

Hand Hygiene Practices among undergraduate medical students in Tertiary Care Unit, Gujrat Pakistan

Author's Details:

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Abstract

Background & Method: Hand hygiene is a cost-effective method in preventing infection transmission. Hand hygiene practices have been found to be faulty in medical health care professionals. We conducted a study to evaluate the awareness, and practice of hand hygiene among undergraduate medical students during their clinical rotations in Tertiary Care Unit, Gujrat Pakistan (NSMC,UOG). A questionnaire based (cross-sectional) on World Health Organization's concept of "Five Moments for Hand Hygiene" was used to assess the awareness of the indications for hand hygiene and compliance was observed during clinical Rotations. Sixty students including thirty-six males (60%) and twenty-four females (40%) participated voluntarily in the study.

Results: The average awareness about the positive indications of hand hygiene was 56%. Rests of the 44% of students were either not sure or unaware of the indications of hygiene. Only 29% of students were able to identify all the five indications for hand hygiene in the questionnaire. Compliance as assessed during OSCE sessions was only 17% with no significant difference between the genders.

Conclusion: It was concluded that many efforts are required to improve the hand hygiene practices among undergraduate medical students.

Introduction

- Hand hygiene Practices is an important healthcare issue Worldwide & is a single most cost-effective and practical measure to reduce the incidence of healthcare-associated infection and the spread of antimicrobial resistance across all settings—from advanced health care systems to primary healthcare centers [1, 2]. These infections are the most common adverse events resulting from a stay in the hospital affecting approx. 5 to 10% of hospitalized patients in the developed Countries & the burden is larger in underdeveloped Countries. In spite of being a very simple action, compliance with hand hygiene among health care providers is as low as less than 40% [3–5]. To address this problem of lack of compliance with hand hygiene practices, efforts are being made Like One of such efforts is the introduction of an evidence-based concept of "My five moments for hand hygiene" by World Health Organization. These five moments that call for the use of hand hygiene 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 patient surroundings. This concept has been aptly used to improve understanding, training, monitoring, and reporting hand hygiene among healthcare workers [6] in spite of the fact that some recent research has recommended more cautious approach in the universal adoption of this concept [7]. Another strategy is to ensure proper education of the trainee health work force, and in this regard, multiple studies have been conducted to study the hand hygiene practices of medical students. Such studies are important as the students in their clinical training phase through the healthcare facilities and can potentially transmit infections besides being the healthcare providers of future when their pattern of training will reflect on their infection control practices. Snow et al. [8]. But in none of these studies WHO's concept of "My five moments for hand hygiene" has been utilized to evaluate hand hygiene practices. Hence the WHO's concept was made the basis of the present study to evaluate hand hygiene awareness and compliance among Professionals of Tertiary Care Unit, Gujrat Pakistan (NSMC,UOG). This study is the first of its kind in the kingdom and is expected to inspire further projects in other medical institutions and in the long run promote the concept of proper hand hygiene practices among Health Professionals.

Objectives & Aims

- To evaluate the awareness, and compliance of hand hygiene among Health Professionals during their clinical Practice in Aziz Bhatti Shaheed Teaching Hospital, Gujrat Pakistan
- To improve Hand Hygiene Practices among Health Professionals

Inclusion & Exclusion Criteria**1. Inclusion**

- Doctors of age ranging from 25 to 50 year old, both male & female.
- Paramedical Staff of age ranging from 20 to 40 year old, both male & female.
- Medical students of 3rd, 4th, & Final Year MBBS.

2. Exclusion

- Doctors of age below 25 and above 50 are excluded.
- Paramedical Staff below age of 20 and above age of 40 are excluded.
- Non-medical students are excluded.

3. Sample Size

- 72

Materials and Methods

- A cross-sectional study was undertaken from June to July among Students & Professionals in Tertiary Care Unit, Gujrat Pakistan. On the basis of WHO's concept of "Five Moments for Hand Hygiene" [6], activities commonly undertaken by medical students during clinical phase (3rd, 4th & Final year of MBBS course) were selected, and a questionnaire was designed (As given below).
- The purpose of the study was explained as per the ethical guidelines of WHO, and students were requested to fill the questionnaires. The participation of students was voluntary, and the questionnaires were kept anonymous. However, the identifying data of students who opted not to respond to questionnaire was recorded to exclude them from assessment of compliance. The total number of responses was collected, and data was processed and analyzed using SPSS (statistical package for social sciences, version 16)

Self-designed questionnaire

Name: Age: Gender:
 College: Year in Medical School

Self-designed questionnaire used for assessment of hand hygiene awareness among medical students

Is hand hygiene (washing with antiseptic soap/alcohol hand rub) recommended?	Yes	No	Not Sure
(1) Before abdominal examination.			
(2) Before blood sample extraction with gloved hands.			
(3) After dressing the wound with gloved hands.			
(4) After shaking hands with in-patients at the end of detailed history taking session.			
(5) After touching apparently clean linen bedding or food package in the patient's room.			

**Scenarios used for assessment of hand hygiene compliance.
 Opportunities of hand hygiene**

Please encircle your answer

	Hand-hygiene observed	Hand-hygiene not observed
(1) Before abdominal examination		
(2) After abdominal examination		
(3) Before general physical examination		
(4) After general physical Examination		

May 31, 2017

Hand hygiene practice among medical

	Questions	Agree	Disagree
1	I adhere to correct hand hygiene practices at all times		
2	I have sufficient knowledge about hand hygiene		
3	Sometimes I have more important things to do than hand hygiene		
4	Emergencies and other priorities make hygiene more difficult at times		
5	Wearing gloves reduces the need for hand hygiene		
6	I feel frustrated when others omit hand hygiene		
7	I am reluctant to ask others to engage in hand hygiene		
8	Newly qualified staff has not been properly instructed in hand hygiene in their training		
9	I feel guilty if I omit hand hygiene		
10	Adhering to hand hygiene practices is easy in the current setup		

May 31, 2017

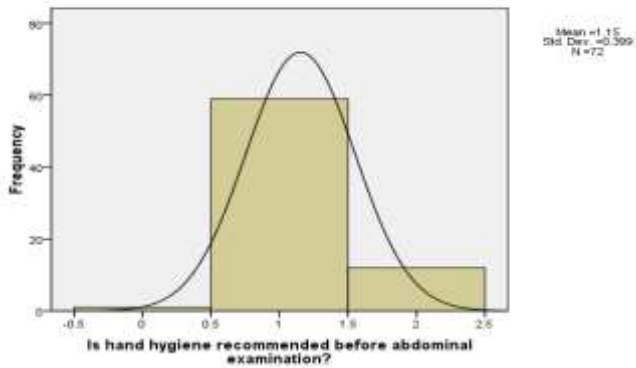
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Is hand hygiene recommended before abdominal examination?	72	0	2	1.15	.399	1.264	.283
Is hand hygiene recommended before blood sample extraction with gloved hands?	72	0	2	1.43	.552	-.234	.283
Is hand hygiene recommended after dressing the wound with gloved hands?	72	0	2	1.32	.526	.181	.283
Is hand hygiene recommended shaking hands with patients at the end of detailed history taking session?	72	0	2	1.19	.573	-.008	.283
Is hand hygiene recommended after touching apparently clean linen bedding or food package in the patient's room?	72	0	2	.54	.529	.123	.283
Hand hygiene observed before abdominal examination.	72	1	2	1.31	.464	.862	.283
Hand hygiene observed after abdominal examination.	72	1	2	1.22	.419	1.365	.283
Hand hygiene observed before general physical examination.	72	1	2	1.62	.488	-.527	.283
Hand hygiene observed after general physical examination.	72	1	2	1.10	.298	2.777	.283
Valid N (listwise)	72						

May 31, 2017

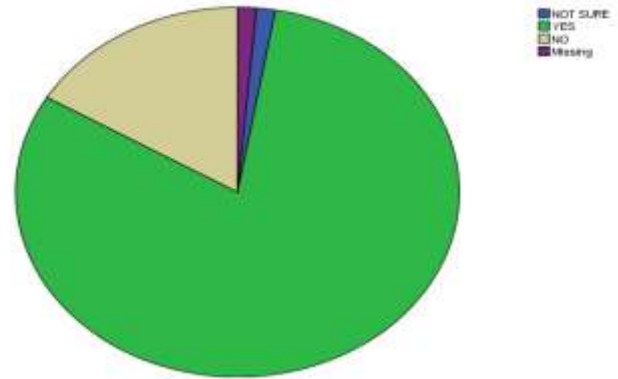
Is hand hygiene recommended before abdominal examination?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT SURE	1	1.4	1.4	1.4
	YES	59	80.8	81.9	83.3
	NO	12	16.4	16.7	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Is hand hygiene recommended before abdominal examination?



