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Hand Hygiene Knowledge, Attitude and Practices of Health Care Providers in Two Teaching Hospitals, Aden, Yemen, 2020

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Abstract

Introduction: A significant way of avoiding nosocomial infections is good hand hygiene. Many health-related infections are thought to be transmitted by the hands of healthcare providers via direct contact. The study aimed to assess hand hygiene knowledge, attitude and practices of health care providers in selected hospitals in Aden.

Methods: In June 2020, a cross-sectional study was carried out. It targeted doctors and nurses in two teaching hospitals in Aden. With self-administered structured questionnaires, data collection was performed after taking administrative permission from the targeted hospitals and verbal consent from the respondents. The obtained data were analyzed using version 20 of SPSS.

Results: From 422 respondents (192 doctors and 230 nurses), male comprised 58.3% and females 41.7%. Mean age was 21.4±7.3 years, and the highest percentage (61.6%) aged 25-34 years. Eighty six percent had 1-10 years of service. Good knowledge of hand hygiene was found in 55.9% of respondents. The majority (98.6%) knew that contaminated hand is a vehicle for infection transmission. Regarding the attitude, strongly agree was answered for the sentiments: hand washing is protective to them (76.3%); fear from contracting disease (65.4%); hands washing should be done after contact with all patients (50.9%); and hand washing can be improved by administrative order and continuous health education (38.2%). Overall positive attitude was encountered in 94.3% of the respondents. Nearly two-thirds (64.2%) indicated hands washing before patient contact or bedside procedures whereas 93.4% have such practice the after contact with patients.

Conclusion: Health care providers in the two teaching Hospitals mostly have good knowledge and practice, and positive attitude towards hand washing but suboptimal practices especially with hand-drying. Hospital administrations should provide proper hand drying methods, reduce workload.

Keywords: Hand Washing, Awareness, Attitude, Behaviour, Hospitals.

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معارف ومواقف وممارسات نظافة اليدين بين مقدمي الرعاية الصحية في إثنين من المستشفيات التعليمية، عدن، اليمن، 2020

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ملخص الدراسة

المقدمة: تعتبر النظافة الجيدة لليدين من الطرق المهمة لتجنب عدوى المستشفيات حيث يُعتقد أن العديد من الأمراض المعدية تنتقل عن طريق أيدي مقدمي الرعاية الصحية عبر الاتصال المباشر. هدفت الدراسة إلى تقييم معرفة ومواقف وممارسات مقدمي الرعاية الصحية في عدن حول نظافة اليدين.

المنهجية: في يونيو 2020، تم إجراء دراسة مقطعية استهدفت الأطباء والممرضين في إثنين من المستشفيات التعليمية في عدن باستخدام استبانة يتم تعبئتها ذاتياً. تم جمع البيانات بعد الحصول على وموافقة إدارة المستشفيات والموافقة الشفوية من المستجيبين. بعدها تم تحليل البيانات التي تم الحصول عليها باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (النسخة 20).

النتائج: من إجمالي 422 طبيباً وممرضاً (192 طبيباً و230 ممرض) مستجيب في هذه الدراسة، شكل الذكور 58.3% والإناث 41.7%. كان متوسط العمر 21.4 ± 7.3 سنة، وكانت النسبة الأكبر (61.6%) في عمر 25-34 سنة، و86% من المستجيبين لهذه الدراسة تراوحت سنوات خدمتهم ما بين 1-10 سنوات. وجدت معرفة جيدة بنظافة اليدين عند 55.9% من المستجيبين وقد أكد 98.6% اليد الملوثة هي وسيلة لنقل العدوى. بالنسبة للمواقف، وافق وبشدة 76.3% على أن غسل اليدين يحميهم، و65.4% على الخشية من الإصابة بالمرض و 50.9% على ضرورة غسل اليدين بعد ملامسة جميع المرضى، و 38.2% على أهمية دور النظام الإداري والتعليم الصحي المستمرفي تحسين ممارسات غسل اليدين. كان لدى أكثر من 93.4% من المشاركين موقف إيجابي تجاه غسل اليدين، وقد أشار 64.2% لممارستهم غسل اليدين قبل ملامسة المرضى، لكن ممارسة غسل اليدين بعد ملامسة المرضى وصلت إلى 93.4%.

