

Enabling and demotivating factors associated with handwashing practices: A case study of undergraduate students in a Nigerian University

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Abstract

Background: Improvement in hand hygiene behavior is one of the most important and cost-effective barriers to infectious diseases. This study described the practice, frequency of practice and identified factors associated with handwashing practice of undergraduate students in a Nigerian tertiary institution.

Methods: A descriptive cross-sectional study was conducted among 345 undergraduate students in South-west Nigeria selected through multi-stage sampling technique. Data collection was done using a semi-structured, self-administered pre-tested questionnaire. Standard handwashing technique was determined using the total scores for handwashing under running water; with soap; for at least 15 seconds and washing the palms, back of palms, fingers, web spaces and wrists. Data collected were analyzed using SPSS version 17. Descriptive and inferential statistical tests were done with p-value set at <0.05.

Results: Majority 280 (81.9%) of the students wash hands regularly but only 146 (52.5%) practiced standard handwashing technique. A higher proportion of female students practiced standard handwashing ($p=0.034$). Enabling factors significantly associated with handwashing practices included imitation of friends ($p=0.021$); knowledge that handwashing prevents diseases ($p=0.011$); teachings from parents ($p=0.034$); disgust for feces ($p=0.020$) and handwashing practice believed to enhance social status ($p<0.001$) while statistically significant de-motivational factors included forgetfulness ($p=0.028$), lack of soap ($p=0.012$) and lack of time to spare ($p=0.034$).

Conclusion: The practice of standard handwashing is poor amongst undergraduate students in south-west Nigeria with significant gender disparities. University communities need to initiate programs and develop strategies that will encourage the practice and remove all possible barriers.

Keywords: *Handwashing practice, undergraduate students, enabling factors, de-motivational factors*

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Résumé

Contexte: L'amélioration du comportement en matière d'hygiène des mains est l'un des obstacles les plus importants et les plus rentables aux maladies infectieuses. Cette étude a décrit la pratique, la fréquence de la pratique et les facteurs identifiés associés à la pratique du lavage des mains chez des étudiants en licence dans un établissement d'enseignement supérieur nigérian.

Méthodes: Une étude transversale descriptive a été menée auprès de 345 étudiants en licence au sud-ouest du Nigéria sélectionnés à l'aide d'une technique d'échantillonnage à plusieurs étapes. La collecte des données a été réalisée à l'aide d'un questionnaire semi-structuré auparavant testé et auto-administré. La technique standard de lavage des mains a été déterminée en utilisant les scores totaux pour le lavage des mains sous l'eau courante; avec du savon; pendant au moins 15 secondes et laver les paumes, l'arrière des paumes, les doigts, les espaces de la bande et les poignets. Les données collectées ont été analysées à l'aide de la version 17 de SPSS. Les tests statistiques descriptifs et déductifs ont été effectués avec une valeur p fixée à <0,05.

Résultats: La majorité (280) (81,9%) des élèves se lavent les mains régulièrement, mais seulement 146 (52,5%) pratiquent la technique de lavage des mains standard. Une proportion plus élevée d'étudiantes pratiquait le lavage des mains standard ($p = 0,034$). Les facteurs favorables significativement associés aux pratiques de lavage des mains incluaient l'imitation des amis ($p = 0,021$); savoir que le lavage des mains prévient les maladies ($p = 0,011$); enseignements des parents ($p = 0,034$); dégoût pour les excréments ($p = 0,020$) et les pratiques de lavage des mains censées améliorer le statut social ($p < 0,001$) tandis que les facteurs démotivants statistiquement significatifs incluaient l'oubli ($p = 0,028$), le manque de savon ($p = 0,012$) et le manque de temps ($p = 0,034$).

Conclusion: La pratique du lavage des mains standard est médiocre chez les étudiants en licence au sud-ouest du Nigeria, avec d'importantes disparités entre les sexes. Les communautés universitaires doivent lancer des programmes et développer des stratégies qui encourageront la pratique et élimineront tous les obstacles possibles.

