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AWARENESS CAMPAIGNS AND HAND HYGIENE PRACTICE AMONG SECONDARY SCHOOL STUDENTS

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Abstract

Nigeria's low level of sanitation hygiene provoked the increasing prevalence and containment of infectious diseases such as bird flu, acute respiratory infections, Ebola, Lassa fever, polio, diarrheal, pneumonia, and dysentery. These diseases can attack vulnerable groups like children. Therefore, awareness of hand hygiene practices is still needed to prevent the spread of diseases. This study analyzed the exposure to campaign messages on hand washing and hygiene sanitation among Lagos State, Nigeria, secondary school students. A total of 620 students participated in the study and were selected through multi-stage sampling methods. Research instruments adopted included questionnaires and observation of hand hygiene facilities and practices among students. Quantitative data were analyzed through the Statistical Package for Social Sciences (SPSS). Findings show that about 97% of respondents know the need to wash their hands. Furthermore, interpersonal sources of information on hand hygiene available to respondents included parents and family members (58.9%), followed by medical officers (13.4%), public health campaign organizations (11.7%), and teachers (9.9%). The three most dominant influences on hand washing practice among respondents are parents (46.4%), teachers (23.3%), the media (14.5%), and private business organizations (12.1%) in that order. Based on the correlation coefficient (r=0.256; p=0.000), the study established a significant positive relationship between exposure to campaign messages and hand sanitation among the study group, indicating that exposure to hand sanitation messages positively influences good handwashing behavior among school children. This study has implications for government authorities, policymakers, and development partners on the need to engage traditional and new media channels to complement interpersonal sources of information to enhance proper hand sanitation among students in Nigeria and other sub-Saharan African countries.

Keywords: Behaviour; Campaigns; Health; Hand hygiene; School students.

1. Introduction

In an era of increasing globalization, diseases easily spread across borders. However, the ease of international travel and the realities of global commons heighten concerns about pandemics. The spread of infectious diseases such as bird flu, the risk of Ebola Virus Disease (EVD), Lassa fever polio, diarrhoea, pneumonia, and acute respiratory infections (ARI), notably the COVID-19 pandemic, are alarming and call for a global response. Number 3 of the United Nations (U.N.'s) global goals, Sustainable Development Goal (SDG), as well as

Goal 6 (2), emphasize the need for universal access to adequate and equitable sanitation of all to promote the well-being and health of societies (United Nations, 2022). Accordingly, this study investigated the information sources and hand sanitation among Lagos State, Nigeria, secondary school students.

Enduring hand hygiene is necessary and desirable to safeguard the well-being of children and youth (Mohamed et al., 2023; Al Nadwi et al., 2022; Berhanu et al., 2022; Jatrana et al., 2021). Mohamed et al. (2023) maintained that hand hygiene was an effective strategy for preventing Covid-19. It also prevents other infectious diseases and respiratory and gastrointestinal infections among children. This strategy also helps to reduce disease-induced absenteeism among school children. An earlier study by Peltzer and Pengpid (2014) estimates that, on average, 1.4 million deaths of children of school age are prevented in India due to handwashing with soap. Similarly, another study by Steiner-Asiedu et al. (2011) believes that since the global handwashing campaign intensified in 2009 due to the pandemic influenza H1N1, handwashing awareness and facilities have been scaling up globally. It became significant due to the outbreak and continuous spread of the Covid-19 pandemic (United Nations, 2022).

There is also the need for handwashing for children because of their proximity to child-care settings which can lead to a higher risk of spreading infectious diseases within the age group (Ginja et al., 2019). Hand washing is globally recognized as the most straightforward, cheapest, and most effective means of halting the spread of infection (Besha et al., 2016). These infections are most prevalent in some of the most disadvantaged sections of the world (Jones et al., 2020). Also, absenteeism in schools in developing countries is linked to improper handwashing. However, good hand sanitation tends to be low in Nigeria and some other developing countries (Akpabio & Rowan, 2021).

Shehu & Nazim (2022) noted that even though Nigeria is a signatory to the Sustainable Development Goals (SDGs), with Goal 6 stating that nations should show firm commitment towards a guarantee of access to water and sanitation, its commitment to Water, Sanitation, and Hygiene (WASH) is still weak as it is ranked 152 out of 157 countries studied. There is increased commitment towards improvement on SDG Goal 6 in many areas. According to Gbadegesin & Akintola (2020) and the Federal Ministry of Water Resources, the declaration of a state of emergency on sanitation and hygiene contained in the Presidential Executive Order 009 is a commitment shown by the government to improve the situation by 2025.