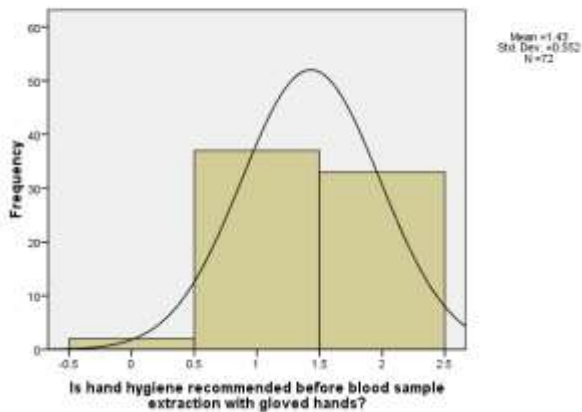
Is hand hygiene recommended before abdominal examination?



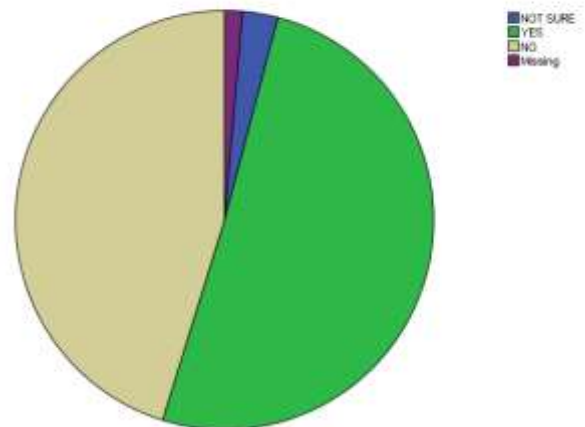
Is hand hygiene recommended before blood sample extraction with gloved hands?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT SURE	2	2.7	2.8	2.8
	YES	37	50.7	51.4	54.2
	NO	33	45.2	45.8	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Is hand hygiene recommended before blood sample extraction with gloved hands?



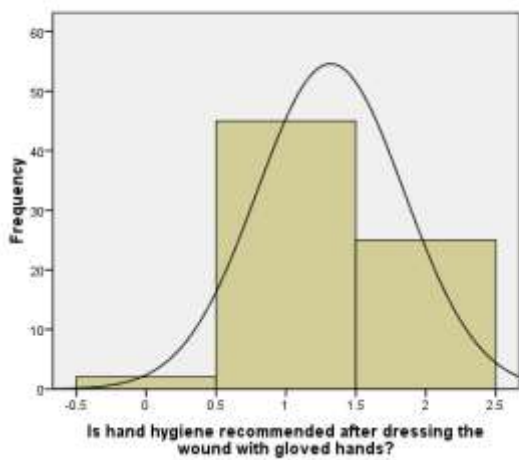
Is hand hygiene recommended before blood sample extraction with gloved hands?



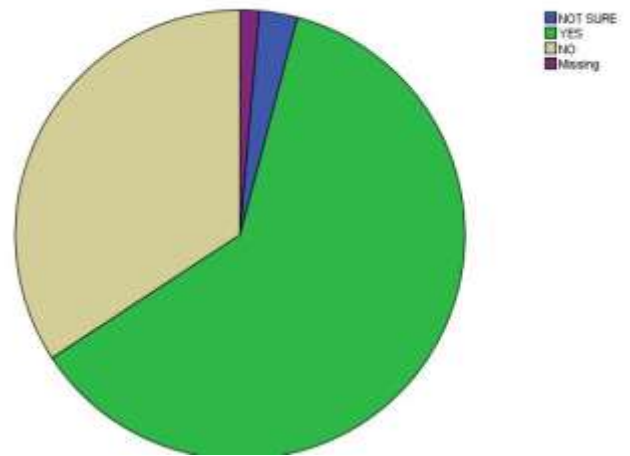
Is hand hygiene recommended after dressing the wound with gloved hands?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT SURE	2	2.7	2.8	2.8
	YES	45	61.6	62.5	65.3
	NO	25	34.2	34.7	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Is hand hygiene recommended after dressing the wound with gloved hands?



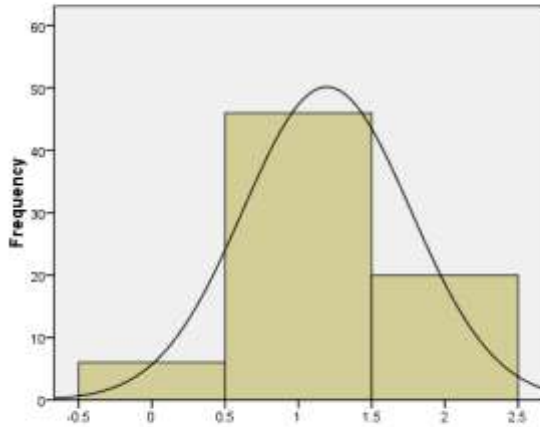
Is hand hygiene recommended after dressing the wound with gloved hands?



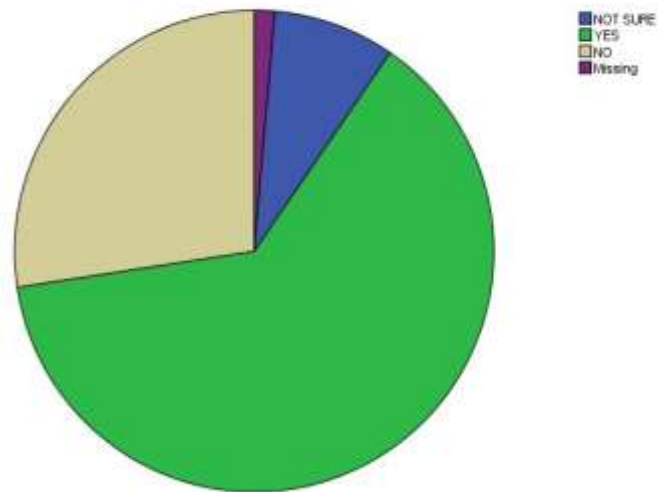
Is hand hygiene recommended shaking hands with patients at the end of detailed history taking session?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT SURE	6	8.2	8.3	8.3
	YES	46	63.0	63.9	72.2
	NO	20	27.4	27.8	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Is hand hygiene recommended shaking hands with patients at the end of detailed history taking session?



