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Compliance of Hand Hygiene among Health Care Professionals and Allied Health Workers in the Prevention of Bacterial Contamination

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Abstract

This study examined the hand hygiene compliance in the operating theatre set-up and its effect on how to deter pathogenic microorganisms and prevent transmitting them. Poor hand hygiene practices are unacceptable and break the law of our infection control practices, thus transmitting microorganisms to our clientele and fellow health care practitioners. Respondents' profiles like gender, age, occupation, years of employment, level of respondents' behaviour in performing proper hand hygiene, feedback on proper hand hygiene, and fulfilment of health care supplies and facilities were assembled. Survey questionnaires were distributed, and SPSS was utilized for the data analysis. Fifty-five (55) participants joined the current research study. Each participant answered a three (3) page questionnaire formulated by the researchers and confidentiality of their identity was strictly observed. The majority of respondents of this research study are nurses, mostly female, with 4 to 6 years of experience as operating theatre staff. Feedback on proper hand hygiene was significant, and respondents were "Fulfilled" by limited supplies and facilities. This study was conducted during the COVID-19 pandemic to evaluate the adherence of our operating theatre staff to hand hygiene practices along with the supplemental of additional information and knowledge of disease transmission prevention.

Keywords: Allied Health Workers, Compliance, Hand Hygiene, Health Care Professionals, Prevention of Bacterial Contamination.

INTRODUCTION

Hand Hygiene or handwashing is the act of cleansing both hands with the use of clean running water and anti-septic soap (Helba, 2014; Goldman, 2008). Proper hand hygiene reduces the spread of potentially deadly micro-organisms to patients and the risk of healthcare provider colonization of infection caused by germs acquired from the patient (Kredie & Kalkman, 2011; Helba, 2014; Control & Prevention, 2021; Organization, 2009, 2017).

Surgical Hand scrubbing is being observed inside our operating department by scrubbing together all surfaces and crevices of the hands using a surgical scrub soaked with an anti-septic solution and water. It is the most basic and effective measure that prevents and controls the transmission of infectious agents (Control & Prevention, 2021). In the event of the absence of soap and water, the 15-seconds vigorous scrubbing should be observed using alcohol-based

hand sanitizers to prevent the transfer of micro-organisms for both patients and fellow healthcare providers (Control & Prevention, 2021; Organization, 2017).

This study provides additional information for healthcare professionals and allied healthcare workers working inside the operating theater. The additional information regarding our study about proper hand hygiene falls under the infection control program that is part of the cleanliness cited by Florence Nightingale that a person's health was the direct result of environmental influences (DeLaune & Ladner, 2011; Smeltzer, 2010).

This study was conducted to examine compliance with hand hygiene in the operating theatre set-up to deter pathogenic microorganisms and prevent transmitting them. Poor hand hygiene practices are unacceptable and break the law of our infection control practices thus, transmitting microorganisms to our clientele and fellow healthcare providers(DeLaune & Ladner, 2011; Helba, 2014).

MATERIALS AND METHODS

Design:

This is a questionnaire-based research study. Approvals were obtained from the hospital administrator and operating theater supervisor. A self-administered questionnaire was utilized, which consisted of four (4) parts, including respondents' demographic data, behavior, feedback, and fulfillment on health care supplies and facilities.

Research questionnaires were translated from English to Arabic to cater to operating theater staff who do not have an English background. The respondents' behavior will be measured using 10 questions with a rate of 1 to 3, wherein 1 is the lowest and 3 is the highest, in addition to feedback on proper hand hygiene, which consists of six (6) statements, and fulfillment on health care supplies and facilities, which also consists of six (6) statements.

To have more understanding of the data of this study, SPSS (Statistical Package for the Social Sciences) was utilized by the researchers for data analysis.

Study Participants and Locale:

The study investigates compliance with hand hygiene practices among healthcare professionals and allied health workers in the prevention of bacterial contamination. The researchers gathered 55 participants, which included surgeons, staff nurses, anesthesiologists, anesthesia technicians, help nurses, and porters for elective and trauma/emergency surgeries. Operating theaters in all government healthcare facilities of Benghazi City were part of the questionnaire's distribution.