This study investigates information sources and H.S. among students in secondary schools in the location of this study. The study hypothesized that 'There is no significant positive relationship between exposures to hand sanitation messages and practice among students in secondary schools in Lagos State, Nigeria. However, good hand sanitation tends to be low in Nigeria and some other developing countries. This study investigates information sources and hand sanitation among students in secondary schools in the location of this study. This study hypothesized that no significant positive relationship exists between exposure to hand sanitation messages and practice among students in Lagos State, Nigeria, and secondary schools.

A communication campaign is "the strategic design of a series of messages sent to one or more targeted populations for a discrete period in response to a positive or negative situation affecting the organisation," community, or society (Reddi, 2019). Health communication is the purposive attempt to influence behaviours in large audiences within a specified period, using an organized set of communication activities and featuring messages in multiple channels to motivate behaviour change in individuals and society (Sood et al., 2014).

There are specific steps to carry out a health campaign (Popescu & Verman, 2000). First, it is necessary to identify the behavior that needs changing by gathering data which will lead to designing a project. This step is followed by the team's approach to mounting a successful health campaign. Here, each member of the team must be confident enough to contribute. A clear message must be communicated, especially with all media channels. For the message to be compelling, it must be attractive, accessible, acceptable, targeted, and convincing. The message strategy must provide opportunities to promote community interaction through interactive sessions, with health experts serving as resource persons. In addition, redundancy is needed, or creative repetition of messages, to enhance communication effectiveness (Olatunji, 2011). Health promotion specialists increase citizens' confidence in the message and are also aimed at influencing government policy. Effective health campaigns must be purpose-driven and utilise a multimedia approach. Health campaigns are often initiated and executed by a team whose members have assigned roles and work together to achieve predetermined goals and objectives. It is also essential that a health campaign is executed within a time frame and must be evaluated to determine the outcomes of the campaign.

Across the globe, water, sanitation, and hygiene issues have improved significantly, but the improvement is still not far-reaching (McMichael, 2019). Water is, however, an essential element in sanitation (Hope et al., 2020). World Health Organization (WHO) (2021) report shows that only 71% of the global population still has essential handwashing with soap and water at home, and 2.3 billion people globally lack WASH facilities, of which 670 million people lack handwashing facilities. This number is a significant setback with the deadline for attaining SDGs in its final quarter.

In Ghana, for instance, Appiah-Brempong et al. (2018) reported that 33% of municipal schools had children wash their hands in shared bowls, while 24% had pupils drying their hands with the same cotton towel after handwashing. They also observed that only 16% of schools in the study had functional water facilities. Where those water facilities were available, only 3% of them deemed it essential to have a separate handwashing station. The situation is similar in Kolladiba, Northwest Ethiopia, where Wolde et al. (2022) reported that handwashing is very poor and generally practiced mostly among educated households.

In a study, Jatrana et al. (2021) established the parameter for determining handwashing practices. This study includes classifications such as “appropriate,” “inappropriate,” and “lacking.” Other practices are “handwashing before eating,” “handwashing after using the toilet,” and “handwashing with soap.” The researchers also investigated the influences of socio-demography health, lifestyle, school, and family on appropriate handwashing among students. Based on the global orientation of the study, the sample size comprised 354 422 adolescents aged 13-17 years. The study revealed that 30.3 percent of the sample size practiced appropriate hand hygiene. It consequently advocated hand hygiene awareness campaigns targeting students and their parents or guidance. The present study has a limited focus and geographical spread, unlike the one carried out by Jatrana et al. (2021). However, this study benefits from the conceptual clarifications regarding appropriate hand hygiene techniques.

A study on hand sanitation (HS) and resources in a teaching hospital in Ghana, a neighboring West-African country, was conducted by Yawson and Hesse (2013). This study is in response to the noticeable incessant transfer of microorganisms by the medical personnel in hospitals at Korle-Bu, one of the largest Teaching Hospitals in Ghana. The observation lasted for three weeks and detailed patient contact, HS compliance, and handwashing techniques among the health workers. The survey indicated that there was palpable defiance of HS among health workers against the WHO-recommended procedures for effective HS,

either with soap and water or alcohol hand rub, particularly in high-density areas. This observation was attributed to multiple factors in its promotion most especially in complex developing countries where limited resources are significant barriers to effective H.S. This was evident in the research report that only 3 of the 15 centers in the hospital had alcohol hand rub for use by the health workers. Even the health workers did not make use of the few hands rub that were available. Although very instructive, the study by Yawson and Hesse (2013) is remarkably different from our present study, which investigated the influence of information sources on H.S. practice among students in secondary schools in Lagos State, Nigeria.