الاستنتاج: يتمتع مقدمو الرعاية الصحية في المستشفيين التعليميين بمعرفة وممارسة جيدة وموقف إيجابي تجاه غسل اليدين. لكن الممارسات دون المستوى الأمثل خاصة مع تجفيف الأيدي. يجب أن توفر إدارات المستشفيات طرق تجفيف مناسبة للأيدي، وتقليل عبء العمل.

الكلمات المفتاحية: غسل اليدين، الإدراك، الاتجاهات، السلوك، المستشفيات.

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Introduction

Most of microorganisms can be transmitted through hands from one to one. In hospitals, healthcare providers consider one of the most important sources of microorganism transmission by direct contact during their work on patients, disposable material, dirty instruments … etc. [1].

Hand washing is considered a simple procedure and not needs to wide explanation or expensive materials. Despite that, the recommendation for it is low and may reach to less than 50%. Literature shows many reasons for lack of hand washing, especially in low-middle income countries (LMICs); for example, unavailability of water, lack of appropriate equipment, insufficient knowledge among health care providers regarding risk of microorganism transmitted by hands and lack of procedures of safety [2].

In developed countries, infection by health workers affects about 5-15% of hospitalized patients. In addition, this infection is present more in the intensive care rooms (9-37%) and is highly resistant [3,4]. The rate of infection incidence in US states was estimated at 4.5%, which affected the economy enormously, as there were many factors that contributed to this, but the most important one was the poor cleanliness of workers' hands in the field of health care [5,6]. The size of the problem lies in the basic measures taken in health facilities to combat infection, as these measures do not exist in most developing countries due to lack of staff, poor hygiene and sanitation, in addition to the lack of basic equipment, lack of rehabilitation and good and continuous training [7]. In addition to these factors, an unfavorable social background and population largely affected by malnutrition and other types of infection and/or disease contribute to the increased risk of HAI in developing countries [8,9].

Yemen, as a developing country has high rates of mortality and morbidity, in addition to the deterioration of the health system, particularly since the 2015 war, as only 50% of health facilities are functioning. Yemen also suffers from cholera and many infectious diseases, the main cause of which is the lack of health awareness and lack of hygiene [10]. Therefore, the study aimed to assess hand hygiene knowledge, attitude and practices of health care providers in selected hospitals in Aden.

Methods

Study design and setting

A cross-sectional descriptive study was carried out targeting doctors and nurses at the two main teaching hospitals in Aden city, Al-Sadaqa and Al-Ghamhouria Hospitals. These hospitals provide health care for all patients from Aden and neighboring governorates and both hospitals consist of four departments (internal medicine, pediatric, gynecology and obstetrics).

Population and sampling

The sample is a convenient universal sample of all doctors and nurses of both hospitals which consists of 327 doctors and 493 nurses. The study purposively included doctors and nurses who had served for a minimum of one year and worked in various

wards of both hospitals at the time of the study.

Data collection

The collection of data was done in June 2020, using a specially designed pretested, self-administered structured questionnaire delivered to the respondents in the wards.

Statistical analysis

Data were analyzed using SPSS for windows version 20. A descriptive statistical analysis was done, and percentage, mean, standard deviation (SD) was used to describe the socio-demographic characteristics as appropriate. Knowledge and practice were scored in percentages and graded as following:

- 0-33.3% was considered poor,
- >33.3-≤66.6% was fair
- >66.6% was good.

Attitude was assessed used Likert scale. Each Likert item was rated on a 1-5 response scale; where strongly agree=5, agree-4, neutral=3, disagree=2, strongly disagree=1. The scores were graded into positive (strongly agree, agree), or negative (differentiate, strongly disagree and disagree) [11].

Ethical consideration

Ethical clearance was issued from the Ethics and Research Committee of the Faculty of Medicine and Health Sciences, University of Aden. Permission to conduct the study was obtained from the hospitals' administration. Oral consent was obtained from the respondents prior to administration of questionnaire.

Results

Of the 422 doctors and nurses enrolled in study there were 58.3% males and 41.7% females. The mean age was 21.4±7.3 years. Doctors comprised 45.5% in this study while nurses consisted 54.5%. Eighty six percent of the respondents had 1 to 10 years of service as seen in Table 1.

