Original Research Article

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICES OF HAND HYGIENE AMONG MEDICAL AND NURSING STUDENTS.

ABSTRACT

Aims: This study aims to determine and compare the levels of handwashing knowledge, attitude and practice among medical and nursing students of All Saints University School of Medicine, Dominica.

Study design: this was a quantitative, cross-sectional study

Place and Duration of Study: All Saints University School of Medicine, Dominica between May and August, 2021

Methodology: A total of 73 students (26 MD students, 18 Clinical students, 22 Nursing students and 7 Pre-med students) of All Saints University Dominica participated in the study, after their informed consent was obtained. The study used data was collected from registered medical and nursing students of All Saints University, Dominica. This involved the use of a self-designed, structured questionnaire that was electronically distributed to students and analyzed electronically using SPSS version 21

Results: Though all participants admitted having heard of hand hygiene practices, all nursing students (100%) affirmed having sufficient knowledge about hand hygiene while 28.6% of the pre-med students participating did not feel they had sufficient knowledge ($P<0.05$). Also, a large percentage of the respondents that were nursing students (90.9) claimed to have had a formal training in hand hygiene. This was closely followed by clinical students (72.2%) while MD and pre-med students only had 38.5% and 28.6% respectively.

Conclusion: Although there seem to be a high level of awareness of hand hygiene among the participants, certain gaps in knowledge still exists which may be due to lack of proper training. There seem to be a better level of practice of hand hygiene among the nursing students and those in clinicals, compared to other medical students which draws the need to re-introduce formal training on hand hygiene into medical schools especially from early years of training.

Keywords: Knowledge, Attitude, Practices, Hand washing, Hand hygiene practices, Medical students, Nursing students, Dominica

INTRODUCTION

Globally, hand hygiene remains the single, cheapest and practical public health measure associated with the prevention of transmission of microorganisms and health-care infectious diseases, while drastically reducing the spread of antimicrobial resistance(1–3). In spite of the simplicity of this procedure, compliance has been poor among healthcare providers (1,4) and medical students (5). According to the World Health Organization, washing hands with soap and water could reduce diarrhea-related deaths by half (6).

The World Health Organization introduced the '*My five moments for hand hygiene*' programme to help improve compliance with hand hygiene (7). "This five moments 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 a patients surroundings (8,9). This approach has significantly improved the understanding and practice of hand hygiene among healthcare practitioners" (1).

The practice of hand hygiene includes cleansing of the hands by rubbing both hands together using an alcohol-based hand sanitizer or washing both hands with soap and water to prevent microbial growth (10). In spite of the simplicity of this procedure, compliance has been poor and a faulty behavioural development during medical training has been identified as a central cause (11,12).

Furthermore, the findings of previous studies on compliance with hand hygiene demonstrate that medical students may have unsatisfactory levels of knowledge and practices of hygienic practices. In a study conducted among medical students in Dominica, it was demonstrated that only 44.12% of medical students wash their hands before eating, 3.53% after working on a cadaver, 55.29 % after working in the laboratory, 68.24% after defecation and 62.94% after urination (13).

In a study conducted by Al Kadi and Salati (8), only 29% of the medical students were able to identify all indications for hand hygiene in the questionnaire, with a 17% compliance during OSCE sessions. In her study, Graf *et al* (14) demonstrated that only 33% of students could identify indications of hand hygiene. A study conducted by feather demonstrated only 8.5% of medical students washed their hands after patient contact during their final MBBS OSCE, although this figure increased to 18.3% after handwashing signs were displayed (12).

JUSTIFICATION

There is a paucity of information regarding the knowledge, attitude and practices of handwashing among Caribbean medical students, especially medical and nursing student's knowledge of the most important safety precaution measure. The observance of hand hygiene by medical students is hypothesized as being poor, yet the knowledge and practice of hand hygiene among medical students is a reflection of the future healthcare as well as a reflection of the general populace at large. Thus, the need for a study like this that aims in the long run to design appropriate strategies that promote hand hygiene has become expedient.

Null hypothesis

Medical students do not know about or practices hand hygiene regularly

Alternative hypothesis

Medical students know and practice hand hygiene regularly

Aims and Objectives

These materials have been created and adapted by student researchers at All Saints University. This project is designed to help learn to conduct basic research. We will be evaluating the knowledge and practice of hand hygiene among students of All Saints University.