Mots clés: *Pratique du lavage des mains, étudiants en licence, facteurs favorables, facteurs de démotivation*

Introduction

Absenteeism due to illnesses from transmissible infections is a major problem in educational institutions [1-3]. Hands are the primary mode of transmission of many infectious diseases, particularly among those living and working in compact residential and work environment such as in markets, schools, military barracks, college dormitories, and summer camps. Group living environments, such as students' halls of residence, make the spread of transmissible diseases and upper respiratory illnesses more likely. The occurrence and severity of hygiene related disease outbreaks in endemic areas has been documented in literature to be greatly enhanced by human behavior with regards to their healthy hygiene practices [4]. Poor hygiene practices such as inadequate handwashing have caused many people to fall ill and even to die [5]. Improvement in hand hygiene behavior is the most important and cost effective barrier to many infectious diseases even among students [5, 6].

The World Health Organization [7] defines hand hygiene as any action of hand cleansing which may include handwashing, antiseptic handwashing, or antiseptic hand rubbing [7, 8]. The Global Handwashing day on October 15 yearly was initiated by the Public Private Partnership for Handwashing (PPPHW) at the annual World water week since 2008 [9]. The main objective was to motivate and mobilize millions around the world to improve their handwashing habits. This simple and cost-effective practice, according to research, can reduce the rate of mortality from these diseases such as diarrhea and pneumonia by 50% or more [10, 11]. Appropriate hand hygiene practices, especially by handwashing can potentially result in the reduction of the spread of infection and the resulting lost days due to absenteeism [1]. Nonetheless, some people merely wash hands. Hence, it is important to know how standard their practice is.

Students in the tertiary institution are an important population to be studied. They are people in the preparatory phase for the independent adult life. They are expected to continue to pass on the right ideals as well as ethical norms in the society if these have been truly imbibed by them. However, these students are often also young people, full of life and involved in several adventurous activities. Their busy lifestyle may make them overlook this basic healthy practice which improves health and

life. They are also at high risk of rapid spread of infectious diseases such as the latest Ebola infection in the West African countries. This is because they live in hostels, some of which are over-populated with the occupants closely relating with one another. Unfortunately, there is a paucity of literature on the hand hygiene practices of Nigerian university students, especially in non-medical professions. The study, therefore, described the handwashing practices of university students in diverse professional training, determined if their practice was standard or not; assessed the frequency of handwashing practices to critical events and factors associated with their type of handwashing practice. Findings from this study will provide evidence on the prevailing handwashing practices of students' in Nigerian universities and identify basic intervention packages to enhance their practice, health and livelihood.

Methods

The study was descriptive cross-sectional in design and was conducted among undergraduate students of the Joseph Ayo Babalola University, a faith-based private institution in Southwest Nigeria. The school had a total population of about 3000 students with a male to female ratio of 1.02:1 showing a slight preponderance of male students as at the time of conducting the study. The study was conducted across all departments within the seven faculties namely Humanities, Agriculture, Natural Sciences, Law, Environmental Sciences, Social Sciences and Management Sciences. There was no medically related faculty in the institution as at the time of conducting this study. There are varied numbers of Departments across all these faculties offering courses with duration of four or five years in each department. A sample size of 359 was determined using the Cochran's formula for determining single proportions based on an assumed 50 percent prevalence rate for handwashing practice of undergraduate students in Nigerian universities. Then, adjustment for a possible 5% percent attrition and a total population less than 10,000 was done. A multi-stage sampling technique was employed which entailed initial selection of two departments from each of the seven faculties in the university studied. This was followed by the selection of seven students by simple random sampling technique at all levels of study in all the selected departments using their year of study sample frame obtained from the university registrar. Interview appointments were then fixed with these students by sending text messages to their mobile phone numbers. If anyone refused to consent to the study, he was replaced from the sample frame.

