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KNOWLEDGE AND PRACTICE OF HAND WASHING AMONG SECONDARY SCHOOL STUDENTS IN EDO STATE, NIGERIA

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ABSTRACT

The purpose of this study was to assess the knowledge and practice of hand washing, and to determine the factors that limit the practice of hand washing among secondary school students. Sample size of 200 participants was used in this descriptive cross-sectional study. Students were recruited from four secondary schools in Benin City, Edo State, Nigeria. Multi-stage sampling was utilized in selecting the settings and participants. The sample size was determined using Cochran's formula for descriptive study. A self-structured questionnaire was used to obtain data, which was analysed using descriptive statistics. This study observed that the respondents' level of knowledge of hand hygiene is good (66%), with a mean score of 5.33 out of 8, and the practice of hand washing is fair (68.4%), with a mean score of 1.98 out of 2.50. Findings also indicate that the respondents' accessibility of hand washing equipment is poor (27%). Other factors limiting hand washing include ignorance, unavailability of clean running water, unattractive hand washing facilities, and lack of time. Lastly, there is significant difference ($p < 0.000$) between the knowledge score of students in private schools when compared with those in public schools. It is therefore recommended that schools provide the necessary materials needed for students' hand washing to encourage adequate practice. This will help fill the knowledge-practice gap observed in the study.

Keywords: Hand washing; Infection; knowledge and practice study; Secondary School Students

INTRODUCTION

Hand hygiene, which includes hand washing, is fundamental in the prevention of acquiring and the spread of infections such as COVID-19, diarrhoea, cholera, hepatitis A, and Ebola. In the effort towards infection control, the importance of regular hand washing at appropriate times cannot be overemphasized. Hand washing is the washing of hands with plain or antimicrobial soap and running water for the purpose of eliminating dirt, organic materials, and other disease-causing organisms (Twinomuhwezi et al., 2022). It is the most accessible method of hand hygiene among the general population (Azuogu et al., 2016). It has been observed that simple hand washing practices can reduce the transmission of infectious germs (Vishwanath et al., 2019; Hussein et al., 2021). On the other hand, deficient knowledge about proper hand washing practices predisposes to the risk of communicable diseases (Almoslem et al., 2021) and the ensuing situations such as absenteeism from school and high cost of spending on healthcare. Furthermore, insufficient water, sanitation, and hygiene (WASH) materials results in poor hand washing practices (Rotimi & Noem, 2020). WASH materials include wash hand basins, running water, hand washing soap, and hand sanitizers.

School children are susceptible to the spread of infectious disease in the school environment especially due to poor sanitation, including inadequate hand washing (Tamiliarasi et al., 2016). The knowledge and practice of hand washing among school children has been investigated with resultant recommendations by researchers. Almoslem et al. (2021) used a cross-sectional survey to assess the hand washing practices among 271 (80%) students in Saudi

Arabia. Only 46% of the participants agreed that hand washing could prevent diseases. Generally, the students have high level of knowledge on hand hygiene (80%) and the level of education of mothers positively impacted on hand hygiene practices. Often the knowledge of hand washing practices did not translate into practice and this calls for concern. In a cross-sectional study by Azuogu et al. (2016), it was concluded that the level of hand washing practice among secondary school students in Ebonyi State was low, especially before and after eating, among both rural and urban dwelling students.

According to Twinomuhwezi et al. (2022), the factors associated with hand washing practices amongst 291 secondary school students in Uganda were availability of clean water, existence of hand washing stations in schools, and sanitation/attractiveness of hand washing stations. Most of the students (77%) washed their hands after using restrooms, while only 36.4% washed their hands before eating food. Some schools could not provide the students with soap for hand washing. The researchers recommended that students should be further sensitized on the importance of hand washing and that WASH materials should be made available. Another cross-sectional study by Admasie et al., (2022) evaluated the extent of hand washing practices and the factors that affect such practices among 580 primary school children in South Ethiopia. Findings showed that only 28.1% practiced proper hand washing, 64.1% often washed their hands after using the toilet, while only 12.8% do so always. In the same study, the children were aware of the benefit of hand washing in infection control (55.2%), but 51.2% reported that they only need to use soap if their hands look dirty. They highlighted the importance of good role models (parents, teachers, and health professionals) and the provision of WASH materials (Admasie et al., 2022).