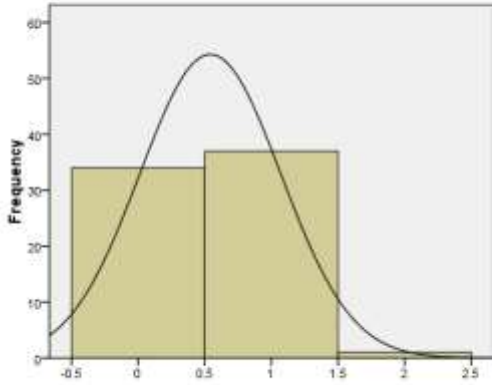
Is hand hygiene recommended shaking hands with patients at the end of detailed history taking session?



Is hand hygiene recommended after touching apparently clean linen bedding or food package in the patient's room?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NOT SURE	34	46.6	47.2	47.2
	YES	37	50.7	51.4	98.6
	NO	1	1.4	1.4	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

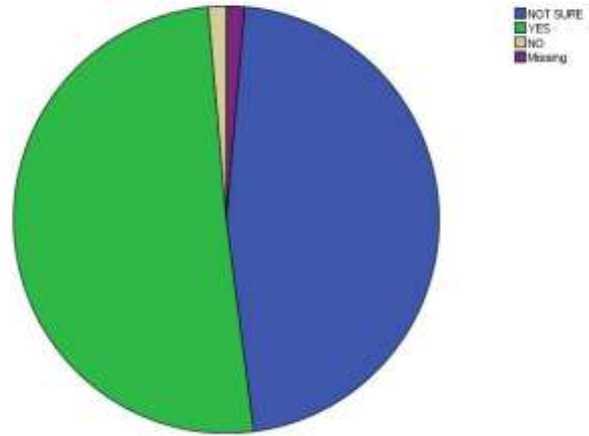
Is hand hygiene recommended after touching apparently clean linen bedding or food package in the patient's room?



Mean =0.54
Std. Dev. =0.629
N=72

Is hand hygiene recommended after touching apparently clean linen bedding or food package in the patient's room?

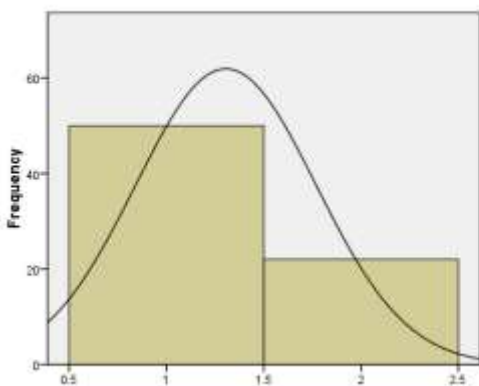
Is hand hygiene recommended after touching apparently clean linen bedding or food package in the patient's room?



Hand hygiene observed before abdominal examination.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OBSERVED	50	68.5	69.4	69.4
	NOT OBSERVED	22	30.1	30.6	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

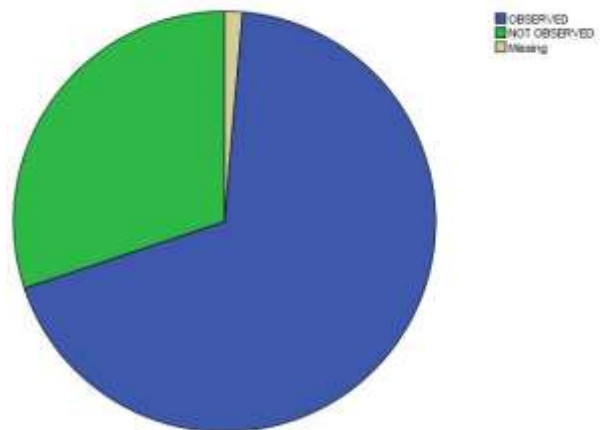
Hand hygiene observed before abdominal examination.



Mean =1.31
Std. Dev. =0.464
N=72

Hand hygiene observed before abdominal examination.

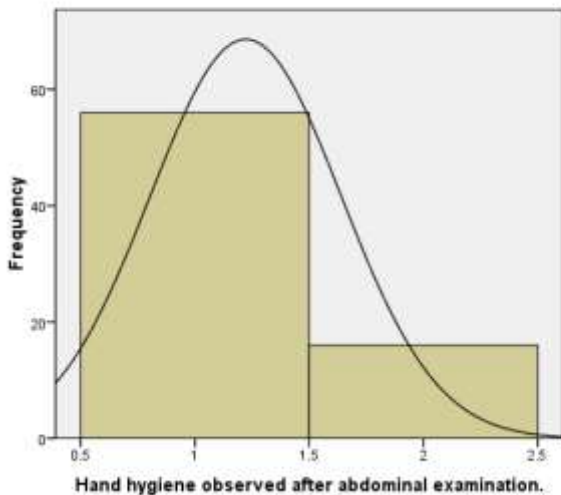
Hand hygiene observed before abdominal examination.



Hand hygiene observed after abdominal examination.

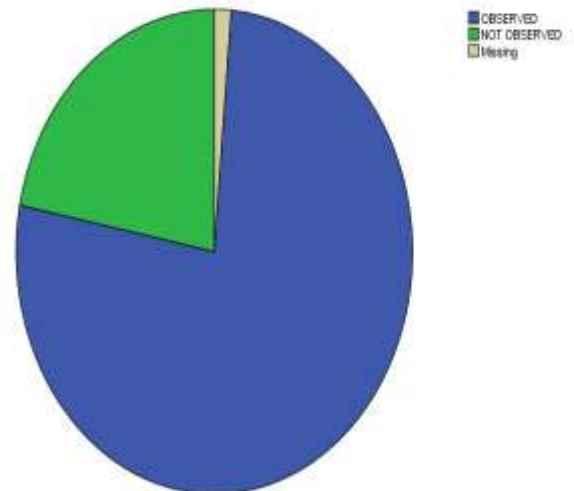
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OBSERVED	56	76.7	77.8	77.8
	NOT OBSERVED	16	21.9	22.2	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Hand hygiene observed after abdominal examination.



Mean = 1.22
Std. Dev. = 0.419
N = 72

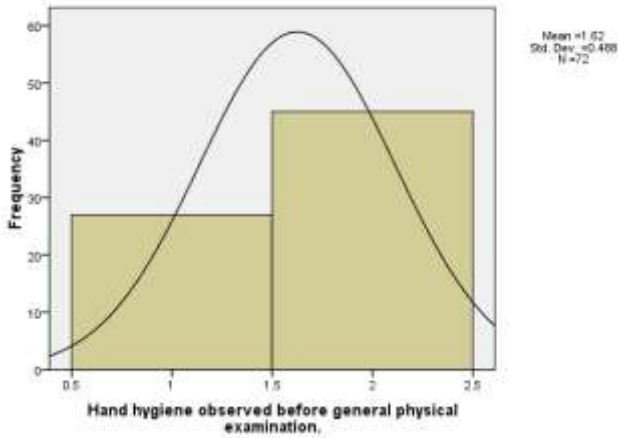
Hand hygiene observed after abdominal examination.



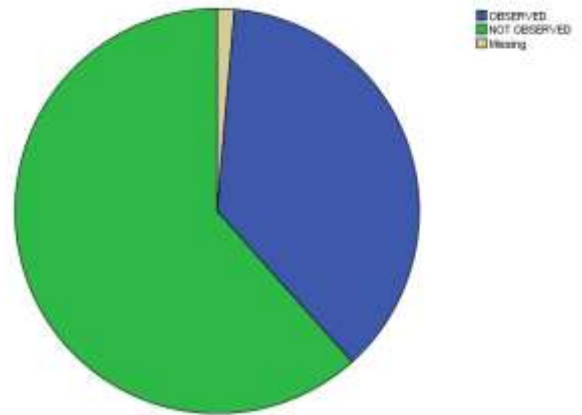
Hand hygiene observed after general physical examination.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OBSERVED	65	89.0	90.3	90.3
	NOT OBSERVED	7	9.6	9.7	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Hand hygiene observed before general physical examination.