Data was quantitative in nature and collected using a semi-structured, self-administered pre-tested questionnaire administered by four trained graduate research assistants. The outcome variables were 'regularly practicing handwashing or not' and 'standard handwashing practice or not'. A standard handwashing practice for this study was assessed by asking if respondents (1) washed hands under running water, (2) with soap (3) for at least 15 seconds and (4) if they washed the palms, back of palms, fingers, web spaces and wrists. The response to each of these practices which was one of always, sometimes, or never were scored. Always was scored 2, sometimes 1 and never had a score of zero. The total score to all four questions was then summed up. The obtainable scores ranged from 0 to 8. A standard handwashing practice was defined as scoring > 50% of the total score. Scoring \geq 50% was defined as a non-standard practice. Of those, who practiced standard handwashing, the frequency for which this was done for selected events was determined. However, only those respondents that practiced handwashing aside from when they are or took their bath were subjected to this scoring and grading. Independent factors included the socio-demographic factors as well as selected enabling and demotivating factors to handwashing practice. The faculties of the study were regrouped into Pure and Applied Sciences (consisting of the Faculties of Agriculture, Natural Sciences, and Environmental Sciences) and Social, Humanities, and Management Sciences (consisting of Faculties of Law, Humanities, Social Science and Management Sciences). The level of study was also regrouped into those in 200 levels of study and below and those above 200 levels.

Data was analyzed using the SPSS version 17 statistical software. Univariate analysis such as frequency distribution of students who practiced standard handwashing and the frequency of their practice was done. Summary statistics was done for the socio-demographic variables. The bivariate level of analysis was done by assessing factors associated with handwashing practice using a chi-square statistics with the level of statistical significance set at $p < 0.05$.

Permission to conduct the study was granted by the school authorities. Informed verbal consent was also obtained from the respondents after being assured of the confidentiality of the data provided. The authors adhered to the Helsinki Declaration principles in the conduct of this study.

Result

Three hundred and fifty students were recruited for the study and 345 responded giving a 98.6% response rate. There were more female students in the population studied with a female to male ratio of 1:1.4. The mean age of respondents was 22.4 ± 2.3 years. Almost all the respondents, 333 (96.5%) had parents with formal education. (Table 1).

Table 1: Socio-demographic characteristics of respondents (n = 345)

Socio-demographic characteristics	Frequency	%
<i>Sex</i>		
Male	144	41.7
Female	201	58.3
<i>Age</i>		
d" 24 years	257	74.5
>24 years	88	25.5
<i>Marital status</i>		
Single	321	94.0
Married	21	6.1
<i>Faculty</i>		
Natural and Applied sciences	146	42.3
Humanities Social and Management Sciences	199	57.7
<i>Year of study</i>		
100	60	17.4
200	119	34.5
300	113	32.8
400	53	15.3
<i>Religion</i>		
Christians	337	97.7
Islam	5	1.5
Traditional	3	0.9
<i>Education level of mother</i>		
No formal education	12	3.5
Formal education	333	96.5
<i>Occupation of parents</i>		
Farming	21	6.1
Trading	34	9.9
Government employees	129	37.4
Self-employees	99	28.7
Corporate employees	62	18.0

The Frequency of handwashing

Two hundred and eighty, (81.9%) of respondents often practiced handwashing while 65 (17.1%) reportedly washed their hands only when they want to eat or take their bath. Of those who often practiced handwashing, 203 (72.5%) did so <5 times a day. The mean handwashing frequency was 4.3 ± 0.9 SD with a modal frequency of 3 times as presented in Table 2. Of the 280 respondents who reportedly often washed their hands, a little more than half, 158 (56.4%) always did so under running water, less

than half 119 (42.5%) did so with soap and a much lower proportion 84 (30.0%) reportedly always did so for at least 15 seconds (Table 3).