AIM

- To evaluate the knowledge, attitude and practice of hand hygiene among medical and nursing students

OBJECTIVES

1. To access knowledge, attitude and practices of handwashing compliance among medical students
2. To promote hand washing compliance among medical students
3. To suggest appropriate strategies that promote hand hygiene
4. To compare levels of knowledge, attitudes and practices of hand hygiene between students of different stages and fields of clinical training as well as across gender

MATERIALS AND METHODS

Study Design: this was a quantitative, cross-sectional study

Study Area: All Saints University School of Medicine, Roseau, Commonwealth of Dominica.

Study Participants: All medical and nursing students enrolled to a full-time programme to study at the All-Saints University School of Medicine, Commonwealth of Dominica were recruited into the study. Recruitment was dependent on approval of the University's ethical committee as well as following obtained informed consent from the study participants. As a result of education and immigration, this population is made up of nationals from different countries.

Inclusion criteria:

- All medical students who voluntarily gave their consent to participate in the study by giving their oral and written informed consent
- Persons within the age ranges of 15 - 60 years old

Exclusion criteria:

- Individuals who were unwilling or incapable of giving their informed consent for data collection

DATA COLLECTION PROCEDURE

During the study procedure, informed consent was obtained from each subject. Data collection involved the use of structured questionnaire that contained items on their demographic characteristics; age, dietary habits, sanitary and hygienic habits etc. Questionnaires were distributed to all participants who voluntarily consented to participate in the study after being fully informed.

DATA MANAGEMENT AND ANALYSIS

The data was generated via questionnaires electronically. The data was coded and transferred to Microsoft Excel, and then transferred to Statistical Package for Social Sciences (SPSS) version 21 for analysis. Descriptive statistical methods were used to calculate percentages for each of the responses given. Pearson Chi-square test was used to compare the percentages of the correct responses between the medical and nursing students and determine the statistical significance. *P*-value less than 0.05 was considered statistically significant.

RESULT

Table 1 and 2 is a comparison of the knowledge on hand hygiene based on WHO guidelines among the four groups of students who took part in this study. In table 1, it is shown that all the participants had heard of hand hygiene practices. A satisfactory percentage across the groups admitted having heard about it from school (clinical – 61.1%, MD – 57.7%, Nursing – 68.2%, pre-med – 71.4%) and social media (clinical – 16.7%, MD – 19.2%, Nursing – 18.2%, pre-med – 14.3%). Only 1 (4.5%) of the nursing students claimed to have heard about hand hygiene from all the options provided. This outcome was statistically significant ($P = 0.000$). In the same vein, although more than half of all the groups claimed to always have the notice boards remind them of hand hygiene, this act was most common among the nursing students with 72.7% of the group participating in the study indicating that option.

At the same time, all the nursing students (100%) claimed to have sufficient knowledge about hand hygiene while 28.6% of the pre-med students participating in this study did not feel they had sufficient knowledge. This comparison was statistically significant ($P = 0.000$). Also, a large percentage of the respondents that were nursing students (90.9%) claimed to have had a formal training in hand hygiene. This was closely followed by students in clinicals (72.2%) while MD and pre-med students only had 38.5% and 28.6% respectively. This comparison was also statistically significant ($P = 0.000$). About alcohol based rubbing, only among the nursing students was there over half of the population (68.2%) that believed that hand washing and rubbing are to be performed in a sequence. Only the same group of students had a large percentage (77.3%) who chose 20 seconds as the minimal time needed for hand washing via alcohol-based hand rub. These comparisons were as well statistically significant ($P = 0.000$).

Table 3 and 4 compared the group's personal hygiene practices using chi-square test. In the table, it is observed that a large portion of all the groups claimed to wash their hands before cooking meals, although only among the nursing students was there a 100% outcome. Also, almost all members in each group (100%) stated that they wash their hands after using the rest room, with exception of 1 (14.3%) of the pre-med students who did not practice this. On the other hand, use of alcohol or medicated soap to wash hands was not a common practice among the groups (clinical – 27.8%, MD – 19.2%, Nursing – 18.2%, pre-med – 14.3%). In the same vein, although not many of the participants had the practice of turning off the tap with their elbow (clinical – 44.4%, MD – 11.5%, Nursing – 27.3%, pre-med – 28.6%), participants in their pre-med still had many who turn off the tap with their palm (71.4%). Furthermore, although many of the participants prefer using paper towel to dry their hands, 30.8% of participants in MD group practice the use of general towels to dry their hands. These comparisons were statistically significant ($P < 0.05$).