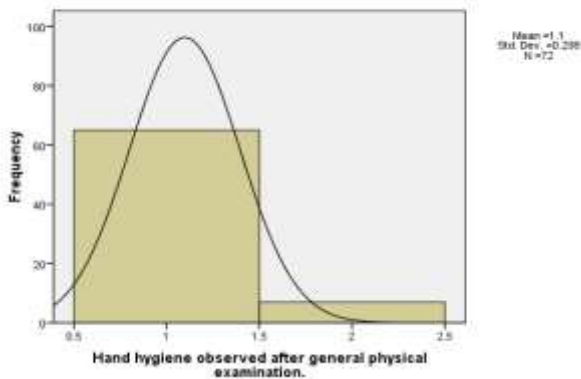
Hand hygiene observed before general physical examination.



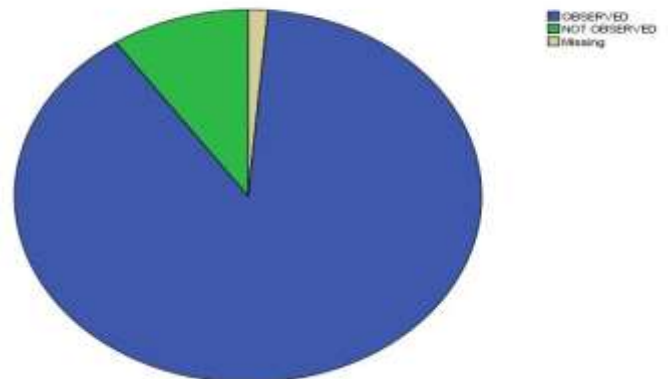
Hand hygiene observed after general physical examination.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OBSERVED	65	89.0	90.3	90.3
	NOT OBSERVED	7	9.6	9.7	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

Hand hygiene observed after general physical examination.

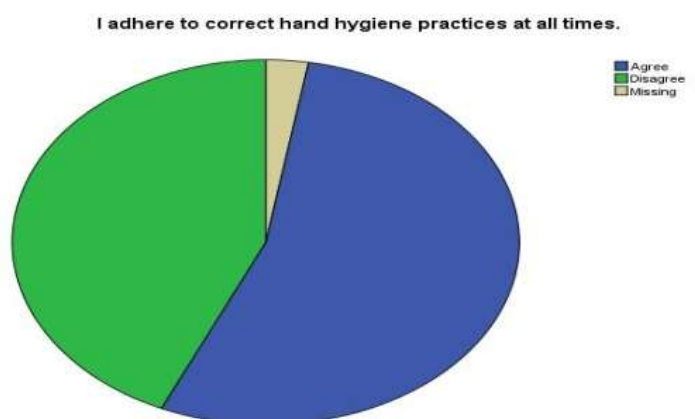


Hand hygiene observed after general physical examination.



I adhere to correct hand hygiene practices at all times.

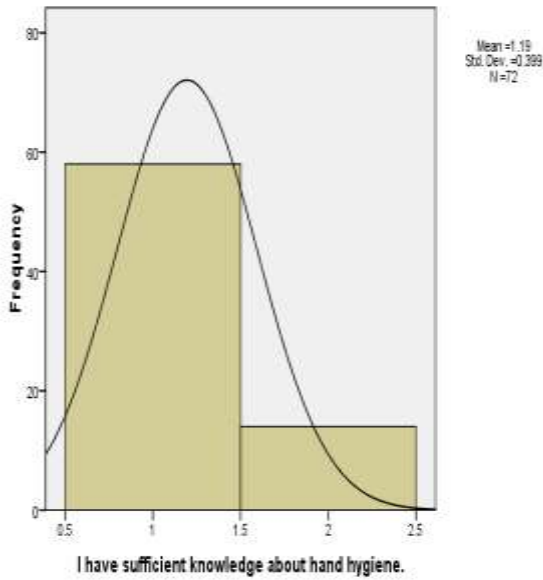
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	40	54.1	55.6	55.6
	Disagree	32	43.2	44.4	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		



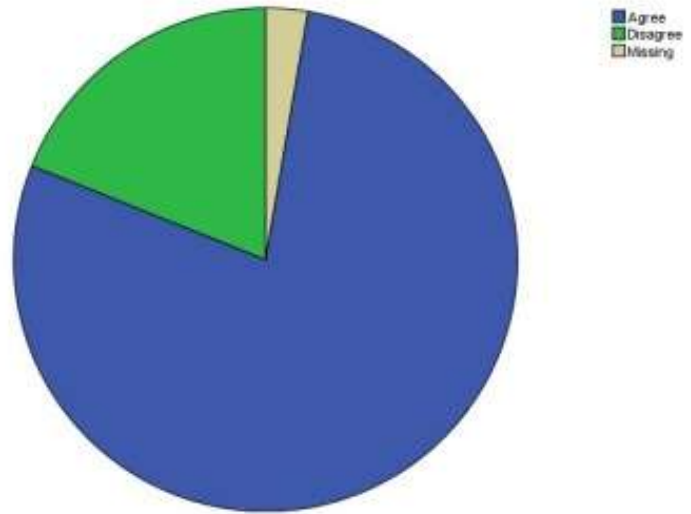
I have sufficient knowledge about hand hygiene.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	58	78.4	80.6	80.6
	Disagree	14	18.9	19.4	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

I have sufficient knowledge about hand hygiene.

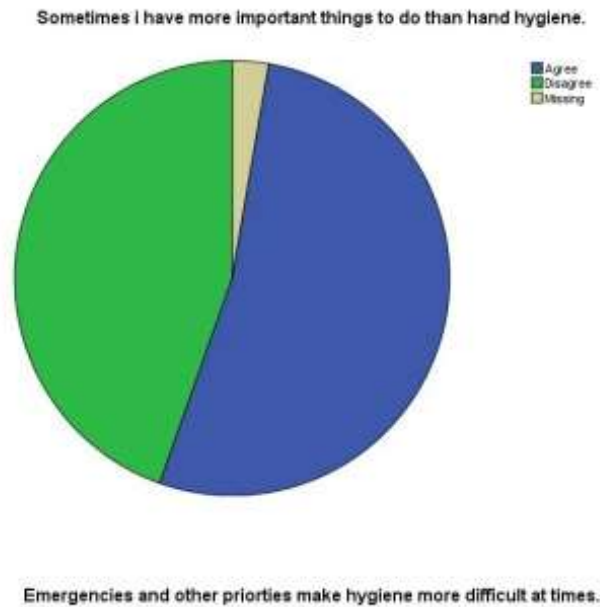
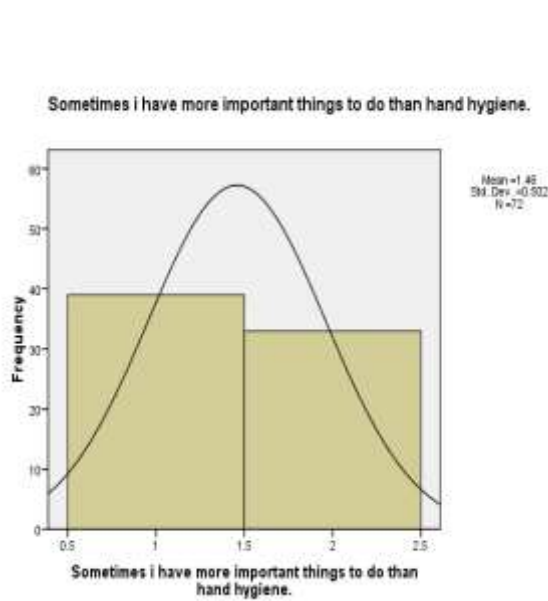


I have sufficient knowledge about hand hygiene.