Xuan & Hoat (2013) investigated hand sanitation behaviour, including washing hands with soap among students in a multi-ethnic rural North Vietnam community. The research took place in six selected schools and as well the homes of the students. The study reveals that 66% of the 319 students interviewed use soap to wash their hands. However, 10 out of 319 students carried out the handwashing protocol satisfactorily. The study shows a gap between awareness and practice of hand sanitation with soap. The students' homes that the researchers visited had access to soap and water, unlike the schools where soaps were not available for hand washing. The present one is limited to the school environment in Lagos State, Nigeria. However, the present study also investigated the hand hygiene practice among students.

Berhanu et al. (2022) investigated handwashing practices among public primary school children in Harari Town in the Eastern province of Ethiopia. The cross-sectional survey comprised 670 pupils and utilised the questionnaire, interview, and observation methods. The study established that one-third of the sample carried out proper handwashing. Factors influencing proper handwashing practice, according to the researchers (Berhanu et al., 2022), are grade or level of education, residency type of the pupils, the existence of role models (referents), availability of handwashing facilities, including accessibility to water and soap and membership of WASH Club in Schools. Unlike the public schools' focus (Berhanu et al., 2022), the present study cuts across public and private secondary schools in Lagos State, Nigeria. The present study did not investigate the role of WASH clubs in hand sanitation in schools.

Using a descriptive survey design and the questionnaire instrument, Birgili & Ugurlu (2019) evaluated the knowledge, belief, and practice of hand hygiene among nursing students in the Department of Nursing, Faculty of Health Sciences, Mugla Sitki Kocman University, Turkey. A total of 655 nursing students participated in the research. The study found that nursing students had a sound theoretical knowledge of hand hygiene and practiced it to some extent. In order to increase the level of practice of hand hygiene, the study recommended the need to increase students' awareness of hand hygiene and expose them regularly to training schemes on appropriate hand hygiene. The present study did not focus on Nursing school students but on secondary school students. However, the relevance of the Birgili & Ugurlu (2019) study is that it shows that theoretical knowledge of hand hygiene does not necessarily translate to appropriate practice.

In a qualitative study on factors perceived to facilitate or hinder handwashing among primary school students in Northwest Tanzania, Okello et al. (2019) established that improvement in the quality, number, and location of handwashing stations in schools, along with access to soap and water increases the chances of hand sanitation among students. The study also identified factors such as an increased understanding of the relationships between handwashing and the well-being of students, as well as exposure to hood handwashing techniques through practical demonstrations, predisposing pupils to good hand hygiene practice. However, Okello et al. (2019) submitted that inconsistency or outright failure of

school authorities to provide water, soap, and hand washing stations militate against good handwashing practices among students in Tanzania, the locale of the study.

Another related study, carried out in Makah City, Saudi Arabia, by Al Nadwi et al. (2022) among primary school pupils, investigated the effects of health education on knowledge and practice of handwashing, with a sample size of 139 pupils. It established that at the quasi-experimental design's post-intervention and follow-up stages, there was a remarkable improvement in handwashing knowledge and practice among primary school pupils. This research finding strengthens the need for increased education, awareness campaigns, and exposure to regular training of students to guarantee healthy hand hygiene practices. The findings also align with the position of Watson et al. (2019), which concluded that interventions in hand hygiene usually led to improvements in practice.

A study by Iyam (2019) in Obudu Local Government Area of Cross River State, Nigeria, investigated the relationship between school-based handwashing practice and students' health. It had a sample size of 200 students. It established that students' appropriate handwashing practice positively influences their well-being. The study by Iyam (2019) is partially relevant because it was conducted in a Local Government Area in Nigeria. However, the present study is more extensive in scope than Iyam (2019), and the present study did not investigate the correlation between hand hygiene and students' health.