Hand washing is an important means of infection prevention among school children; it should be continuously evaluated for its effectiveness in schools and to ascertain how the practice can be improved. This study

assessed the knowledge and practice of hand washing among secondary school students at selected schools in Benin City, Nigeria.

Objectives

1. To determine the level of knowledge of hand washing among secondary school students in Benin City.
2. To ascertain the extent of practice of hand washing as a preventive measure against communicable diseases.
3. To assess the availability of hand washing materials to the students.
4. To identify factors limiting the practice of hand washing among the students.

METHODOLOGY

A descriptive cross-sectional survey design was used in the study. The settings for the study were four selected secondary schools in Egor Local Government Area of Benin City, Edo State, which consisted of two Government owned schools and two private schools. The target population was students in Senior Secondary Schools which involved Senior Secondary Schools I, II and III. The sample size was determined using Cochran's formula for descriptive study in calculating 200 participants which included 5% attrition rate. Participation in this study was open to both male and female senior secondary students at the selected schools who were willing to participate and within the age range of 13 to 19 years.

Multistage sample technique was utilized as the sampling method. At the first stage simple random sampling was done using balloting in selecting the four schools. The second involved a purposive sampling to select the senior secondary schools to enable adequate gathering of data from students who were within the age specified. The convenience sampling technique was used in selecting the participants from the classes at the third stage. The number of students selected from each class was proportional to the total number of

students in the school. A structured questionnaire was used to collect the data, which included sections on basic socio-demographic profile, knowledge of hand washing, accessibility of hand washing equipment and the extent of practice of hand washing among the participants, including the limiting factors. The instrument was pre-tested on 20 students from a school that was not included in the study. For internal consistency the Cronbach alpha was calculated at 0.78. Data was collected from participants during their break period after obtaining permission from the principals and class teachers. Students were given adequate information about the research process and consent was given by the students. Questionnaires were filled, assistance was given where necessary and filled questionnaire were retrieved immediately.

Data was analysed using mean, frequency, and percentages with the Statistical Package of Social Sciences (SPSS) Version 24.0.

Concerning the knowledge of hand washing, mean of 0-3 was considered poor, 4 was fair, while 5 and above was good. For other items, such as accessibility to hand washing equipment, percentages of 0-49.9%, 50-69.9% and 70-100% were classified as poor, fair and good respectively. For the practice of hand washing, mean below 1.50 was viewed as poor, 1.50 to 1.99 was fair and 2–2.50 was good. For the items on factors that limit hand washing, mean score of less than 2.50 was considered non-significant as a limiting factor.

Ethical Consideration: The researchers obtained ethical approval from the Edo State Ministry of Education Ethical Review Committee. Adequate information was given on the research process and the objectives. Participation was voluntary, oral, and written consents were obtained. Confidentiality was maintained throughout the conduct of the study.

RESULTS

Table 1 shows the demographic details of the participants. More than half of the participants (69.5%) are within the age range of 15-19 years. Students in SS3 are least represented in

the study (20%) when compared with SS1 (44%) and SS2 (36%). Almost half (45.0%) of the mothers had secondary education, while only 16 (8%) had only primary education. Most of the mothers were civil servants.