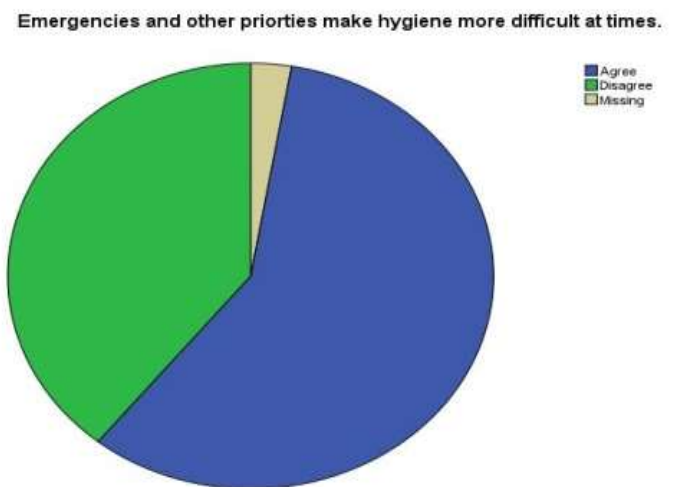
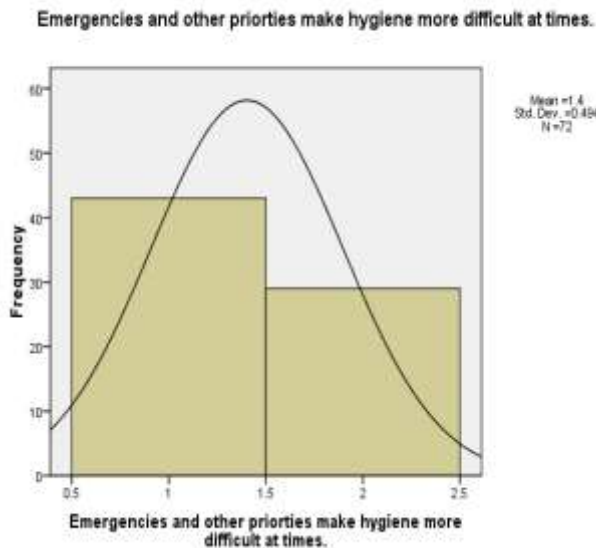
Sometimes i have more important things to do than hand hygiene.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	39	52.7	54.2	54.2
	Disagree	33	44.6	45.8	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		



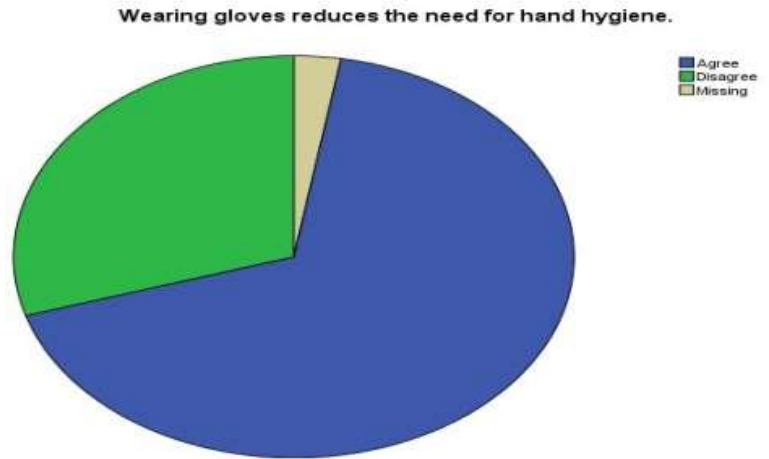
Emergencies and other priorities make hygiene more difficult at times.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	43	58.1	59.7	59.7
	Disagree	29	39.2	40.3	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		



Wearing gloves reduces the need for hand hygiene.

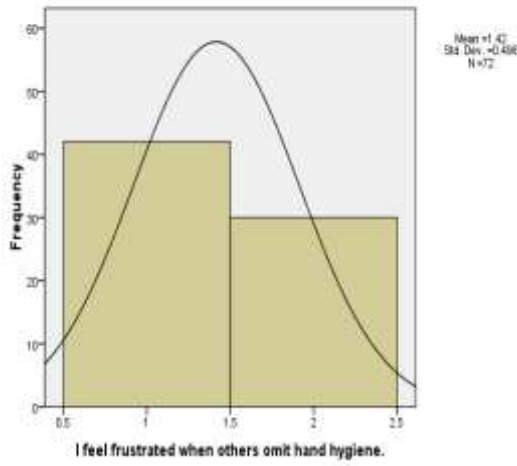
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	50	67.6	69.4	69.4
	Disagree	22	29.7	30.6	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		



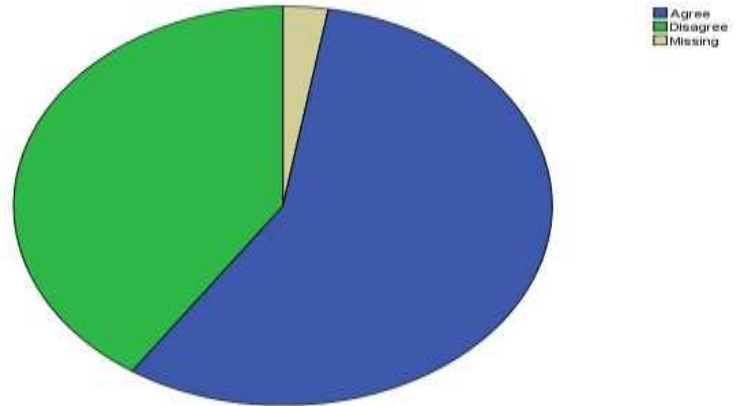
I feel frustrated when others omit hand hygiene.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	42	56.8	58.3	58.3
	Disagree	30	40.5	41.7	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

I feel frustrated when others omit hand hygiene.



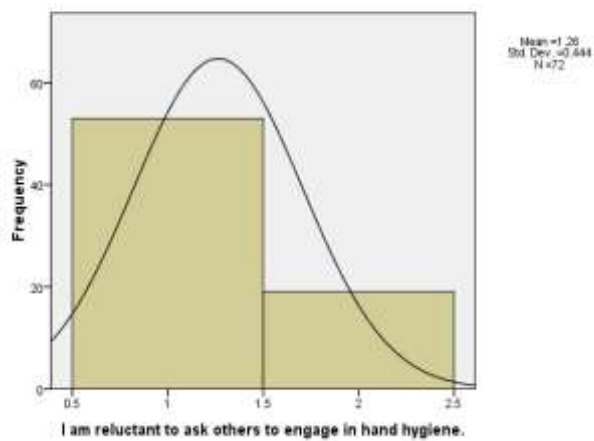
I feel frustrated when others omit hand hygiene.



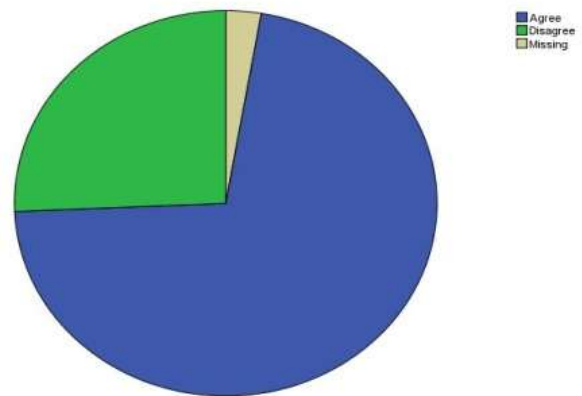
I am reluctant to ask others to engage in hand hygiene.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	53	71.6	73.6	73.6
	Disagree	19	25.7	26.4	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

I am reluctant to ask others to engage in hand hygiene.