Table 5 and 6 are outlines of the respondents' adopted moments of hand hygiene in clinical practices. Washing of hands before any physical examination strongly agreed to by especially the nursing students (81.8%) and MD students (76.9%), although none of the participants disagreed to this practice. 11.1% of the clinical students disagreed to the practices of washing hands before blood sample extraction and always washing hands after shaking hands with patients. While same range of percentage of the groups were neutral to the practice of washing hands after touching patients' food package (clinical – 27.8%, MD – 26.9%, Nursing – 22.7%, pre-med – 28.6%), only among the nursing students was there a high level of strong adoption to the practice always washing hands after touching patients bed linen (strongly agree = 81.8%). These comparisons were statistically significant ($P < 0.05$)

Table 7 and 8 shows the attitude of participants towards hand hygiene practices. Among the groups, only the nursing students had more than half (68.2%) that strongly agreed to the attitude of adhering to correct hand hygiene practice at all times. Also 71.4% of the pre-med students were neutral to the attitude of been reluctant to ask others to engage in hand hygiene although 50% of the nursing students disagreed to this reluctance. A good number of the participants across the groups affirmed to having a feeling of guilt if they omit hand hygiene. Furthermore, almost all the nursing students (95.5%) strongly agreed that hand hygiene was an essential part of their role, which others also popularly affirmed to but not as strongly as the nursing students.

Table 1. Respondents Knowledge of hand hygiene based on WHO guidelines

Inquiries	**Program**				**χ2-value**	**P value**
	Clinical N (%)	**MD N (%)**	**Nursing N (%)**	**Pre- Med N (%)**		
Heard of hand hygiene practices						
YES	18 (100)	26 (100)	22 (100)	7 (100)	74.0	**0.000**
NO	0 (0)	0 (0)	0 (0)	0 (0)		
Where did you hear about hand hygiene?						
Mum	0 (0)	0 (0)	1(4.5)	0 (0)		
Friend	1 (5.6)	0 (0)	0 (0)	0 (0)		
Home	0 (0.0)	4 (15.4)	1 (4.5)	0 (0)		
Learnt it	0 (0.0)	1(3.8)	0 (0)	0 (0)	93.75	**0.000**
School	11 (61.1)	15(57.7)	15(68.2)	5 (71.4)		
Seminar	3 (16.7)	1 (3.8)	0 (0)	1 (14.3)		
Social Media	3 (16.7)	5 (19.2)	4 (18.2)	1 (14.3)		
All of the above	0 (0)	0 (0)	1 (4.5)	0 (0)		
Times of hand washing						
	2 (11.1)	9 (34.6)	0 (0)	2 (28.6)		
1 – 3 times	10 (55.6)	11(42.3)	11(50.0)	2 (28.6)	61.25	**0.000**
4 – 7 times	2 (11.1)	4 (15.4)	0 (0)	1 (14.3)		

7 – 10 times >10 times	4 (22.2)	1 (3.8)	11(50.0)	2 (28.6)		
Notice boards remind me of hand hygiene						
YES	11 (61.1)	14(53.8)	16(72.7)	4 (57.1)	75.89	**0.000**
NO	7 (38.9)	12(46.2)	6 (27.3)	3 (42.9)		
Infection Prevention team have a positive influence on my hand hygiene						
YES	14 (77.8)	20(76.9)	17(77.3)	6 (85.7)	37.70	**0.000**
NO	4 (22.2)	5 (19.2)	5 (22.7)	1 (14.3)		
I have sufficient knowledge about hand hygiene						
YES	17 (94.4)	23(88.5)	22(100)	5 (71.4)	80.45	**0.000**
NO	1 (5.6)	3 (11.5)	0 (0)	2 (28.6)		
Any formal training in hand hygiene						
YES	13 (72.2)	10(38.5)	20(90.9)	2 (28.6)	92.22	**0.000**
NO	5 (27.8)	16(61.5)	2 (9.1)	5 (71.4)		