Table 2: Practice and Frequency of Handwashing by all respondents (n=345)

Response	Frequency	%
Practice handwashing regularly		
Yes	280	81.9
No (occasionally)	65	17.1
Total	345	100.0
Frequency of handwashing		
< 5 times	203	72.5
5-9 times	62	22.1
>10 times	15	5.4
Total	280	100.0

When the responses defining standard handwashing practices were scored and summed up, 146 (52.5%) of the respondents practiced standard handwashing. As regards the frequency and times of practicing standard handwashing, >50% of respondents reportedly always washed their hands before and after taking their meals, after using the restroom, after blowing their nose, after touching animals and before preparing meals as shown in Table 3.

Table 3: Frequency of standard handwashing practices and critical periods for handwashing among respondents with regular handwashing practice (n=280)

	Always		Sometimes		Never		Total
	Freq.	%	Freq.	%	Freq.	%	
<i>Standard handwashing practices</i>							
Wash hands under running water	158	56.4	103	36.8	19	6.8	280
Wash hands with soap	119	42.5	152	54.3	9	3.2	280
Wash hands for at least 15 seconds?	84	30.0	140	50.0	56	20	280
Wash palms, back of palm, fingers, web spaces and wrists	166	59.3	99	35.3	15	5.4	280
<i>Critical periods for handwashing practice</i>							
Wash hands before meals	158	56.4	90	32.1	32	11.4	280
Wash hands after meals	148	52.9	96	34.3	36	12.9	280
Wash hands before defecation	78	27.9	80	28.6	122	43.6	280
Wash hands after defecation	154	55.0	118	42.1	8	2.9	280
Wash hands when they get back to the hostel	90	32.1	122	43.6	68	24.3	280
Wash hands after handshaking	35	12.5	87	31.1	158	56.4	280
Wash hands after using public transportation	52	18.6	121	43.2	107	38.2	280
Wash hands after waking up in the morning	167	59.6	95	33.9	18	6.4	280
Wash hands after touching animals	171	61.1	86	30.7	23	8.2	280
Wash hands before preparing meals	154	55.0	87	31.1	39	13.9	280
Wash hands after money exchange	52	18.6	101	36.1	127	45.4	280
Wash hands after blowing the nose	211	75.4	65	23.2	4	1.4	280

A chi-square analysis was carried out to identify socio-demographic factors associated with the practice of standard handwashing among respondents. As shown in Table 4, being a female student (p= 0.034); a single or unmarried students (p= 0.023); practicing Christianity as a religion (p<0.001); as well as students with educated parents (p= 0.008) were found to be statistically significantly associated with the practice of standard handwashing.

When the respondents' perspectives on some enabling factors that could have informed their handwashing practices were assessed, knowledge from previous school (p= 0.024) was the only enabling institutional factor. All the personal factors assessed were significant which includes imitation of friends (p= 0.021) and knowledge of its prevention of diseases (p= 0.011). Teaching from parents (p= 0.034), societal disgust for dirty hands (p= 0.018) and handwashing practices enhancing students' social status (p<0.001) were the cultural enabling factors found to have statistically significantly informed their handwashing practices. (Table 5). Also, the possible de-motivational factors to handwashing practice by these undergraduate students were assessed. Of these, forgetfulness (p= 0.028); lack of soap (p= 0.012) and lack of time or being too busy (p= 0.034) were the statistically

Table 4: Socio-Demographic characteristics associated with standard handwashing practices (n=280)