Table 1: Socio-Demographic Characteristics of Study Participants (n=200)

Variables	Attributes	Frequency	Percentage
Age (years)	10-14	61	30.5
	15-19	139	69.5
Sex	Female	93	45.5
	Male	107	53.5
Ethnic group	Bini	92	46.0
	Hausa	11	5.5
	Yoruba	20	10.0
	Igbo	27	13.5
	Others	50	25.0
Religion	Christianity	185	92.5
	Islam	11	5.5
	Traditional	3	1.5
	Others	1	0.5
Level of education	SS1	88	44.0
	SS2	72	36.0
	SS3	40	20.0
Mother's educational level	Primary	16	8.0
	Secondary	90	45.0
	Tertiary	35	17.5
	Others	59	29.5
Mother's occupation	Trader	50	25.0
	Civil servant	69	34.5
	Private worker	33	16.5
	Others	48	24.0

Note: SS = Senior Secondary

Table 2 presents the participants' responses to questions regarding their knowledge of hand washing. Overall, the mean knowledge score was 5.3 out of a total of 8. Majority of the students reported that the hands are the main pathway of the transmission of germs (96%). However, almost half the students (42.5%) agreed that hand hygiene was the most

important means of avoiding the transmission of harmful germs. Again, just a bit more than half of the students (58%) knows that avoiding artificial fingernails and keeping the nails short are means of hand hygiene. This study observed that the respondents' overall level of knowledge of hand washing is good (66%).

Table 2: Knowledge of hand washing (n=200)

Items	True	False
Hands are the main pathways of germs transmission	192(96.0%)	8(4.0%)
Hand hygiene is therefore the most important measure to avoiding the transmission of harmful germs and prevent associated infection	85(42.5%)	115(57.5%)
Hand washing is the act of cleaning one's hands with or without the use of water or another liquid or with the use of soap for the purpose of removing soil, dirt and microorganisms	128(64.0%)	72(36.0%)
It is ideal to wet hands under running water before adding soap	168(84.0%)	32(16.0%)
The duration of the entire procedure of hand washing is 40 to 60 seconds	148(74.0%)	52(26.0%)
One way of keeping hand hygiene is to avoid artificial fingernails and keep natural nail short	116(58.0%)	84(42.0%)
Hand washing with the right Technique covering all surface of the hands at the right time is more important than the length of time of hand washing	155(77.5%)	45(22.5%)
Hand washing can be done properly with only clean water even without the use of soap.	123(61.5%)	77(38.5%)
Mean Knowledge score	69.68%	

Table 3 illustrates the participants' reported hand washing practices. The results indicate that 20 (10.0%) of the participants never wash their hands after using the restroom, while 17 (8.5%) do so seldom, 22 (11.0%) do it often, and 141 (70.5%) always wash their hands. In terms of washing hands before and after eating, 16 (8.0%) of the participants never wash their hands, 30 (15%) do so seldom, 32 (16.0%) do it often, and 122 (61%) always wash their hands. Additionally, 38 (19.0%) of the participants never wash their hands after sneezing or coughing, while 38 (19.0%) do so seldom, 54 (27.0%) do it often, and 70 (35%) always wash their hands. The study also observed that 28

(14.0%) of the participants never thoroughly wash their hands for 10 to 15 seconds before rinsing and drying, while 24 (12.0%) do so seldom, 42 (21%) do it often, and 78 (39%) always follow this practice. Moreover, 67 (33.5%) of the participants never use hand sanitizers, while 44 (22.0%) do so seldom, 42 (21%) do it often, and 43 (23.5%) always use hand sanitizers. Finally, 40 (20%) of the participants never use soap to wash their hands, 13 (6.5%) do so seldom, 48 (24%) do it often, and 99 (49.5%) always use soap. Overall, this study indicates that the participants' hand washing practices are high, with a rate of 68.4%.