Table 2. Respondents Knowledge of hand hygiene based on WHO guidelines

Inquiries	**Program**			**χ2-value**	**P**

	Clinical N (%)	**MD N (%)**	**Nursing N (%)**	**Pre- Med N (%)**		**value**
Is hand the main route of transmission						
YES	16 (88.9)	24(92.3)	22 (100)	7 (100)	76.80	**0.000**
NO	2 (11.1)	2 (7.7)	0 (0)	0 (0)		
Which hand hygiene promote transmission						
-Hand washing after exposure	1 (5.6)	6 (23.1)	5 (22.7)	3 (42.9)		
-Hand washing before touching a patient	3 (16.7)	5 (19.2)	5 (22.7)	0 (0.0)	20.43	0.202
-Hand washing immediately after risk	4 (22.2)	2 (7.7)	3 (13.6)	1 (14.3)		
-Hand washing before an aseptic procedure	9 (50.0)	10(38.5)	8 (36.4)	3 (42.9)		
Which is true? Alcohol based Hand rubbing:						
-Causes skin dryness than hand washing	1 (5.6)	2 (7.7)	1 (4.5)	2 (28.6)		
-Is more effective than hand washing	0 (0)	2 (7.7)	2 (9.1)	1 (14.3)	25.67	0.059
-Is more rapid than						

hand washing -Hand washing rubbing are to be performed in a sequence	8 (44.4) 8 (44.4)	9 (34.6) 11(42.3)	2 (9.1) 15(68.2)	2 (28.6) 2 (28.6)		
Minimal time needed for hand washing via alcohol-based hand rub 5 secs 10 secs 15 secs 20 secs	5 (27.8) 4 (22.2) 2 (11.1) 7 (38.9)	1 (3.8) 7 (26.9) 7 (26.9) 11(42.3)	0 (0) 2 (9.1) 3 (13.6) 17(77.3)	2 (28.6) 1 (14.3) 1 (14.3) 3 (42.9)	92.45	**0.000**
Which of the following should be avoided? Artificial fingernails Damaged skin Regular use of a hand cream Wearing jewelry	 6 (33.3) 9 (50.0) 0 (0) 3 (16.7)	 14(53.8) 7 (26.9) 3 (11.5) 2 (7.7)	 13(59.1) 0 (0) 0 (0) 9 (40.9)	 3 (42.9) 4 (57.1) 0 (0) 0 (0)	101.58	**0.000**

Table 3. Participants personal hygiene practices

Inquiries	**Program**	**χ^2-value**	**P**

	Clinical N (%)	**MD N (%)**	**Nursing N (%)**	**Pre- Med N (%)**		**value**
Do you wash your hands before cooking meals?						
YES	16(88.9)	23(88.5)	22(100)	6 (85.7)	76.93	**0.000**
NO	2 (11.1)	3 (11.5)	0 (0)	1 (14.3)		
Do you wash your hands after cooking meals?						
YES	17(94.4)	24(92.3)	21(95.5)	7 (100)	39.96	**0.000**
NO	0 (0)	2 (7.7)	1 (4.5)	0 (0)		
Do you wash your hands after using the rest room?						
YES	18(100)	26(100)	22(100)	6 (85.7)	83.69	**0.000**
NO	0 (0)	0 (0)	0 (0)	1 (14.3)		
Do you wash your hands after scratching your hair?						
YES	2 (11.1)	9 (34.6)	10(45.5)	4 (57.1)	81.24	**0.000**
NO	16(88.9)	17(65.4)	12(54.5)	3 (42.9)		

Do you wash your hands after picking your nose?						
YES	12(66.7)	16(61.5)	14(63.6)	4 (57.1)	74.24	**0.000**
NO	6 (33.3)	10(38.5)	8 (36.4)	3 (42.9)		
Do you use alcohol or medicated soap to wash your hands?						
Alcohol	5 (27.8)	5 (19.2)	4 (18.2)	1 (14.3)	42.14	**0.000**
Medicated soap	13(72.2)	21(80.8)	18(81.8)	5 (71.4)		

Table 4. Participants personal hygiene practices

Inquiries	**Program**				**χ2-value**	**P value**
	Clinical N (%)	**MD N (%)**	**Nursing N (%)**	**Pre- Med N (%)**		
Do you turn off the tap with your palm?						
YES	7 (38.9)	11(42.3)	4 (18.2)	5 (71.4)	45.03	**0.000**
NO	11(61.1)	14(53.8)	18(81.8)	2 (28.6)		