Socio-demographic characteristics	Standard practice (n= 154) Freq (%)	Non-standard practice (n= 126) Freq (%)	Total (n= 280) Freq (%)	Test of Statistical significance; (degree of freedom), p-value
Sex				
Male	58 (45.8)	64 (54.1)	122(100.0)	$\chi^2=18.448$; (df=1); p= 0.034
Female	96 (60.7)	62 (39.3)	158(100.0)	
Age				
<18 Years	74 (54.0)	63 (46.0)	137(100.0)	$\chi^2=9.4220$;(df=1); p= 0.098
>18 years	80 (56.7)	61 (43.3)	141(100.0)	
Marital status				
Single	148 (56.1)	116(43.9)	264 (100.0)	$\chi^2=24.477$; (df=1); p= 0.023
Married	6 (37.5)	10 (62.5)	16 (100.0)	
Faculty of study				
Pure and Applied sciences	88 (62.0)	54 (38.0)	142 (100.0)	$\chi^2=11.808$; (df=1); p= 0.084
Social, humanities & Management Sciences	66 (47.8)	72 (52.2)	138 (100.0)	
Level of study				
≤200 level	76 (60.3)	50 (39.7)	126 (100.0)	$\chi^2=6.864$; (df=1); p = 0.108
>200 level	78 (50.7)	79 (49.3)	154(100.0)	
Religion of respondents				
Christians	151 (55.1)	123 (44.9)	274 (100.0)	$\chi^2=28.948$;(df=1); p < 0.001
Non-Christian	3 (50)	3 (50)	6 (100.0)	
Level of education of parents				
No formal education	2 (33.3)	4 (66.7)	6 (100.0)	$\chi^2=28.421$; (df=1); p=0.008
Formal education	152 (55.5)	122 (44.5)	274 (100.0)	

significant barriers to handwashing practice among the respondents. (Table 6).

Discussion

This study explored the practice of handwashing among undergraduate students in a private university in Nigeria. It attempted to identify those factors that could influence handwashing practices among these students, who for the high level of interaction among them puts them at a high risk of contracting communicable diseases if any should occur.

Frequency of handwashing

More than three-quarters of the students studied (81.9 percent), often practiced some sort of handwashing. However, only 42.5 percent reportedly always washed their hands with soap. This finding is low compared to 66.9 percent of students observed at the Michigan State University (MSU) who did same [12] though higher than the 22.5% undergraduate students in four private universities in Bangladesh who practiced handwashing with soap and water [13]. The reason for the difference with the findings from MSU may be because theirs was a one-time observation compared to the methodology of this

study. In Nigeria, there is paucity of evidence in literature on the handwashing practices of undergraduate students in non-medically related disciplines. Rather, evidence abounds on the handwashing practices of students in medically related professions who are incompatible groups with our study population as handwashing is an ethics of their intending professions. Regarding the frequency of handwashing practice, this was low as only 27.5 percent of the 81.9 percent washed hands more than five times. According to Rose-Innes, the recommended daily frequency of handwashing by the Global Hygiene Council was a minimum of six times [14]. This low frequency depicts that more still needs to be done in creating a handwashing culture among students in tertiary institutions.

Findings showed that 30 percent of the students reported that they always washed their hands for at least 15 seconds. This is also low though much higher compared to 2 percent of female American college students observed to have washed their hands with soap for ≤10 seconds [15] and 5 percent of students of MSU who did same for 15 to 20 seconds [12]. This suggests that a self-reported finding may

Table 5: Enabling factors associated with handwashing practice among all respondents (n=345)