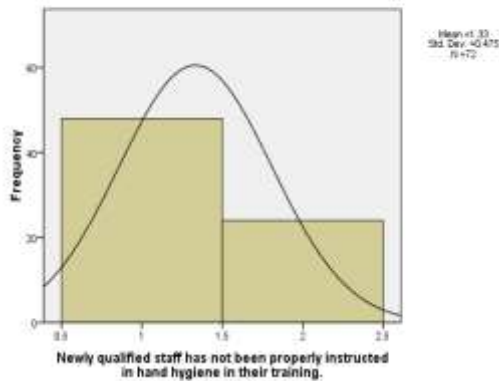
I am reluctant to ask others to engage in hand hygiene.



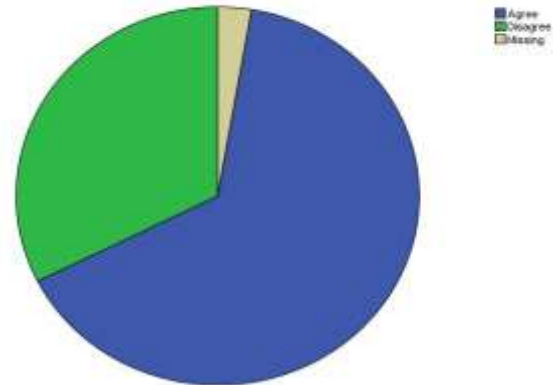
Newly qualified staff has not been properly instructed in hand hygiene in their training.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	48	64.9	66.7	66.7
	Disagree	24	32.4	33.3	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

Newly qualified staff has not been properly instructed in hand hygiene in their training.



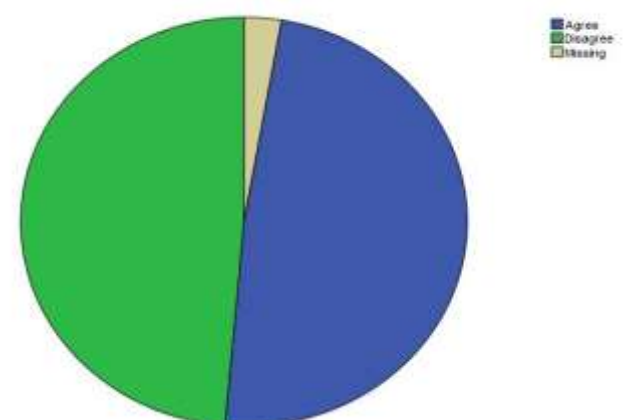
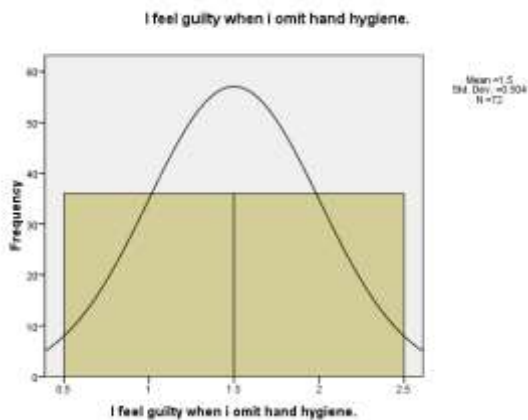
Newly qualified staff has not been properly instructed in hand hygiene in their training.



I feel guilty when i omit hand hygiene.

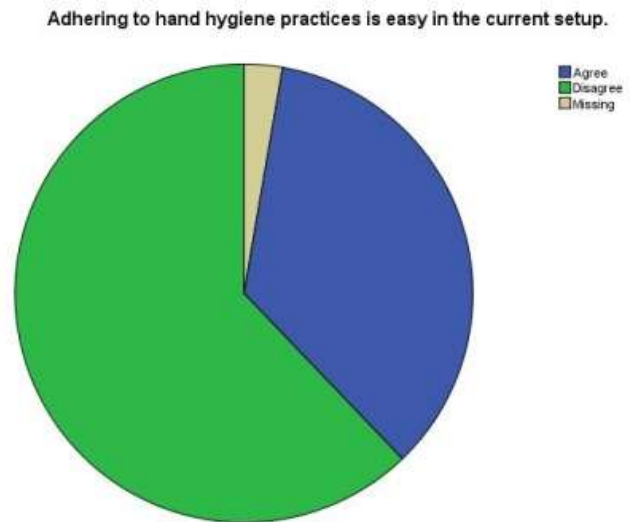
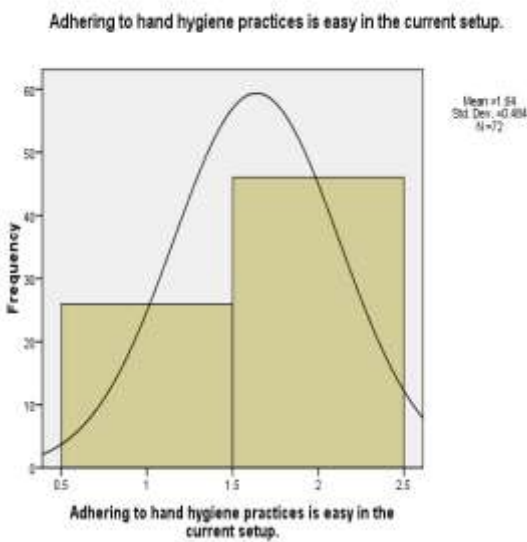
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	36	48.6	50.0	50.0
	Disagree	36	48.6	50.0	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

I feel guilty when i omit hand hygiene.



Adhering to hand hygiene practices is easy in the current setup.

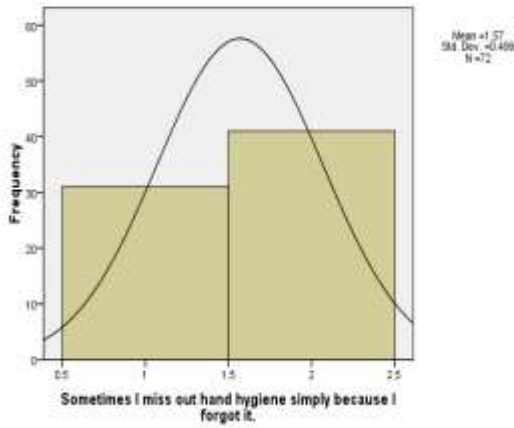
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	26	35.1	36.1	36.1
	Disagree	46	62.2	63.9	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		



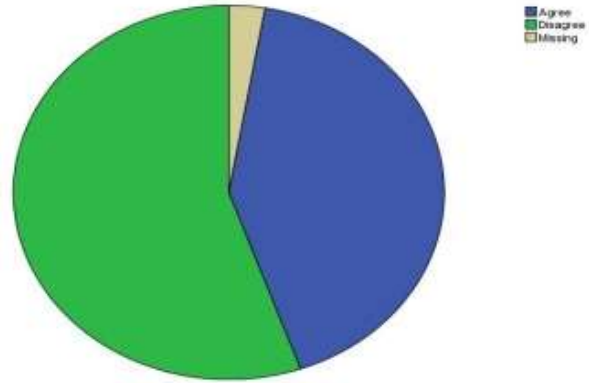
Sometimes I miss out hand hygiene simply because I forgot it.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	31	41.9	43.1	43.1
	Disagree	41	55.4	56.9	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

Sometimes I miss out hand hygiene simply because I forgot it.