Do you turn off the tap with your elbow?						
YES	8(44.4)	3 (11.5)	6 (27.3)	2 (28.6)	80.13	**0.000**
NO	10 (55.6)	23(88.5)	16(72.7)	5 (71.4)		
Do you spill little water on the tap before turning it off?						
YES	15(83.3)	16(61.5)	9 (40.9)	5 (71.4)	81.97	**0.000**
NO	3 (16.7)	10(38.5)	13(59.1)	2 (28.6)		
Do you dry your hands after washing your hands						
YES	18(100)	24(92.3)	21(95.5)	6 (85.7)	76.41	**0.000**
NO	0 (0)	2 (7.7)	1 (4.5)	1 (14.3)		
What do you use to dry hands						
General towel	2 (11.1)	8 (30.8)	2 (9.1)	0 (0)		
Paper towel	15(83.3)	12(46.2)	18(81.8)	5 (71.4)	37.62	**0.000**
Separate towel	1 (5.6)	5 (19.2)	2 (9.1)	1 (14.3)		

Table 5. Respondents adopted moments of hand hygiene in clinical practices

Hand hygiene practice	Program				χ2-value	P value
	Clinical N (%)	MD N (%)	Nursing N (%)	Pre- Med N (%)		
I wash my hands before any physical examination						
AGREE	10 (55.6)	1 (3.8)	4 (18.2)	1 (14.3)		
DISAGREE	0 (0)	1 (3.8)	0 (0)	0 (0)	62.09	**0.000**
NEUTRAL	3 (16.7)	3 (11.5)	0 (0)	0 (0)		
STRONGLY AGREE	5 (27.8)	20(76.9)	18(81.8)	4 (57.1)		
STRONGLY DISAGREE	0 (0)	0 (0)	0 (0)	1 (14.3)		
I wash my hands before blood sample extraction						
AGREE	7 (38.9)	4 (15.4)	3 (13.6)	1 (14.3)		
DISAGREE	2 (11.1)	0 (0)	0 (0)	0 (0)	53.31	**0.000**
NEUTRAL	5 (27.8)	4 (15.4)	1 (4.5)	0 (0)		
STRONGLY AGREE	3 (16.7)	17(65.4)	18(81.8)	5 (71.4)		

STRONGLY DISAGREE	1 (5.6)	0 (0)	0 (0)	0 (0)		
I wash my hands after blood sample extraction with gloves						
AGREE	6 (33.3)	4 (15.4)	0 (0)	2 (28.6)		
NEUTRAL	4 (22.2)	6 (23.1)	1 (4.5)	1 (14.3)	38.74	**0.001**
STRONGLY AGREE	7 (38.9)	14(53.8)	20(90.9)	2 (28.6)		
STRONGLY DISAGREE	1 (5.6)	1 (3.8)	0 (0)	0 (0)		

I always wash my hands after shaking hands with patients						
AGREE	7 (38.9)	2 (7.7)	4 (18.2)	1 (14.3)		
DISAGREE	2 (11.1)	0 (0)	0 (0)	0 (0)	46.98	**0.001**
NEUTRAL	4 (22.2)	7 (26.9)	2 (9.1)	2 (28.6)		
STRONGLY AGREE	5 (27.8)	15(57.7)	16(72.7)	3 (42.9)		
STRONGLY DISAGREE	0 (0)	1 (3.8)	0 (0)	0 (0)		

Table 6. Respondents adopted moments of hand hygiene in clinical practices

Inquiries	**Programme**				**χ2-value**	**P value**
	Clinical N (%)	**MD N (%)**	**Nursing N (%)**	**Pre- Med N (%)**		
I always wash my hands after touching patients food package						
AGREE	6 (33.3)	10(38.5)	8 (36.4)	3 (42.9)		
DISAGREE	0 (0)	1 (3.8)	0 (0)	0 (0)	33.27	**0.032**
NEUTRAL	5 (27.8)	7 (26.9)	5 (22.7)	2 (28.6)		
STRONGLY AGREE	7 (38.9)	6 (23.1)	9 (40.9)	1 (14.3)		
STRONGLY	0 (0)	1 (3.8)	0 (0)	0 (0)		