Variables	Regular hand washing practice n=280 Freq (%)	Occasional handwashing practice n= 65 Freq (%)	Total n= 345 Freq (%)	Test of statistical significance, χ^2 value; (degree of freedom); p-value
Personal factors				
Imitation of friends				
•Agree	228 (88.4)	30 (11.6)	258 (100.0)	$\chi^2= 39.003$; (df= 1); p= 0.021
•Disagree	42 (55.3)	34 (44.7)	76 (100.0)	
Prevention of diseases				
•Agree	274 (92.9)	21 (7.1)	295 (100.0)	$\chi^2= 42.313$; (df= 1); p= 0.011
•Disagree	6 (19.4)	25 (80.6)	31(100.00)	
Personal habit				
•Agree	272 (93.8)	24 (8.2)	296 (100.0)	$\chi^2= 48.229$; (df= 1); p= 0.024
•Disagree	8 (18.2)	36 (81.8)	44 (100.0)	
Disgust for faeces				
•Agree	255 (86.7)	39 (13.3)	294 (100.0)	$\chi^2=46.692$; (df= 1). p =0.020
•Disagree	25 (46.3)	27 (51.9)	52 (100.0)	
Disgust for filthy Environment				
•Agree	249 (84.7)	45 (15.3)	294 (100.0)	$\chi^2= 48.248$; (df= 1); p= 0.023
•Disagree	31 (64.6)	17 (35.4)	48 (100.0)	
Fear of contracting disease				
•Agree	274 (92.9)	21 (7.1)	295 (100.0)	$\chi^2=52.811$; (df= 1); p<0.001
•Disagree	6 (19.4)	25 (80.6)	31 (100.0)	
Detest filthy latrines				
•Agree	266 (88.7)	34 (11.3)	300 (100.0)	$\chi^2=49.339$; (df= 1); p= 0.031
•Disagree	14 (31.1)	31 (68.9)	45 (100.0)	
Protection against infections				
•Agree	278 (86.8)	42 (13.2)	320 (100.0)	$\chi^2=50.007$;(df= 1); p= 0.018
•Disagree	2 (8.0)	23 (92.0)	25(100.0)	
Institutional factors				
Hand hygiene practices from the previous school				
•Agree	242 (88.9)	24 (8.2)	266 (84.6)	$\chi^2= 48.229$; (df= 1); p= 0.024
•Disagree	8 (18.2)	36 (81.8)	44 (100.0)	
Knowledge acquired in the university				
•Agree	146 (52.1)	45 (13.3)	191 (55.4)	$\chi^2= 16.429$; (df= 1); p= 0.127
•Disagree	134 (27.9)	20 (51.9)	154(44.6)	
Campaign on media and internet				
•Agree	149 (76.8)	45 (13.3)	194 (56.4)	$\chi^2= 18.028$; (df= 1); p= 0.113
•Disagree	131 (88.5)	17 (11.5)	148 (42.6)	
Cultural factors				
Teaching from parents				
•Agree	266 (88.7)	34 (11.3)	300 (87.0)	$\chi^2_1= 43.788$; (df= 1); p= 0.034
•Disagree	14 (31.1)	31 (68.9)	45 (13.0)	
Societal disgust for dirty hands				
•Agree	278 (86.8)	42 (12.2)	320 (92.3)	$\chi^2= 48.407$;(df= 1); p= 0.018
•Disagree	2 (8.0)	23 (92.0)	25 (7.2)	
Enhances Social Status				
•Agree	228 (88.4)	30 (11.6)	258 (100)	$\chi^2= 51.370$; (df= 1); p<0.001
•Disagree	42 (55.3)	34 (44.7)	76 (100)	

be higher than when the respondents are directly observed. Only 52.9 percent of students studied practiced standard handwashing. This is similar to

43 percent of medical students in Austria who performed handwashing according to the WHO guidelines [16]. This suggests that a lot still needs

Table 6: De-motivational factors associated with handwashing practice among all respondents (n=345)