Table 3: Practice of hand washing among secondary school students (n=200)

	Never (0)	Seldom (1)	Often (2)	Always (3)	Mean	Decision
Washing of hands after visiting the toilet	20 (10.0)	17 (8.5)	22 (11.0)	141 (70.5)	2.42	Good
Washing of hands before and after eating	16 (8.0)	30 (15.0)	32 (16.0)	122 (61.0)	2.30	Good
Washing of hands after sneezing/coughing	38 (19.0)	38 (19.0)	54 (27.0)	70 (35.0)	1.78	Good
Vigorously washing of hands thoroughly for 10 to 15secs before rinse and dry	28 (14.0)	24 (12.0)	70 (35.0)	78 (39.0)	1.99	Good
Use of hand sanitizers	67 (33.5)	44 (22.0)	42 (21.0)	47 (23.5)	1.35	Poor
Use of soap to wash hands	40 (20.0)	13 (6.5)	48 (24.0)	99 (49.5)	2.03	Good
Overall mean	17.42%	13.8%	22.3%	46.1%	1.98%	

Table 4 shows the participants' response to the question on their accessibility of hand washing equipment. Findings shows that 139(69.5%) of respondents said yes to the question stating that “Is there a functional tap in your school?” and 61(30.5%) said no. Also, 38(19%) of respondents said yes to the question stating that “Is there a bowl of clean water in your class to wash soiled hands” and 162(81.0 %) said no. Furthermore, result reveals that 32(16.0%) of respondents said yes to the question stating that “Is there provision for soap for hand washing in

your class room” and 168(84.0 %) said no, while 36(18.0%) of respondents said yes to the question stating that “Is there provision for hand drying towel or disposable towel to dry hands after washing it in your class and 164(82.0 %) said no. Lastly, 30(15.0) of respondents said yes to the question stating that “Is there provision for hand sanitizer in your school” and 170(85.0 %) said no. This study indicates that the respondents' accessibility of hand washing equipment is poor (27%).

Table 4: Accessibility to hand washing equipment (n=200)

Items	Yes	No
Is there a functional tap in your school?	139(69.5%)	61(30.5%)
Is there a bowl of clean water in your class to wash soiled hands?	38(19.0%)	162(81.0%)
Is there provision for soap for hand washing in your classroom?	32(16.0%)	168(84.0%)
Is there provision for hand drying towel or disposable towel to dry hands after washing it in your class?	36(18.0%)	164(82.0%)
Is there provision for hand sanitizer in your school?	30(15.0%)	170(85.0%)
Overall mean	27.6%	72.4%

Further, **Table 5** shows the factors the participants considered as limiting the practice of hand washing. It was reported that lack of time limits the practice of hand washing to a

very small extent (35.5%), while lack of water limits the practice to very great extent (25.5%). It was observed that none of the responses is significant.

Table 5: Factors that limit hand washing among secondary school students (n=200)

	TVSE (1)	TSE (2)	TGE (3)	TVGE (4)	Mea n	Decisi on
Ignorance	83 (41.5)	42 (21.0)	30 (15.0)	45 (22.5)	2.19	NS
Lack of availability and accessibility of clean water	77 (38.5)	45 (22.5)	27 (13.5)	51 (25.5)	2.26	NS
Unattractive hand washing facilities	60 (30.0)	52 (26.0)	33 (16.5)	55 (27.5)	2.42	NS
Lack of time	71 (35.5)	64 (32.0)	33 (16.5)	32 (16.0)	2.13	NS
Lack of hand washing equipment such as soap	61 (30.5)	55 (27.5)	28 (14.0)	56 (28.0)	2.40	NS
Laziness	71 (35.5)	44 (22.0)	32 (16.0)	53 (26.5)	2.34	NS

Key: TVGE = To a Very great extent; TGE = To a great extent; TSE = To a small extent; TVSE = To a very small extent; NS = Not significant

Finally, Table 6 shows that there is significant difference ($p < 0.000$) between the knowledge score of students in private schools when

compared with those in public schools. Private schools reported higher knowledge score than public schools.