DISAGREE						
I always wash my hands after touching patients bed linen						
AGREE	8 (44.4)	2 (7.7)	4 (18.2)	3 (42.9)		
DISAGREE	0 (0)	1 (3.8)	0 (0)	0 (0)	48.88	**0.000**
NEUTRAL	3 (16.7)	7 (26.9)	0 (0)	1 (14.3)		
STRONGLY AGREE	7 (38.9)	14(53.8)	18(81.8)	2 (28.6)		
STRONGLY DISAGREE	0 (0)	1 (3.8)	0 (0)	0 (0)		

Table 7. Respondents attitude towards hand hygiene practices

Inquiries	**Program**				**χ2-value**	**P value**
	Clinical N (%)	**MD N (%)**	**Nursing N (%)**	**Pre- Med N (%)**		
I adhere to correct hand hygiene practice at all times						
AGREE	13 (72.2)	8 (30.8)	7 (31.8)	1 (14.3)		
NEUTRAL	2 (11.1)	5 (19.2)	0 (0)	3 (42.9)	42.63	**0.000**
STRONGLY AGREE	3 (16.7)	11(42.3)	15(68.2)	2 (28.6)		
Emergencies and other priorities make hygiene more difficult						
AGREE	11(61.1)	9 (34.6)	5 (22.7)	3 (42.9)		
DISAGREE	2 (11.1)	5 (19.2)	2 (9.1)	0 (0)	58.44	**0.000**
NEUTRAL	2 (11.1)	4 (15.4)	6 (27.3)	1 (14.3)		
STRONGLY AGREE	3 (16.7)	8 (30.8)	9 (40.9)	0 (0)		
STRONGLY	0 (0)	0 (0)	0 (0)	1 (14.3)		

DISAGREE						
I feel frustrated when others omit hand hygiene						
AGREE	8 (44.4)	10(45.5)	10(45.5)	3 (42.9)	54.28	**0.000**
DISAGREE	2 (11.1)	4 (15.4)	0 (0)	0 (0)		
NEUTRAL	7 (38.9)	7 (26.9)	4 (18.2)	3 (42.9)		
STRONGLY AGREE	1 (5.6)	5 (19.2)	8 (36.4)	0 (0)		
I am reluctant to ask others to engage in hand hygiene						
AGREE	0 (0)	2 (7.7)	2 (9.1)	0 (0)		
DISAGREE	7 (38.9)	5 (19.2)	11(50.0)	1 (14.3)	58.38	**0.000**
NEUTRAL	7 (38.9)	12(46.2)	3 (13.6)	5 (71.4)		
STRONGLY AGREE	0 (0)	3 (11.5)	2 (9.1)	0 (0)		
STRONGLY DISAGREE	4 (22.2)	4 (15.4)	4 (18.2)	0 (0)		
I feel guilty if I omit hand hygiene						
AGREE	12(66.7)	15(57.7)	11(50.0)	2 (28.6)		
DISAGREE	0 (0)	0 (0)	0 (0)	1 (14.3)	67.54	**0.000**
NEUTRAL	3 (16.7)	6 (23.1)	0 (0)	2 (28.6)		

STRONGLY AGREE STRONGLY DISAGREE	2 (11.1) 1 (5.6)	4 (15.4) 1 (3.8)	11(50.0) 0 (0)	1 (14.3) 0 (0)		

Table 8. Respondents attitude towards hand hygiene practices

Inquiries	Program				χ2-value	P value
	Clinical N (%)	MD N (%)	Nursing N (%)	Pre- Med N (%)		
Sometimes I miss out of hand hygiene because I forget it						
AGREE	7 (38.9)	8 (30.8)	7 (31.8)	3 (42.9)		
DISAGREE	2 (11.1)	4 (15.4)	5 (22.7)	1 (14.3)	54.34	**0.000**
NEUTRAL	6 (33.3)	3 (11.5)	1 (4.5)	1 (14.3)		
STRONGLY AGREE	3 (16.7)	8 (30.8)	5 (22.7)	0 (0)		
STRONGLY DISAGREE	0 (0)	3 (11.5)	4 (18.2)	1 (14.3)		
Hand hygiene is an essential part of my role						
AGREE	10 (55.6)	9 (34.6)	1 (4.5)	3 (42.9)		
NEUTRAL	1 (5.6)	4 (15.4)	0 (0)	1 (14.3)	61.85	**0.000**