Variables	Regular hand washing practice n=280 Freq (%)	Occasional handwashing practice n= 65 Freq (%)	Total n= 345 Freq (%)	Test of statistical significance, χ^2 value; (degree of freedom); p-value
Forgetfulness				
•Agree	266 (88.7)	34 (11.3)	300 (100)	$\chi^2= 43.621$; (df= 1) p= 0.028
•Disagree	14 (31.1)	31 (68.9)	45 (100)	
Inconveniently located handwashing facility				
•Agree	125 (42.5)	45 (13.3)	170 (49.3)	$\chi^2= 11.892$; (df= 1) p= 0.146
•Disagree	155 (57.5)	20 (51.9)	175 (50.7)	
Lack of motivation				
•Agree	146 (52.1)	45 (13.3)	191 (55.4)	$\chi^2= 16.429$; (df= 1) p= 0.127
•Disagree	134 (27.9)	20 (51.9)	154 (44.6)	
Lack of soap				
•Agree	228 (88.9)	61 (21.1)	289 (83.8)	$\chi^2= 43.002$; (df= 1) p= 0.012
•Disagree	42 (64.6)	23 (35.4)	65 (18.8)	
Lack of time (too busy)				
•Agree	274 (88.9)	34 (11.0)	308 (89.3)	$\chi^2= 38.312$; (df= 1) p= 0.034
•Disagree	6 (16.2)	31 (83.8)	37 (10.7)	
Lack of water				
•Agree	140 (50.0)	20 (13.3)	191 (55.4)	$\chi^2= 16.429$; (df= 1) p= 0.127
•Disagree	140 (50.0)	34 (51.9)	154 (44.6)	
Soap damages skin				
•Agree	146 (52.1)	43 (13.3)	189 (54.8)	$\chi^2= 17.009$; (df= 1) p= 0.210
•Disagree	134 (28.4)	20 (51.9)	159 (100)	

to be done to improve the quality of handwashing practice among undergraduate students in Nigeria.

Factors associated with the practice of handwashing

A higher proportion of female students practiced standard handwashing compared to their male counterparts. This is contrary to the findings of Herbert et al, and Anderson et al who found no gender differences in the handwashing practice of their students [16, 17]. All the personal and socio-cultural factors assessed were significantly associated with the practice of handwashing. Findings showed the role of peer group influence on handwashing as 88.4 percent of the students agreed that imitation of their friends encouraged the practice in them. Also, the knowledge of the students on the importance of handwashing practices in infection prevention and control also informed the practice. The place of the family in encouraging the practice of handwashing cannot be over-emphasized and this was supported by findings from this study. The importance of engendering the practice of handwashing early in life was equally highlighted

in this study as a high proportion, 88.9 percent of those who regularly practiced handwashing attributed it to their home-acquired habit before becoming undergraduate students. Very few attributed it to knowledge gained in the university. Forgetfulness was found as a significant barrier to handwashing among the students studied. This was also the main reason given for skipping handwashing when within the universities by 37.5% of undergraduate students studied by Sultana et al in Bangladesh [13]. Hence, university authorities need to institute programs with reinforcements that will enlighten and often remind the students on standard handwashing practices.

Conclusion and Recommendation

A fairly high proportion of the population studied practiced regular handwashing with more female than male preponderance even though, the frequency of this practice among both sexes is regrettably lower than the global recommendation by the World Health Organization. Standard handwashing practice is yet to be generally adopted by the students studied. Personal factors such as disgust for feces, filthy

environments and filthy latrines as well cultural factors such as teaching from parents, societal disgust for feces and perceiving handwashing practice as one that enhances social status were the significant enabling factors of handwashing among the students studied. The significant demotivating factors included forgetfulness, lack of soap and lack of time to spare for practicing handwashing.

To improve standard handwashing practices of the student population, it will be advantageous to adopt the use of emotional motivators such as promoting the perception of disgust for fecal matter, dirt and filthy environments among undergraduate students, as being used by sanitation programs globally in community led total sanitation to stop open defecation. Emotional motivators can be used to promote an emotion that has been found to strongly drive the acceptance or neglect of a behavior. This can be done by developing and deploying appropriate health promotional packages. For the rapid uptake of this practice, it will also be beneficial to relate the practice to an activity that enhances social status in the university community. Various stakeholders such as the family and religious bodies should be engaged and sensitized on promoting the practice. It is also expedient for university communities to initiate programs and develop strategies by which the practice of handwashing can be encouraged. A poster with a simple question such as "Have you washed your hands today" or another showing "the basic steps in standard handwashing" pasted in strategic locations in the school may help remind students to wash their hands at critical periods. The school authorities should also endeavor to enable handwashing by provision of handwashing stations and facilities at strategic locations on campus and hostels and remove all possible handwashing barriers.

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