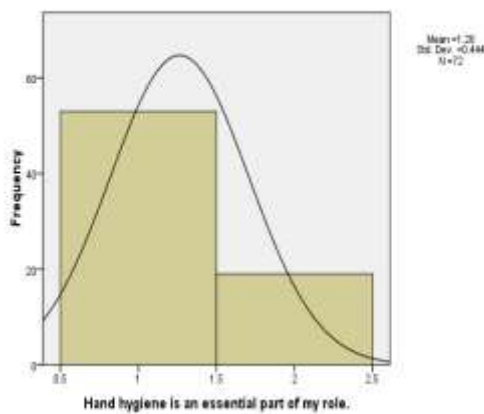
Sometimes I miss out hand hygiene simply because I forgot it.



Hand hygiene is an essential part of my role.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	53	71.6	73.6	73.6
	Disagree	19	25.7	26.4	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

Hand hygiene is an essential part of my role.



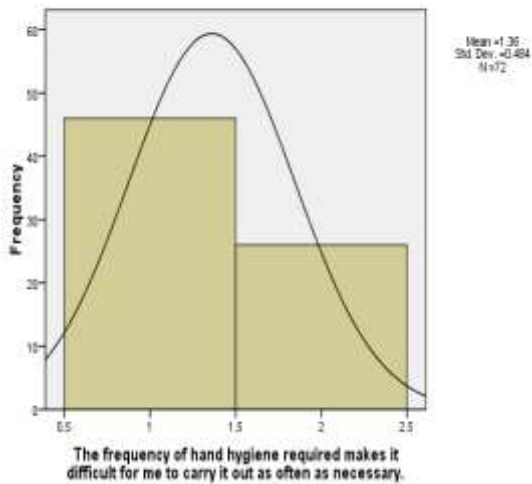
Hand hygiene is an essential part of my role.



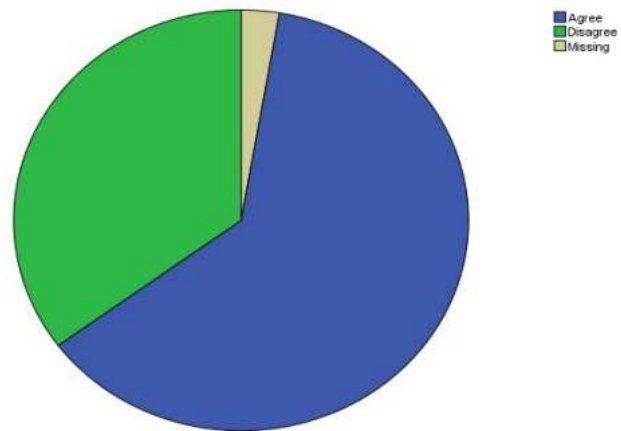
The frequency of hand hygiene required makes it difficult for me to carry it out as often as necessary.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	46	62.2	63.9	63.9
	Disagree	26	35.1	36.1	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

The frequency of hand hygiene required makes it difficult for me to carry it out as often as necessary.



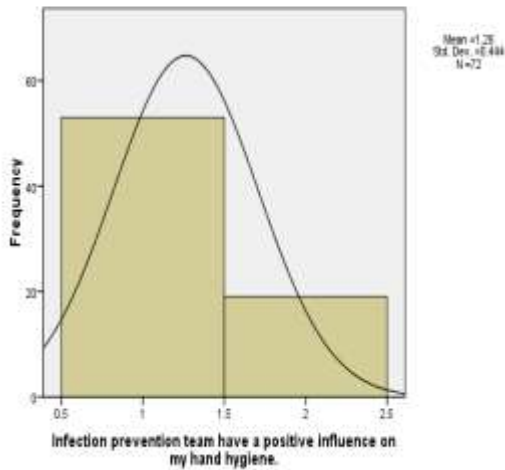
The frequency of hand hygiene required makes it difficult for me to carry it out as often as necessary.



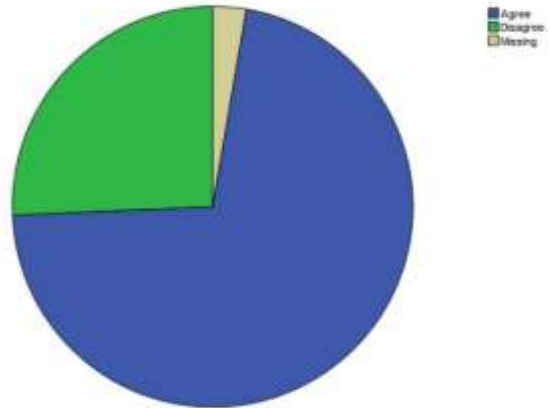
Infection prevention team have a positive influence on my hand hygiene.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	53	71.6	73.6	73.6
	Disagree	19	25.7	26.4	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

Infection prevention team have a positive influence on my hand hygiene.



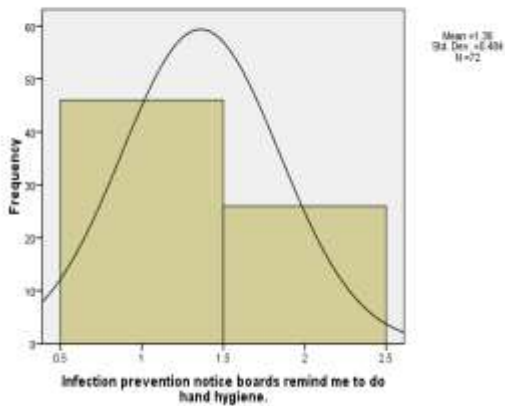
Infection prevention team have a positive influence on my hand hygiene.



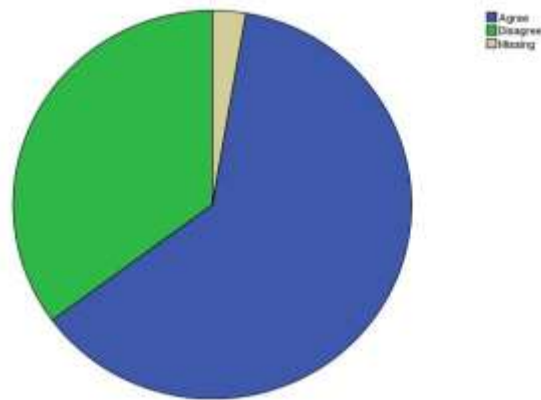
Infection prevention notice boards remind me to do hand hygiene.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	46	62.2	63.9	63.9
	Disagree	26	35.1	36.1	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

Infection prevention notice boards remind me to do hand hygiene.



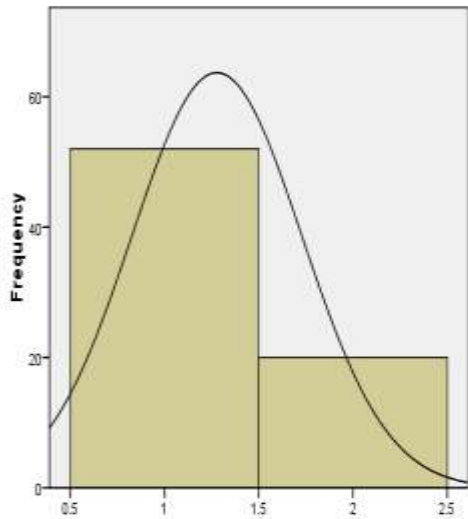
Infection prevention notice boards remind me to do hand hygiene.



It is difficult for me to attend hand hygiene courses due to time pressure.