In a related development, Dangis et al. (2023) evaluated the effectiveness of a gamified live feedback intervention on better handwashing practices of preschool children in early education and care settings in different locations around Turku, Finland, and Bamberg, Germany. The researchers referred to "gamification" as using game elements in a non-game setting. This research was based on the assumption that the uses of games tend to increase children's motivation to carry out any particular assignment. They noted that "enhancing children's experiences with positive and enjoyable approaches can support them grow into healthy adults" (Dangis et al., 2023). The study concludes that a successful hand hygiene practice is enhanced by providing the required training to children; installing handwashing stations, water, and soap; and utilizing digital technologies, including computer games, videos, and video cameras, to improve and monitor handwashing behaviour among school children.

The Nigerian situation is not so far from the average in most developing and African countries. Federal Ministry of Water Resources (FMWR), Government of Nigeria, National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF) (2022) reports that children carry a preponderance of health burden from the unavailability of WASH facilities. It estimates that 74 percent of household members who suffer from diarrhoea are children. This staggering number is due to poor access to quality water and sanitation facilities. The report further states that eighty-four (84) percent of the households studied expressed dissatisfaction with the level of water supply they have accessed. Only about 24% of total schools studied have adequate water and toilet facilities.

Sequel to the review of related previous empirical studies carried out above. The present study attempts to fill the existing gap in the literature by providing empirical data to address the research problem on awareness and hand sanitation among students in Lagos State, Nigeria, secondary schools.

2. Methods

This study investigated awareness, sources of information, and hand sanitation among secondary students in Lagos State, Nigeria. There are 349 junior secondary schools (with 337, 724 pupils) and 322 senior secondary schools (with 229,980 pupils) in Lagos State,

Nigeria at the time of the study based on the estimation of Lagos State Government (Lagos State Ministry of Education, 2019). These include government-owned and privately-owned secondary schools in urban and rural settings in the state. The fieldwork took place between January and October 2019. The selected schools were delimited to Junior Secondary School class 3 (JSS3) and Senior Secondary Class 3 (SS3). The students are aged between 13 and 17 years.

The questionnaire used had both closed and open-ended items. It was developed by the researchers and called 'Handwashing campaign information sources, knowledge, and practices measurement inventory.' The questionnaire has the following sub-divisions: demographic data; awareness of messages on handwashing; sources of information; level of accuracy of knowledge; and healthful handwashing practices. The questionnaire was subjected to face and content validity. Reliability measures were taken by subjecting the questionnaire to the Cronbach Alpha test. The Cronbach Coefficient of 0.88 was obtained. The result is far above the threshold value of 0.7, which indicates that the questionnaire is reliable and fit for purpose. Quantitative data were collated and analysed through the Statistical Package for Social Scientists (14th Edition).

The research hypothesis was tested through correlation analysis. Also, observational and focus group discussion guides were used. A combination of purposive, stratified, and simple random sampling methods was used to select the sample size of 650 respondents. Lagos State was stratified into three senatorial zones. Two (2) local government areas were selected from each of the three senatorial zones. Also, Junior Secondary Class 3 (JS3) and Senior Secondary Class 3 students who participated in the study were selected from government-owned and private sector-owned secondary schools in the state. Discussion of findings focused on research questions and hypotheses.

3. Results and Discussions

A total of 672 copies of the questionnaire were administered. Although all the copies were returned, 620 (or 92. 2%) were usable and adopted for the research report. The five significant items on demographic data relate to the senatorial district, local government area, school, and type of ownership where respondents were drawn. About 33.1% of the 620 respondents attended schools in Lagos West; 38.1% were from Lagos East; while the remaining 28.9% attended schools in Lagos Central. Thus, most respondents surveyed attend schools in Lagos East senatorial zone.

Also, out of the 620 successfully surveyed, 14.0% of the respondents attend the schools located in Ikeja; 19.2% in Badagry; 18.9% in Somolu; 19.4% in Epe; 11.0% in Surulere; 17.7% of the respondents attend school situated in Mainland. Thus, 43.9% of the respondents attended schools in urban areas, while 56.1% of the respondents were in rural areas. Therefore, most (56.1%) of secondary school students are based in rural areas. In addition, 55.5% of the students attend public (or government) secondary schools, while 44.5% attend private secondary schools. Most of the students in the sample attend public schools.

About 15.2% of the respondents fall within the 10-12 age bracket; 54.5% fall within the 13-15 age bracket; 29.5% are between 16 and 18 while 0.8%, the least of the categories, are aged 19 years and above. About 50.2% of the respondents were junior secondary school students. In comparison, 49.8% were senior secondary school students, with near parity gender distribution (50.2% males and 49.8% females), which may reflect the gender distribution at the national level.