Table 6: Mean comparison of knowledge of hand washing among public and private school students

School ownership	Mean	SD	t-value	P
Public	5.02	1.26	3.591	0.000
Private	5.65	1.23		

DISCUSSION

This study assesses the knowledge and practice of hand washing among senior secondary school students. The study includes a slightly higher number of boys ($n=107$) compared to girls ($n=93$). It was found that the respondents' knowledge level of hand washing is good (66%). This differs from the findings of Almoslem et al. (2021), which reported that only 46% of students believed in the protective ability of hand washing against diseases. However, this study aligns with the results of Oluwole et al. (2020), where 64% of 420 students in Lagos, Nigeria demonstrated high knowledge level of hand washing. Similarly, Tamilarisi et al. (2016) concluded that 85.6% of 450 adolescents in Chennai, India had adequate knowledge of hand washing. Furthermore, the participants' practice of hand washing in this study is high (68.4%), which is similar to the findings of Oluwole et al. (2020) where approximately 71% of students exhibited good hand washing practice. In Tamilarisi et al. (2016), a higher percentage of students (80.7%) washed their hands after using the restroom and (77%) before eating, compared to 70.5% and 61% respectively in the present study.

This study also highlights the poor accessibility of hand washing equipment among the respondents. This finding is consistent with the results of Rotimi and Noem (2020), who conducted a more extensive study among secondary school students ($n=620$) in Lagos, Nigeria. Their study revealed a clear inadequacy in the provision of WASH materials, particularly wash hand

basins, with 40.2% of respondents reporting that they were never provided. The inadequacy of hand washing materials has also been observed in other studies, including those by Oluwole et al. (2020), Ehoche et al. (2021), and Twinomuhwezi et al. (2022). Furthermore, this study demonstrates a significant difference ($p < 0.000$) in the knowledge score between students in private schools and those in public schools. The reason for this difference is currently unknown, as no previous study comparing the knowledge level of these groups was readily available for comparison.

The findings from this study shows that more efforts need to be put into promoting effective hand washing among students in secondary school in Benin City. Hand washing promotion programs can be organized to improve the hand washing practices of students (Seimetz et al., 2017). Some of the benefits include creation of awareness, provision of WASH materials and making hand washing a normal day-to-day activity for the students. Also attractive, clean, functional, and accessible hand washing materials facilitates adequate hand washing. Children of school age are more receptive to learning and behavioural changes. Therefore, schools are suitable for successful health promotion program (Tamilarasi et al., 2016).

Previous studies showed no significant relationship between the knowledge of hand washing messages and the practice of hand washing. Although there is a high degree of knowledge of hand washing, the practice remained low in comparison (Ezeaka et al., 2020; Sharma et al., 2021). They suggested that the message about hand washing should be

developed and circulated in an attractive and interesting manner. The present study highlights an obvious gap in the knowledge and practice of hand washing among the secondary school students.

CONCLUSION AND RECOMMENDATIONS

Hand washing, despite its simplicity, plays a crucial role in disease prevention. However, this study reveals that knowledge about hand washing did not translate into practice among the students. Additionally, some students exhibited deficiencies in their knowledge regarding hand washing. As a result, there is still much to be done in terms of health education for secondary school students, specifically focusing on promoting the practice of hand washing. It is also necessary to ensure the provision of adequate WASH materials in schools.

Targeted health education programs should be implemented to emphasize the importance of hand washing. Additionally, it is recommended to include secondary school teachers in future studies to gain insights into their perceptions and attitudes towards hand washing. Furthermore, hand washing facilities should be made readily available in strategic locations throughout the school premises. Future studies on this topic should focus not only on knowledge assessment but also on interventions and practical application of hand washing practices.