Table 1: Socio-Demographic Characteristic of Respondents (n=422)

Variables	No.	%
Sex		
Male	246	58.3
Female	176	41.7
Age group (years)		
15-24	102	24.2
25-34	260	61.6
35-44	48	11.4
45-54	12	2.8
Profession		
Doctor	192	45.5
Nurse	230	54.5
Years of service		
1-10	363	86
11-20	51	12.1
>20	8	1.9

In Table 2, 55.9% of respondents have good overall hand hygiene knowledge score. Just above half (52.1%) of respondents knew about running water and antiseptic soap as a component of hand washing, while 98.6% of the respondents knew that contaminated hands can serve as a vehicle for the transmission of infection from one patient to another. Eeffective hand washing which entails washing for a period not less than 30 seconds was indicated by 73.9% of respondents. Furthermore, 62.3% of respondents knew that nosocomial infections have a very high impact on patients' clinical outcome. On the other hand, 46.2% of respondents knew that hand washing is very highly effective in preventing the transmission of nosocomial infection.

Table 2: Respondents' Knowledge on Hand Hygiene (n=422)

Item	No.	%
Components of hand washing		
Use of soapy water in basin	73	17.3
Use of running tap water only	62	14.7
Use of running water and antiseptic soap	220	52.1
Use of alcohol only	54	12.8
I don't know	13	3.1
Contaminated hand is a vehicle for transmitting infection		
Yes	416	98.6
No	4	0.9
I don't know	2	0.5
Effective hand washing should last for at least 30 second		
Yes	312	73.9
No	80	19
I don't know	30	7.1
Impact of nosocomial infection on the clinical outcome of the patient		
Very high	263	62.3
High	141	33.4
Low	11	2.6
Very low	3	0.7
I don't know	4	0.9
Effectiveness in preventing nosocomial infection		
Very high	195	46.2
High	142	33.6
Low	72	17.1
I don't know	13	3.1
Ooverall knowledge score		
Good	236	55.9
Fair	175	41.5
Poor	11	2.6

Regarding attitude, Table 3 shows that strongly agree was answered for the sentiments: hand washing is protective for the health care workers (76.3%); fear of contracting disease is the motivation for hand washing (65.4%); hands washing should be done after contact with all patients (50.9%); and hand washing can be improved by administrative order and continuous health education (38.2%); while the main constraint was busy work schedule in between patient care (38.4%). The majority (94.3%) had positive attitude towards hand washing.

Table 4 displays hand washing practice of respondents with claiming of 64.2% of them being wash their hands before patient contact, while 93.4% of them wash their hands after contact with patients or beside procedures. Majority of respondents (85.8%) dry their hands after washing, while 89.6% of them wash their hands after the close of the day of work. Regarding hand washing methods, use of running water plus antiseptic soap represented among 63% of respondents, while use of running tap water only and use of alcohol hand rub was reported only among 12.1% of them. On the other hand, 42.9% of respondents use disposable paper towel, while 29.9% use personal hand kerchief. Overall, 79.6% had good practice, while fair practice found among 17.8%, and only 2.6% of them had poor practices.

Table 3: Attitude of Respondents towards Hand Washing (n=422)

Item	Strongly agree		Agree		Indifferent		Strongly disagree		Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Hand wash can be protective for the health care workers	322	76.3	83	19.7	4	0.9	6	1.4	7	1.7
Healthcare workers (HCWs) are motivated to wash their hands because their fear from contracting disease	276	65.4	114	27	6	1.4	19	4.5	7	1.7
Hand washing should be done when in contact with all patient and patients' fomites	215	50.9	121	28.7	30	7.1	47	11.1	9	2.1
Hand washing can be improving by administrative order and continues health education	161	38.2	135	32	51	12.1	52	12.3	23	5.5
Hand washing is often not adhered to because of busy work schedule in between patients	74	17.5	162	38.4	23	5.5	110	26.1	53	12.6
Overall attitude									**Frequency (%)**	
Positive									380 (94.3)	
Negative									24 (5.7)	

Table 4: Hand Washing Practice of Respondents (n=422)

Practice	Yes		No	
	No.	%	No.	%
Do you wash your hands before patient contact or bedside procedures?	271	64.2	151	35.8
Do you wash your hands after patients contact or bedside procedures?	394	93.4	28	6.6
Do you dry your hands after washing?	362	85.8	60	14.2
Do you wash your hands after the close of day of work?	378	89.6	44	10.4
Hand washing method				
Use of the running tap water only	51		12.1	
Use of running water plus antiseptic soap	266		63	
Use of alcohol hand rub only	51		12.1	
Use of the soapy water in basin	43		10.2	
Others	11		2.6	
Hand drying methods				
Use of common towel	34		8.1	
Allow hand to air dry	45		10.7	
Use of disposable paper towel	181		42.9	
Use of personal hand kerchief	126		29.9	
Others	36		8.5	
Over all practice score				
Good	336		79.6	
Fair	75		17.8	
Poor	11		2.6	