RESULTS AND DISCUSSION

Table 1 showed that the majority of the respondents belong to the female group. This means, there are more female than male healthcare workers employed in the operating department. The table shows that according to age, the majority of the respondents belong to the 30-39 years of age bracket with 58.2 percent. These were followed by 18-29, 40-49- and 50-59-year old age bracket with 18 (32.7 percent), 4 (7.3 percent) and 1 (1.8 percent) respondents, respectively.

This finding indicates that healthcare workers employed in operating theaters in Benghazi City, Libya, belong to the early adulthood group. According to Havighurst (DeLaune & Ladner, 2011), this age group is establishing a career or occupation. This could be attributed to the fact

that the younger generation of healthcare workers are very eager to find stable employment for the betterment of their future and chosen career.

Table (1). Respondents' Profile in Terms of Gender, Age, Occupation, and Years of Employment

Demographics	Parameters	(f)	%
Gender	Male	27	49.1
	Female	28	50.9
Age	18-29	18	32.7
	30-39	32	58.2
	40-49	4	7.3
	50-59	1	1.8
	60 and above	0	0
Occupation	Porter	4	7.3
	Help Nurse	9	16.4
	Nurse	17	30.9
	Anesthesia Technician	7	12.7
	Anesthesiologist	7	12.7
	Surgeon	11	20.0
Years of Employment	1-3	11	20.0
	4-6	20	36.4
	7-9	9	16.4
	10-12	7	12.7
	13-15	3	5.5
	16-18	2	3.6
	19-21	2	3.6
	25 and above	1	1.8

In terms of employment, the table indicates that 17 or 30.9 percent of the respondents were nurses. Next in line were help nurses with 9 or 16.4 percent, followed by surgeons with 11(20.0 percent), and the last, who landed on the same spot were the anesthesia technicians and anesthesiologists both with 7, or 12.7 percent score. This means that the vast majority of the respondents are nurses. Florence Nightingale ((DeLaune & Ladner, 2011) stated that nurses are the core or heart of healthcare.

After scrutinizing the information sheet of the operating theater personnel working in operating as to their length of service, it disclosed that 20 or 36.4 percent of the majority have less than 7 years of clinical experience in operating theaters, while the longest who served were 2 or 19-21 percent respondents with 6-10 years of experience in the healthcare industry which are longer as compared to the rest of the respondents.

Further, it could be reflected from the previous table that most (11 or 20 percent) of them have rendered less than 4 years of service followed by those who rendered 7-9 years (9 or 16.4 percent), 10-12 years (7 or 12.7 percent), and those 16 to 18 and 19 to 21 years of experience who garnered 3.6 percent. No one among the respondents renders more than 21 years of service.

Table 2 shows the respondents' behavior in performing hand hygiene. Ranked the highest is number 4 "Emergency cases including trauma are a higher priority than hand hygiene" having a

mean of 2.5818. This means that operating theater personnel have difficulties in performing hand hygiene prior to handling cases like this. Being an operating nurse who handled both elective and emergency operations always believed that performing hand hygiene is necessary in order to prevent additional infection to the patient. Next is number 2 “I have concrete knowledge about hand hygiene practices”, having a mean of 2.5455. Hand hygiene is one of the basic nursing skills that a student should learn before going further on to the invasive skills. Number 1 came as number 3 “I'm following proper hand hygiene practices all the time”, scoring a mean of 2.5091. The last was number 8 with a mean score of 2.0364 " Junior/New staff have not been properly instructed in hand hygiene protocols". For senior staff nurses, it is our duty to provide orientation to the newly hired staff, from protocols down to the small details of every surgery.

Table (2). Respondents Behavior in Performing Hand Hygiene

Statement	Mean	Interpretation
1. I'm following proper hand hygiene practices all the times	2.5091	Highly significant
2. I have concrete knowledge about hand hygiene practices	2.5455	Highly significant
3. Sometimes there are more important things to be done than hand hygiene	2.3273	Significant
4.Emergency cases including trauma are a higher priority than hand hygiene	2.5818	Highly significant
5.Donning gloves to decrease the need for hand hygiene	2.3091	Significant
6. Frustrated when others are unable to perform hand hygiene	2.1273	Significant
7. I'm reluctant to request others to be part of hand hygiene practices	1.9818	Not significant
8. Junior/New staff have not been properly instructed in hand hygiene protocols	2.0364	Significant
9. I feel guilty if I skip hand hygiene	2.3273	Significant
10. Following hand hygiene protocols is easy	2.4182	Significant
Average Mean	2.3163	Significant