REFERENCES

- Admasie, A., Guluma, A., & Feleke, F. W. (2022). Handwashing Practices and Its Predictors Among Primary School Children in Damote Woide District, South Ethiopia: An Institution Based Cross-Sectional Study. *Environmental health insights*, 16, 11786302221086795. <https://doi.org/10.1177/11786302221086795>
- Almoslem, M.M., Alshehri, T.A., Althumairi, A.A., Aljassim, M.T., Hassan, M.E. & Berekaa, M. M. (2021). Handwashing knowledge, attitudes, and practice among students in Eastern Province Schools, Saudi Arabia. *Journal of Environmental and Public Health*, <https://doi.org/10.1155/2021/66384433>
- Azuogu, V. C., Ilo, C. I., Nwimo, I. O., Azuogu, B.N., & Onwunaka, C. (2016). Extent of hand washing practice among secondary school students in Ebonyi State, Nigeria. *International Journal of Education, Learning and Development*, 4(7), 11-22.
- Ehoche, E. E., Obioma, F., & Ogwuche, L. R. (2021). Knowledge and practice of hand washing among secondary school students in Otukpo, Nigeria. *Journal of Health Technology*, 17(2), 64-76. <https://doi:10.29238/jtk.v17i2.956>
- Ezeaka, N. B., Ezeoke, C. B., & Nwodu, E. G., (2020). Evaluating knowledge and practice of hand washing messages among secondary school students in Anambra State. *Journal of Communication and Media Studies*, 1(1), <https://doi:10.47851/naujocommed.v1i1.73>
- Hussein, A. M., Salih, A., Adam, S., Khattab, A., & Burma, A. (2021). Knowledge, attitude and practice among pupils towards hand washing in Basic Schools-Ombadda Locality-Khartoum State. *Journal of Epidemiology and Public Health Reviews*, 6(2) <https://dx.doi.org/10.16966/2471-8211.213>
- Innocent, D. C., Obani, S. I., Ezejindu, C. N., Uwaezuoke, A. C. & Vasavada, A. (2022). Personal Hygiene practices among selected secondary schools at south eastern Nigeria. *International Journal of Research and Scientific Innovation*, 9(8), 71-78.
- Oluwole, E. O., Ajayi, A. S., & Olufunlayo, T. A. (2020). Perception and practice of handwashing among public secondary school students in Somolu Local

- Government Area, Lagos, Nigeria – a cross-sectional study. *Journal of Clinical Sciences*, 17: 136- 144. https://doi:10.4103/jcls.jcls_5_20
- Rotimi, W. O. & Noem, T. T. (2020). Availability and adequacy of WASH facilities in secondary schools in Lagos State, Nigeria. E3S Web of Conferences 211, 01023. The 1st JESSD Symposium 2020. https://doi.org/10.1051/c3sconf/2020211_01023
- Seimetz, E., Slekiene, J., Friedrich, M.N.D., & Mosler, H. (2017). Identifying behavioural determinants for interventions to increase handwashing practices among primary school children in rural Burundi and urban Zimbabwe. *BMC Research Notes* 10, 280. <https://doi.org/10.1186/s13104-017-2599-4>
- Sharma, M. K., Khanal, S. P., Acharya, D., & Acharya, J. (2021). Association between Handwashing Knowledge and Practices among the Students in Nepal. *Prithvi Academic Journal*, 4, 7–17. <https://doi.org/10.3126/paj.v4i0.37005>
- Tamilarasi, R., Arunmozhi, R., Karthick Raja, V., & Rajajeyakumar, M. (2016). A study to assess the knowledge and practice of hand washing among school going adolescents in Chennai. *International Journal of Health Sciences and Research* 6(8): 147-155. https://www.ijhsr.org/archive_ijhsr_vol.6_issue8.html
- Twinomuhwezi, B. Byamukama, T., & Nshakira, N. (2022). Factors associated with hand washing practices among secondary schools students in Ndorwa East Constituency in Kabale District. *Texila International Journal of Public Health*. <https://doi:10.21522/TIJPH.2013.09.04.Art004>
- Vishwanath, R., Selvabai, A.P., & Shanmugam, P. (2019). Detection of bacterial pathogens in the hands of rural school children across different age group and emphasizing the importance of hand wash. *Journal of Preventive Medicine and Hygiene*, 6 0 (2) , E 1 0 3 - E 1 0 8 . <https://doi.org/10.15167/2421-4248/jpmh2019.60.2.1186>

