African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 7, Issue 4, 2024 (pp. 222-231)
www.abjournals.org

IMPACT OF A HEALTH EDUCATION INTERVENTION PROGRAM ON PERSONAL HYGIENE KNOWLEDGE AND ATTITUDE AMONG FEMALE ADOLESCENTS FROM SELECTED SECONDARY SCHOOLS IN LAGOS STATE, NIGERIA

Akinbode Abiola Oluwatoyin[1], M. F. Olanrewaju (Prof.)[1], Ajayi Oluwaseun Chidera[1], Aina Oluwaseun James[1], Agboola Segun Mattew[1], and Ukachukwu Soyama Felix[2]

[1]Babcock University.

[2]University of Debrecen.

Cite this article:

Akinbode, A. O., Olanrewaju, M. F., Ajayi, O. C., Aina, O. J., Agboola, S. M., Ukachukwu, S. F. (2024), Impact of a Health Education Intervention Program on Personal Hygiene Knowledge and Attitude Among Female Adolescents from Selected Secondary Schools in Lagos State, Nigeria. African Journal of Health, Nursing and Midwifery 7(4), 222-231. DOI: 10.52589/AJHNM-AQG5X2LY

Manuscript History

Received: 28 Dec 2023

Accepted: 4 Feb 2024

Published: 13 Dec 2024

ABSTRACT: *Background: Personal hygiene is a practice that preserves health and prevents diseases particularly through personal cleanliness of the individual and good personal hygiene practices are critical to preventing infectious diseases and improving health outcomes. However, this study examined the impact of health education intervention programs on personal hygiene knowledge and attitude among female adolescents from selected secondary schools in Lagos State, Nigeria. Methodology: The quasi-experimental research approach was employed for the study. The population was 1,500 students. A sample size of 30 students for each group was derived using Cochran's formula. A systematic sampling technique was used to group the participants into experimental group (EG) and control group (CG) by selecting every 2nd student on class register. EG was assigned to health education modules on personal hygiene for 1 hour once weekly and CG had a training on prevention of HPV for 1 hour once a week, both for six weeks. Two research assistants were trained for 1 hour over a period of two days to serve as health educators. A structured validated questionnaire with Cronbach's alpha reliability index ranging from 0.75 to 0.80 was used to collect data. Data was collected at baseline, immediate post-intervention and six weeks follow-up. Data was analysed using descriptive, and inferential statistics at 5% level of significance. Results: Findings showed that at baseline, there was no significant difference ($p > 0.05$) in the mean scores of personal hygiene knowledge for the experimental group (17.06± 0.65) and the control group (18.82± 0.40). Also, at baseline, there was no significant difference ($p > 0.05$) in the mean scores of personal hygiene attitude for the experimental group (5.03 ± 0.54) and the control group (6.67 ± 0.31). Furthermore, there was a significant difference ($p < 0.05$) in the mean scores of personal hygiene knowledge between baseline for EG (17.06 ± 0.65) and 12th week follow-up (23.40 ± 0.17), and there was a significant difference ($p < 0.05$) in the mean scores of personal hygiene attitude between baseline for EG (5.03 ± 0.54) and 12th week follow-up (11.47 ± 0.14). There was also a significant difference ($p >0.05$) in the knowledge and perception of personal hygiene among female adolescents in the control group and artisans in the experimental group at 12th follow-up. Conclusion: The post intervention evaluation of personal hygiene knowledge and attitude among female adolescents in selected secondary schools in Lagos State has proven that the level of knowledge of participants on personal hygiene is very high. It was recommended that personal hygiene be closely tied to the availability of water and sanitation facilities. Therefore, every school should collaborate with local government authorities through advocacy for the water and sanitation facilities.*

KEYWORDS: Adolescents, Health education, Knowledge, Personal hygiene, Practices.

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 7, Issue 4, 2024 (pp. 222-231)

www.abjournals.org

INTRODUCTION

Hygiene is an important issue of concern and has deep-rooted connections with public health (UNICEF, 2023). The World Health Organization describes hygiene as "conditions and practices necessary to preserve health and prevent disease transmission." Personal hygiene therefore refers to maintaining the body's cleanliness (WHO, 2023).