Table (3). Respondents’ Feedback on Proper Hand Hygiene

Statement	Mean	Interpretation
1. Sometimes I forget about hand hygiene	2.0364	Significant
2. Hand hygiene is an important part of my job	2.5455	Highly significant
3. The frequency of hand hygiene makes it difficult to follow as necessary	2.1273	Significant
4. Infection Control Committee have a positive influence on the staff hand hygiene	2.1818	Significant
5. Bulletin boards of Infection Control Committee reminds all the staff about hand hygiene	2.2000	Significant
6. Lectures related to hand hygiene is difficult to attend due to work pressure	2.1455	Significant
Average Mean	2.2060	Significant

The table above shows that 37 out of the 55 respondents, comprising 2.5455 of the total mean score, belong to the second statement that “Hand hygiene is an important part of my job" which supports the study that hand hygiene is the single most effective preventive measure against acquiring hospital infections (Kredie & Kalkman, 2011; Control & Prevention, 2021). The rest have significant feedback on proper hand hygiene.

Table 4 above shows respondents are fulfilled with the availability of enough soap, antiseptic for hand washing, alcohol rub, and paper/clothes for drying hands (mean score, 2.0000). However, the availability of these products on a regular basis is still low in this study (mean score, 1.9273) due to limited supplies from the main store. " Updated infection control bulletin boards" (mean score, 1.8000) landed at the bottom part due to the absence of posting educational materials for proper hand hygiene, which will provide a great reminder to operating theater personnel that hand hygiene is important. Findings on the “continuing education program related to hand hygiene in the hospital” received a significant(fulfilled) result from the respondents (mean score, 1.9273), which means that it is important to carry out training programs related to hand hygiene regularly for healthcare workers as it has been associated with increased compliance with hand hygiene practices and reduction of infection.

Table (4). Respondents Fulfillment on health care supplies and facilities

Statement	Mean	Interpretation
1.Availability of enough supplies/equipment’s in performing hand hygiene	1.9273	Unfulfilled
2. Updated infection control bulletin boards	1.8000	Unfulfilled
3. Availability of enough soap, antiseptic for hand washing, alcohol rub, and paper/clothes for drying hands	2.0000	Fulfilled
4. Availability of clean and sterile gloves in OT	2.4545	Highly fulfilled
5. Number of functional sinks with running water	2.5455	Highly fulfilled
6.Continuing Education program related to hand hygiene in the hospital	1.9273	Fulfilled
Average Mean	2.1091	Fulfilled

CONCLUSION

Outcomes and conclusions were drawn from this research study. The null hypothesis was rejected on respondents’ behavior on proper hand hygiene, with an average mean of 2.31, and feedback on proper hand hygiene practices, with an average mean of 2.20, that there is a significant relationship between the respondents’ behavior and feedback on proper hand hygiene. Lastly, respondents are fulfilled on health care supplies and facilities despite limitations.

In light of the findings and conclusions of the study, the researchers provide suggestions and recommend additional studies, in addition to increasing the number of respondents for future research studies. The hospital administration should provide additional posters inside the scrub sinks that further elaborate and illustrates the relevance of proper hand hygiene. The administration should also include proper hand hygiene as part of the regular training and seminars for healthcare staff. Infection control bulletin boards must be up-to-date by posting relevant educational information

about proper hand hygiene. And, despite the imported products for surgical hand scrubbing, the supplies are not enough. The hospital administration should provide more hand hygiene supplies like soap, alcohol, and paper clothes, equally divided to all operating theaters.

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Author contributions:
Author 1: Developed Introduction, Statement of the Problem, Null Hypothesis, Theoretical and Conceptual Framework, Related Literature, Methodology and over all facilitator.
Author 2 and 3: Formulation of Significance of the Study, Scope and Delimitation, Definition of terms, Analysis and Interpretation of Data.
Author 4: Banking of Related Literature, Finalization of Summary, Conclusion and Recommendations, Translation of questionnaires from English to Arabic, and follow-up with statistician.

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