STRONGLY AGREE	7 (38.9)	13(50.0)	21(95.5)	2 (28.6)		
The frequency of hand hygiene required makes it difficult						
AGREE	5 (27.8)	8 (30.8)	4 (18.2)	2 (28.6)		
DISAGREE	3 (16.7)	4 (15.4)	7 (31.8)	2 (28.6)	33.78	**0.028**
NEUTRAL	4 (22.2)	5 (19.2)	4 (18.2)	1 (14.3)		
STRONGLY AGREE	2 (11.1)	3 (11.5)	5 (22.7)	1 (14.3)		
STRONGLY DISAGREE	4 (22.2)	5 (19.2)	2 (9.1)	0 (0)		
It is difficult for me to attend hand hygiene classes						
AGREE	0 (0)	6 (23.1)	1 (4.5)	0 (0)		
DISAGREE	7 (38.9)	5 (19.2)	8 (36.4)	0 (0)	62.61	**0.000**
NEUTRAL	5 (27.8)	9 (34.6)	2 (9.1)	3 (42.9)		
STRONGLY AGREE	3 (16.7)	5 (19.2)	2 (9.1)	1 (14.3)		
STRONGLY DISAGREE	3 (16.7)	1 (3.8)	9 (40.9)	1 (14.3)		

DISCUSSION

This study was aimed at evaluating the knowledge, practice and attitude of medical and nursing students on handwashing hygiene. In this study, there was a generally high level of awareness of hand washing hygiene among the participants. This outcome can be as a result of the advent of the covid-19 pandemic which has caused an increase in public enlightenment on the need for frequent hand washing as a critical preventive measure of the disease among other steps. This reason for high level of awareness has been shown by other similar studies (15,16). In a study to detect the level of knowledge and practice as a preventive measure to combat COVID-19 disease in Saudi Arabia, it was revealed that 84% of the population realizes and practices handwashing (16).

This awareness however did not seem to be well sufficient among the respondents of this present study, as evident in some of their responses on certain details about handwashing hygiene. For example, some of the participants felt washing their hands 1-3 times a day was sufficient to meet their hygienic requirements. Some also indicated that 5 seconds was ok as the minimal time needed for hand washing via alcohol-based hand rub which may not be entirely correct. The participants of this study do not seem to be isolated in this knowledge gap. In a study conducted by Almoslem *et al*., among students in Saudi Arabia (15), it was observed that only 46% of the students thought that handwashing prevents diseases, and 34% of them thought that it removes dirt. The insufficient knowledge observed in this study could be due to the fact that a large percentage of the participants especially among the MD and Pre-med students were yet to have any formal training on handwashing hygiene which is very essential particularly because of the nature of the profession they are training for. It is therefore important that training on handwashing be formalized among medical students especially at the inception of their coming to school.

Furthermore, there also seem to be a fairly high level of practice of basic handwashing requirements among the study participants especially in the areas of washing hands before and after cooking meals, after using the restroom or picking nose, as well as drying hands after washing. A high percentage of the respondents also had a good habit of washing hands with medicated soap which is higher than what has been reported by other studies (17). handwashing with soap plays a crucial role in the prevention of water- and foodborne diseases by 50% to 70%, and pneumonia, impetigo, and diarrhoeal diseases by 40% to 50% (17).

Additionally, in the adoption of proper hand hygiene during clinical practice, though there was a fair performance across the study population, the nursing students seemed to perform better. For example, only among the nursing students was there a high level of strong adoption to the practice always washing hands after touching patient’s bed linen. This difference in the rate of adoption may be due to many factors such as the formal training most of the nursing students claimed to have had and the nature of their profession which demands high standards in hand hygiene especially while caring for patients.

CONCLUSION

This study has shown that although there seem to be a generally high level of awareness of hand hygiene among the participants, certain gaps in knowledge still exists which could mainly be due to lack of proper training on the subject. There seem to be a better level of practice of hand hygiene among the nursing students and those in clinical level, compared to other medical students which draws the need to introduce formal training on hand hygiene into medical schools especially from early years of training.

ETHICAL APPROVAL

Ethical approval was obtained from the Research Ethical Committee of the All Saints University School of Medicine

CONSENT

The rationale for the study was explained to the participants in English language till they understand. A written informed consent was then obtained by requesting the subjects to sign or thumb print an informed consent form without any coercion or inducement. The consent form included the introduction, the purpose of the study, the risks and benefits to those who participate, confidentiality and voluntariness.

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