.3%) of the participants have received training in hand hygiene in the last 3 years. The participants who had good knowledge in hand hygiene were 12 in total, 11 (91.67%) of them received training. 161 had moderate knowledge, 127 (78.88%) of them received training. 122 had poor knowledge, 97 (64.75%) of them received training.

There was significant difference in the knowledge between the participants who received training the past 3 years in hand hygiene compared to those who did not with p-value of (p=0.002).

Table 4 demonstrating the training effect on the levelofknowledgeofthestudiedsample.

RECEIVED IRAIMING IN THE LAST 5 I	EARS POOR	MODERATE	GOOD
YES 217	79	127	11
73.6%	36.4%	58.5%	5.1%
NO 78	43	34	1
26.4%	55.1%	43.6%	1.3%

# Effect of knowledge on compliance to hand hygiene

Table 4. showing the compliance of the participants according to their level of knowledge. None of the

uncompliant participants have scored a good score. But according to statistical analysis, there was no significant difference between the compliance and the level of knowledge with a P-value of (p=0.220).

 COMPLIANCE TO ALCOHOL-BASED HAND RUB FOR HAND HYGIENE		POOR	MODERATE	GOOD
COMPLIANT	228 77.3%	88 38.6%	130 57%	10 4.4%
NOT COMPLIANT	14 4.7%	7 50%	7 50%	0 0%
MAYBE	53 18%	27 50.9%	24 45.3%	2 3.8%

#### **DISCUSSION:**

Infections caused by the health-care professionals (HCP) are considered one of the highest causes of morbidity and mortality of patients in the hospitals. Most of these infections can be prevented through a simple precautionary measure of proper hand hygiene.

Our study aimed to evaluate the awareness and attitudes regarding hand hygiene among the health-care professionals. The overall level of knowledge of the studied sample was moderate. The mean level of knowledge is  $(0.45.3+SD\ 0.24)$ .

Our study showed that most good levels of knowledge were scored by physicians, specifically specialists. Which is reasonable according to the nature of their work that includes daily physical encounters with their patients. Where most poor levels of knowledge were scored by nurses. Which is odd especially because they mostly have more physical encounters that have great risk of infection transmission such as Intravenous line and Foleys catheter insertion.

But there was no significant statistical difference

between the level of knowledge and the profession of the participants.

Also, we found that the level of knowledge of health care workers in crowded departments like emergency department was significantly poor in comparison to other departments. Which is somewhat expected according to the crowded and hasty environment of this department. But unfortunately, researches are lacking information about this aspect. On the other hand, the respondents from the surgery department had only few respondents with good knowledge. This is the contrary to what is expected as the nature of the surgical field that obligate high knowledge and compliance to proper hand hygiene. There was no statistical difference between the level of knowledge and the departments included.

When comparing between facilities, there was not much difference in knowledge of the included facilities with an overall moderate level of knowledge. This might be because the infection control system is unified in all MOH hospitals.

Regarding the training effect on the knowledge, most of the participants have received training in hand hygiene in the last 3 years and there was also significant difference in the knowledge between the participants who received training the past 3 years compared to those who did not. In our study, the effect of training on the level of knowledge is significant in comparison to other studies conducted in Iran and Pakistan [2] [1].

Regarding the level of knowledge and compliance to proper hand hygiene, our results showed that the knowledge of the participant is reflected on their compliance to hand hygiene as none of the uncompliant participants have scored a good score. But according to statistical analysis, there was no significant difference.

Our results showed that the overall knowledge of HCPs and students in hand hygiene is low in the majority of hospitals in Jeddah, Saudi Arabia. What's interesting is that our results documented that the undergraduate students and the interns were aware of the importance of hand hygiene and route of germs transmission in comparison to a study conducted in Mumbai [6].

#### **CONCLUSION:**

In this study, we aimed to see the awareness of hand hygiene among the health-care professionals. We found that there is poor knowledge among health care workers in most of the MOH hospitals in Jeddah, Saudi Arabia. Also, we found that receiving a recent training in proper hand hygiene has the most effect on the knowledge of HCPs and students. So, we need training programs aiming to educate health care workers on hand hygiene and emphasis about the proper way of cleaning according to WHO guidelines.

We also recommend engaging patients and other hospital visitors in the health education programs.

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