Table 1. Frequency of respondent receiving messages on hand washing

I have learned or heard about handwashing	N	Often		Sometimes		Rarely		Never	
		n	%	N	%	N	%	n	%
Radio	618	512	82.9	78	12.6	16	2.6	10	1.9

Table 1 shows that a majority of the 512 respondents (82.9%) claimed to have heard about the handwashing messages, 78 respondents (12.6%) sometimes heard, 16 respondents (2.6%) rarely heard, and 12 respondents (1.9%) never heard about hand washing messages. Thus, a significant number (82.9%) of the respondents are very aware of handwashing messages.

Table 2. Media and non-mediated sources of messages about hand washing

Q1: Through which of these channels have you received messages about the need to keep your hands clean always?	Frequency	%
Parents and family members	364	58.9
Friends and peers	4	0.6
The school teachers	61	9.9
Health campaign organization/groups	72	11.7
Medical officers in hospitals and clinics	83	13.4
Traditional media of newspapers/radio & television	12	1.9
New media, including the Internet and social media	22	3.6
Total	**618**	**100.0**

Q=question

Table 2 shows that about 58.9% of the respondents claim they always receive messages about the need to keep their hands clean from their parents and family members, followed by medical officers, public health campaign organisations, and teachers. The role of media as active sources of information, education, and entertainment on hand washing was consistently rated low. New media, including the Internet and social media, and traditional newspapers/radio/ television media are deficient compared to interpersonal sources. Apparently, the most frequent channel through which secondary school students receive messages about always needing to keep their hands clean are their parents and family members. The study also investigated how often students receive messages on hand washing through the given source (Table 3).

Table 3. Frequency of receipt messages on hand washing

Source of message	N	Very often		Often		Sometimes		Never	
		n	%	n	%	n	%	n	%
Radio	618	194	31.4	133	21.6	214	34.7	77	12.4
Television	618	260	42.1	198	32.0	129	20.9	31	5.0
Newspaper or magazine	618	75	12.2	109	17.7	264	42.8	170	27.5
Handbill or pamphlets	618	57	9.2	88	14.3	186	30.1	287	46.4
Posters	618	108	17.5	130	21.1	239	38.8	141	22.8
Video film	618	152	24.7	146	23.7	180	29.2	140	22.6
Internet service or social media	618	210	34.0	145	23.5	148	24.0	115	18.6
Drama presentations	618	97	15.7	115	18.7	206	33.4	200	32.3

Source of message	N	Very often		Often		Sometimes		Never	
		n	%	n	%	n	%	n	%
Music	618	81	13.1	84	13.6	150	24.4	303	49
Interaction with friends	618	147	23.8	159	25.8	221	35.8	91	14.7
Doctors, nurses, and other health workers	618	345	55.8	130	21.0	105	17.0	38	6.1
Advocacy groups	618	90	14.6	118	19.1	198	32.0	212	34.3
Parents	618	433	70.1	111	18.0	55	8.9	19	3.1
Teachers	618	326	52.8	183	29.6	78	12.6	31	5.0

Respondents reported that they received sparse messages on hand hygiene from newspapers/magazines, handbills/pamphlets, use of posters, drama presentations, music, and advocacy groups. It implies that the above sources do not serve as solid sources for providing messages on the need for hand washing. However, in that order, the most statistically desirable sources of hand hygiene information available to students are parents, teachers, medical officers, and television. Thus, this suggests that 'parents' and 'teachers' play a tremendous role in educating their children and students on the need for hand washing. The study also investigated the influence of handwashing messages on hand hygiene practice. The results of the data generated through the questionnaire are presented in Table 4.

Table 4. Influence of handwashing messages on hand hygiene practice

Q2: which of the following statements is correct?	**Frequency**	**%**
I have changed the handwashing practices because of the messages I encountered through the media	90	14.6
I have changed the handwashing practices because of the instructions I received from my parents/siblings	287	46.4
I have changed my HWPs because of the instructions I received from my teachers or instructors at School	144	23.3
I have changed my HWPs because of the instructions I received from Private Business Organisations when they visited our schools	75	12.1
I have changed my HWPs because of the instructions I received from NGOs when they visited our schools	9	1.5
My handwashing practices have remained the same over the years because no one taught me the best way to wash my hands	13	2.1
Total	618	100.0