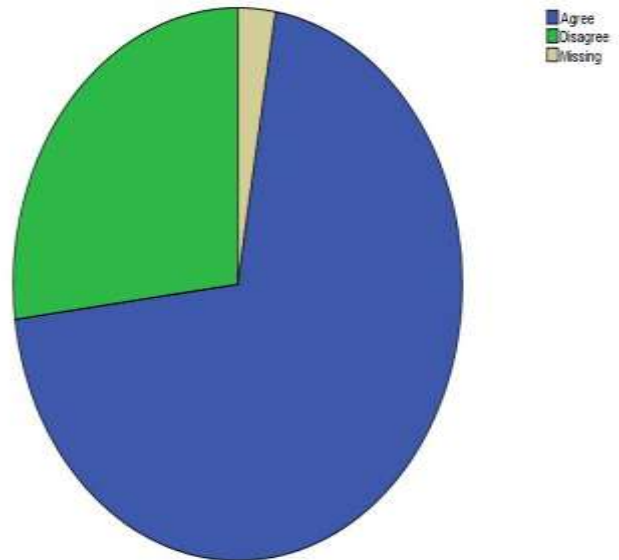
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	52	70.3	72.2	72.2
	Disagree	20	27.0	27.8	100.0
	Total	72	97.3	100.0	
Missing	System	2	2.7		
Total		74	100.0		

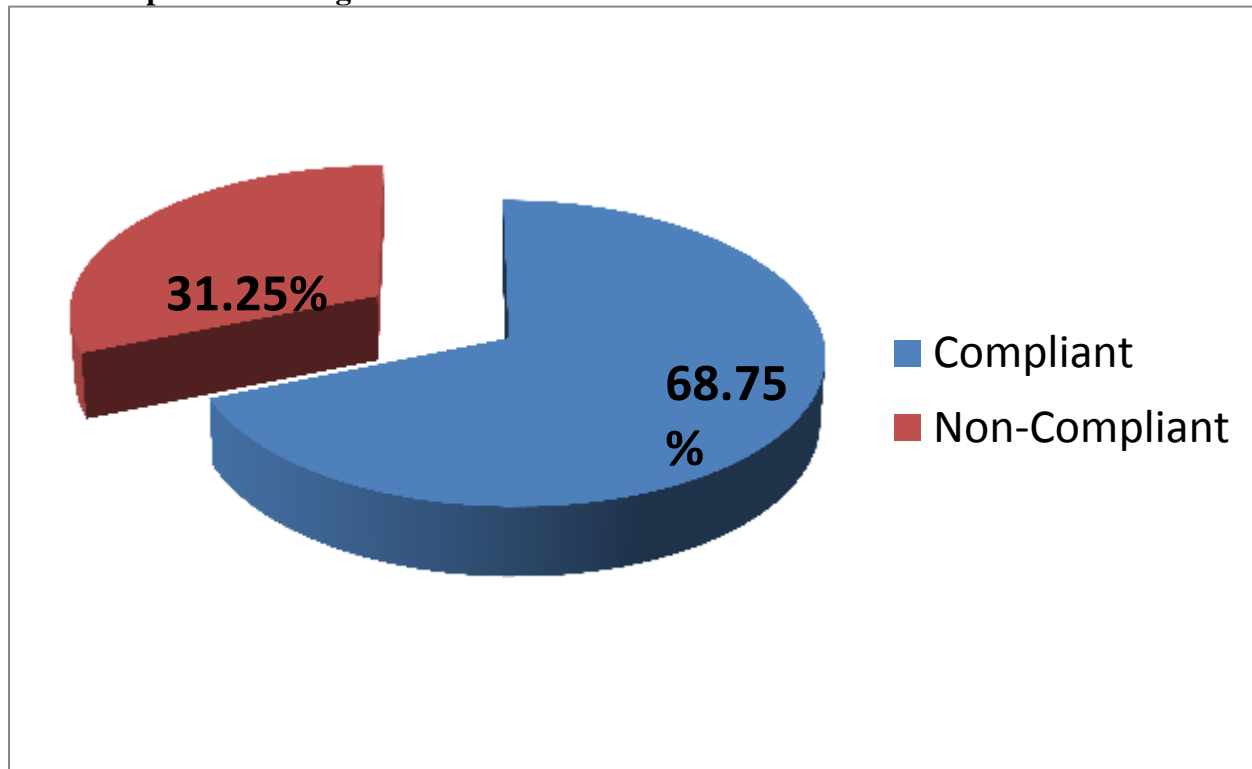
It is difficult for me to attend hand hygiene courses due to time pressure.



It is difficult for me to attend hand hygiene courses due to time pressure.

It is difficult for me to attend hand hygiene courses due to time pressure.



Compliance Among Health Professionals Before and After Clinical Examination**Results**

- A total of sixty students were invited to fill the questionnaire & subsequently were enrolled in the study. The participating students included thirty-six Females and twenty-four males. The average awareness regarding the positive indications of hand hygiene was 51.7% for female students and 62.5% for male students. Only 29% of students were able to identify all the five indications. There was no significant difference ($P>0.05$) between two genders. The detailed results are depicted in Table 3 and Figure 1.
- Thirty-six female students and twenty-four male students got four potential opportunities each to perform hand hygiene during Clinical sessions. Hand hygiene was performed by female students on 24 out of 144 occasions (compliance—16.7%) and by males on 17 out of 96 occasions (compliance—17.7%) resulting in average compliance of 17% for all students with no statistical difference among genders ($P<0.05$). The compliance profile to hand hygiene is shown in Figure 2.

Ethical Issues & Limitations

- Ethical Issues
 - i. Consent
- Limitations
 - i. Language Barrier(Paramedical staff)
 - ii. Time

Discussion

- Healthcare-associated infection is a very important health issue globally, and hand hygiene is an effective method of infection control. The methods of hand hygiene are widely publicized and simple [1]. Recent studies have found low awareness level regarding hand hygiene among medical students and certified healthcare providers [10–14]. However, the hand hygiene practices have not been studied thoroughly among medical students (trainees) in the Middle East although a few studies have been undertaken on healthcare providers. The present study was aimed to fill this gap and assess the undergraduate medical students' awareness and compliance for hand hygiene. The group studied was in their fourth clinical year that frequently performs activities which must require proper hand hygiene in order not to jeopardize patient's health.
- Importance of Hand Hygiene in the Undergraduate Syllabus. Students are bound to develop faulty hand hygiene practice if the curriculum was not enforced with hand hygiene concept and skills. One such series is reported by Anwar et al. [18] from a leading medical training center in Pakistan where only 17% of interns and postgraduate medical students were aware of WHO recommendations on hand hygiene and only 4.7% reported to observe correct hygiene before having direct contact with the patients. It is for this valid reason that the Hygiene Liaison Group, UK [21] strongly advocates teaching elementary hygiene practices at medical schools. Even in developed countries, hand hygiene may not get adequate coverage as has been shown by Mann and Wood [16] who examined the infection control knowledge of third year medical students at the University of Birmingham Medical School in UK using a semistructured questionnaire which included a hand hygiene component. The mean hand hygiene knowledge score was 52.3%, while 58% did not know the correct indications for the use of alcohol hand rub.

Conclusion

- Hand hygiene is the most effective method of preventing transmission of infections. The hand hygiene awareness and compliance among the medical students were found to be very low. Multifaceted and dedicated efforts must be undertaken to rectify this attitude and behavior from early on. Medical Colleges are highly encouraged to modify and enhance their curriculum in order to improve hand hygiene practices among the students. The improved understanding of infection control and hand hygiene among students is expected to play a major role in curbing disease transmission when the students pass out and join the healthcare work force in future.

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