In Table 5, doctors and nurses were not significantly different regarding hand washing before contact or bedside procedure with patients (65.6% and 63% respectively, *p*= 0.372). On the other hand, nurses had significantly better practice (98.3%) of hand washing after contact or bedside procedure (*p* =<0.001) compared to doctors (87.5%). Overall, nurses had better hand washing practice (82.6%) than doctors (76%), though statistically insignificant (*p* = 0.097).

Table 5: Association between Respondent's Profession and Hand Washing Practices (n=422)

Profession	Do you wash your hands before patient contact or bedside procedures?				Do you wash your hands after patient contact or bedside procedures?			
	Yes		No		Yes		No	
	No.	%	No.	%	No.	%	No.	%
Doctor	126	65.6	66	34.4	168	87.5	24	12.5
Nurse	145	63.0	85	37.0	226	98.3	4	1.7
	p = 0.372				*p* = <0.001			
Overall Practice Score								
	Good		Fair		Poor			
	No.	%	No.	%	No.	%		
Doctor	146	76.0	38	19.8	8	4.2		
Nurse	190	82.6	37	16.1	3	1.3		
	p = 0.097							

Note: chi-square test considered significant at p-value <0.05

Discussion

The present study has revealed that 55.9% of the health providers at the Al-Ghamhouria and Al-Sadaqa Teaching Hospitals have good hand washing knowledge. This finding is much lower than that reported among healthcare staff in intensive care unit of a multispecialty hospital in India (90%) [12], and that reported among health care providers among Ain Shams University Hospitals in Cairo (73.1% Elgalea Government Hospital and 72.7% Cleopatra Private Hospital) [13]. However, it is almost similar to the findings from the University of Port Harcourt Teaching Hospital (UPTH) in which 55.4% health care providers had good knowledge of hand washing [14].

A positive attitude towards hand washing was demonstrated in this study (94.3%). Similar findings have been reported in other studies [12,15]. This positive attitude towards hand washing exhibited by the respondents may be attributed to their knowledge of the consequences of poor hand hygiene.

Literature reveals low compliance rate of hand washing practice by health care providers [1,12,16]. In the Egyptian study, only 34% of the respondents had good practice of hand washing [13]. In a similar study among health providers in intensive

care unit in a tertiary hospital in Nigeria, hand washing compliance rate of 53% was reported [16]. These figures are lower than the 79.6% of good hand washing practices in this study. One explanation could be proposed is that their exposure to training in June 2020 during the COVID-19 pandemic contributed to their good practices. It can also be inferred that a positive attitude towards hand washing may positively influence the practice of hand washing.

This study has also shown that health care providers tend to wash their hands more often (93.4%) after contact with patients or performing a bedside procedure than before that procedures (64.2%). This finding is similar to that revealed from the Nigerian study [16]. Furthermore, the present study reported that a major motivation to hand washing is fear of contracting disease from patients. This observation is similar to the study done by Balafama, *et al*. in Nigeria that revealed fear of getting disease from patients was a major motivation to hand washing [16]. The patients are equally protected from infectious agents if all health care providers practice good hand hygiene.

Regarding the hand washing practice, nurses were shown to have good hand washing practices (82.6%) higher than the doctors (76%). Better hand washing practice among the nurses than doctors may be due to their long time of interaction and contact with patients, beside to some procedures as changing diaper, bedding or emptying urine page which enforce them to wash hand frequently more than doctors. This finding is in agreement with another Nigerian study [11].

Limitations

The study is subjected to the following limitations:

1. No comparison was done between the two targeted hospitals regarding the hand hygiene practice
2. The study was conducted in June 2020 during the time of COVID-19 pandemic when there was a high concern to infection prevention including hand hygiene

Conclusion

Health care providers in the two teaching Hospitals have good knowledge and practice, and positive attitude towards hand washing.

Hand washing practiced was high among doctors and nurses after contact with patients than before. Fear from contracting diseases was the major motivation to wash their hands. but suboptimal practices especially with hand-drying. We recommend emphasis on the importance of hand washing before contact with patients and encourage them to hand drying practice.

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