Table 4 indicates that the most dominant influences on hand sanitation among respondents are parents (46.4%), teachers (23.3%), the media (14.6%), and private business organisations (12.1%) in that order. It can be observed that most of the respondents changed their handwashing practice because of the instruction they received from their parents, siblings, or class teachers. The finding on the critical role of parents in providing adequate knowledge, information, and practice of hand hygiene agrees with the outcome of another study (Jatrana et al., 2021), in which parents and other interpersonal sources influence adequate knowledge and practice of hand hygiene. For instance, Berhanu et al. (2022) advocated the increasing relevance of role models (referents) in inculcating adequate knowledge and practice of hand hygiene. This, therefore, suggests that the most effective ways secondary school students can

improve their handwashing practice are through parents or siblings, teachers, and role models, with limited influences emanating from media and private sector initiatives.

This study hypothesized that there is no significant positive relationship between exposure to handwashing messages and healthful handwashing practices among students in secondary schools in Lagos State, Nigeria. This hypothesis was tested using a correlation technique (either Pearson or Spearman correlation coefficient). Meanwhile, the choice between the correlation above computation methods depends on the test of normality of the variables (exposure to handwashing and healthful practices). Thus, Table 5 shows the normal test result of the variables.

Table 5. Normality test results

Variable	Kolmogorov-Smirnov			Shapiro-Wilk		
	statistic	df	p-value	statistic	df	p-value
Exposure	0.050	619	0.001	0.993	617	0.007
Healthful practices	0.076	619	0.000	0.914	617	0.000

As shown in Table 5, the Kolmogorov-Smirnov statistic (stat. = 0.050, p = 0.001) and the Shapiro-Wilk statistic (stat. = 0.993, p = 0.007) for the normality tests reveal that both variables (exposure to handwashing messages and healthful practices) are normally distributed since the p-values are less than 5% level of significance (statistically significant). Thus, the previous test results suggest using Spearman Rank correlation techniques (non-parametric) to test the hypothesis rather than the Pearson Product Moment Correlation method (a parametric testing technique).

Table 6. Correlation analysis results

Sample (n)	617
Spearman correlation coefficient (r)	0.256
p-value	0.000
Level of significance (1%)	0.01

Table 6 presents the result of the correlation analysis between exposure to messages on hand washing and hand hygiene sanitation practice among students in secondary schools in Lagos State. More specifically, the correlation coefficient (r = 0.256; p = 0.000) indicates a positive but weak significant relationship between exposure to information and hand sanitation. This result suggests that exposure to messages on hand hygiene has a positively significant relationship with hand washing practice among secondary school students. Thus, the null hypothesis that "there is no positive relationship between exposure to messages on handwashing and hand hygiene practices among secondary school students in Lagos metropolis" is rejected since the p-value is less than the level of significance of 5%. This result indicates that exposure to hand sanitation messages positively influences hand sanitation.

Therefore, the present study's findings are similar to previous ones by Iyam (2019) and Al Nadwi et al. (2022). For instance, Iyam (2019) established a positive relationship between exposure to hand hygiene knowledge and practice of good handwashing, just as Al Nadwi et al. (2022) found a positive relationship between handwashing knowledge and hand hygiene practice among primary school pupils. It will therefore be necessary for sustained hand hygiene campaigns among the students and a larger population of citizens to prevent

infections and diseases associated with poor hand sanitation, as contended by Mohamed et al. (2023), Al Nadwi et al. (2022), Berhanu et al., (2022), and Jatrana et al. (2021).

Awareness of health campaigns could come from information through mediatized or non-mediatized, interpersonal sources, or a combination of both. Table 1 indicates that the respondents admitted receiving hand sanitation information mostly from interpersonal sources, while the mediated sources (television, newspapers, and internet sources) are rated very low. During one of the focus group sessions, one participant pointed attention to the role of classroom teachers in creating awareness and inculcating hand sanitation culture in students. For instance, Participant J in one of the urban-based secondary schools said: “When I was in primary school, our teacher told us that hand sanitation is good because it can prevent us from germs when we go out for a break and after the break, we must wash our hands before we eat, we must wash our hands.” This study confirms the outcome of another study by Okello et al. (2019) that increasing understanding of the relationships between handwashing and the well-being of students promotes good hand hygiene practice among students.

Public health is critically important to all community, society, or nation members. Public health is an issue of global concern. This issue shows that interpersonal communication channels involving parents, siblings, and peers, as well as group communication in classrooms, are considered the most effective channels for engaging with students in matters relating to H.H. Contrary to the expectations of the researchers, media sources seem not to be compelling enough for disseminating information on hand sanitation.

The four most dominant influencers on hand washing practices among respondents are parents, teachers, the media, and private business organisations in that order. This suggests that the most effective ways secondary school students can improve their handwashing practice are through their parents or siblings, teachers, media, and private sector initiatives.

The tested hypothesis shows that exposure to hand sanitation messages influences the practice. The null hypothesis that "there is no positive relationship between exposure to messages on handwashing and hand hygiene practices among secondary school students in Lagos metropolis" is rejected since the p-value is less than the level of significance of 5%. This result indicates that exposure to hand sanitation messages positively influences the practice. It implies that the more students are exposed to information on hand hygiene, the higher their practice of hand hygiene.

Children receive their foundational education at home, surrounded by parents, siblings, and other household members, which may often involve grandparents. In addition, children observe directly and inadvertently mimic what parents and other superegos in the family do regularly. This may explain why parents and siblings ranked the foremost influencing forces on students' handwashing practices, as established in this study. Teachers and parents serve as powerful influencing factors in the HWPs of students. The continuous interactions between the individual, environmental factors, and the actual behaviour can explain this. Okello et al. (2019) established factors in the school environment that either facilitate or hinder good handwashing behaviour. Okello et al. (2019) identified factors such as exposure to good handwashing techniques through practical demonstrations and availability of handwashing facilities as variables that enhance good hand hygiene practice among students. This has relevance to the current findings.

The school is a powerful educational institution, particularly for children and young ones at impressionistic stages of life. This further indicates that students are aware of the role of parents and teachers in providing information, education, and communication (IEC) on hand hygiene. Social learning theory also claims that when a target population, in the case of

adolescents, is repeatedly exposed to handwashing messages and practices, they tend to mimic those habits. Activities such as hand washing culture before and after mail and toilet visits often occur at home and school. During every school session, children spend between six and eight hours at school for about five days a week. The conclusion of the present study that the dearth of handwashing facilities, including water, soap, and wash hand stations, tend to corroborate a similar finding by Okello et al. (2019) that inconsistency or outright failure of school authorities to provide water, soap, and hand washing stations hinder good handwashing behaviour among students in Tanzania, the locale of the study. Therefore, parents, school authorities, governments, and non-governmental authorities should take an active interest in providing quality, scientific, and evidence-based education to children concerning hand hygiene.

Moreover, this study shows that the potential of entertainment media, computer games, animations, drama, video films, and the like was not fully harnessed in creating mass awareness of hand hygiene among students in the state. The preceding agrees with the submission of a most recent study by Dangis et al. (2023), which confirmed in early education and care settings in different locations around Turku, Finland, and Bamberg, Germany, that the use of computer games and videos tend to increase children's motivation to carry out good handwashing behaviour. In the era of digitisation and the rising popularity of entertainment media, it is thus imperative to teach good hand hygiene to school children through entertainment media, computer games, animations, and cartoon characters.

4. Conclusion

This study established that students widely perceive parents, teachers, and medical officers as the most active interpersonal sources of information on handwashing awareness available to secondary school students in Lagos State, with mass media playing supportive roles. In addition, the study revealed that exposure of secondary school students to information, education, and communication on hand hygiene significantly influenced students' handwashing practice (HWP). This implies that the more one is exposed to information on hand hygiene, the higher the hand hygiene practice among the population. According to the findings, increased use of television, Internet and radio newspapers, magazines, handbills, pamphlets, posters, drama presentations, musical information channels, education, and communication to create awareness of hand hygiene is recommended. Similarly, there is the need for increased social responsibility advertising, cause marketing, and issue-advertising on hand hygiene in the larger society. Finally, we recommend that parents, guardians, school teachers, and administrators sustain hand hygiene awareness, education, and practices among children and wards.

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Author Contribution

Conceptualization, O.R.W.; Methodology, O.R.W.; Software, T.N.T.; Validation, O.R.W. and T.N.T.; Formal Analysis, O.R.W. and T.N.T.; Investigation, X.X.; Resources, O.R.W.; Data Curation, O.R.W.; Writing – Original Draft Preparation, O.R.W.; Writing – Review & Editing, O.R.W. and T.N.T.; Visualization, O.R.W.; Supervision, O.R.W.; Project Administration, T.N.T.; and Funding Acquisition, O.R.W.

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