In particular, personal cleanliness serves as an essential foundation for good self-care and hygiene (Gebreeyessus & Adem, 2018). Personal hygiene is a practice that preserves health and prevents diseases particularly through personal cleanliness of the individual and good personal hygiene practices is critical to preventing infectious diseases and improving health outcomes (Kumar et al., 2020). Personal hygiene encompasses various self-care activities, helping them adjust to the social norms of adulthood, where cleanliness is part of one's personality (Patwal, including bathing, toileting, maintaining general body hygiene, and grooming). Moreover, it is important to note that hygiene is a highly individualized matter influenced by personal values and practices (Kozier & Erb, 2015).

As children transition into adolescence, a period characterized by significant physical and physiological changes, the importance of hygienic self-care activities becomes increasingly crucial (Backes & Bonnie, 2019). This stage of development marks the onset of maturation within the human body, and as such, adolescents must pay more attention to personal hygiene practices. The transition from childhood to adulthood comes with new changes, such as hair growth and increased body odor. Hygiene helps keep the private parts clean and avoid body odor. At this time, the sweat glands are working, and regular bathing is required to prevent unpleasant odor and diseases. So young people should pay special attention to their personal hygiene as it helps improve comfort, boost confidence, self-esteem, and motivates them to lead a healthy lifestyle (2023).

Personal hygiene practices among female adolescents in Lagos State, Nigeria, are a matter of significant concern. Adolescence is a critical period marked by physical and physiological changes, making it a pivotal time to instill proper personal hygiene habits. However, there is evidence to suggest that many adolescent girls in Lagos State lack adequate knowledge and resources to practice good personal hygiene effectively (Akoteyon & Otusanya, 2023). Insufficient personal hygiene practices among adolescent girls can lead to a range of health issues, including skin infections, respiratory infections, urinary tract infections, and sexually transmitted infections (Patil et al., 2018).

Furthermore, the neglect of personal hygiene practices among female adolescents has far-reaching consequences for public health. Poor personal hygiene practices can lead to various health issues, such as skin infections, respiratory infections, urinary tract infections, sexually transmitted infections, reproductive tract infections and infertility, and also social issues. Additionally, inadequate personal hygiene contributes to the prevalence of diseases like diarrhea, worm infestations, malnutrition, anemia, and vitamin deficiencies, particularly among vulnerable populations living in slum areas. By addressing this neglected area of research and implementing effective interventions, we can potentially reduce the burden of preventable diseases, alleviate the burden on healthcare systems, reduce significant financial costs and improve the overall health outcomes of female adolescents in Lagos State. The findings of this study will not only contribute to the existing body of knowledge but also inform policy and

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

practice, paving the way for targeted interventions that empower adolescent girls and promote a healthier future for the community as a whole.

Peer influence is a powerful factor in adolescence, and it can affect personal hygiene behaviors. Students may adopt the hygiene practices of their peers, both positive and negative (Kabir et al., 2021). A study by Almoslem et al. (2021) revealed that students were more likely to practice good personal hygiene if they perceived their close friends as being hygienic. On the other hand, students with friends who had poor hygiene habits were more likely to follow suit (Almoslem et al., 2021). The role of parents in shaping their children's personal hygiene practices is essential. Parents who actively engage in promoting and modeling good hygiene behaviors tend to have children with better personal hygiene (Đurišić & Bunijevac, 2017). A study by Breiner et al. (2016) found a positive correlation between parental involvement and their children's adherence to hand hygiene practices. The school environment can significantly impact students' personal hygiene practices. Schools with adequate facilities and resources, such as clean toilets, handwashing stations, and hygiene education programs, tend to promote better hygiene behaviors among students (WHO, 2019).

METHODOLOGY

Study Design

For this study, a quasi-experimental design was employed, consisting of one experimental group and one control group, to assess the impact of health education on the personal hygiene of female adolescents in Lagos, Nigeria. The choice of a quasi-experimental design is appropriate since the groups were not randomly assigned and the sexual characteristics of the adolescents were not manipulated. This design has proven effective for similar studies as it allows for the identification of a comparison group or time period that closely resembles the treatment group or time period in terms of baseline characteristics. Prior to the intervention, a baseline data was collected from both the control and experimental groups. This was followed by the designed intervention in the experimental group for a period of six (6) weeks while the control group was given necessary attention but not the designed intervention. An outcome evaluation was carried out in both the control and experimental groups soon after the intervention. Then, at the twelfth (12^{th}) week, from the date of the first data, an impact evaluation was carried out in the two groups.

A sample size of 30 students for each group was derived using Cochran's formula. A systematic sampling technique was used to group the participants into experimental group (EG) and control group (CG) by selecting every 2^{nd} student on class register. EG was assigned to health education modules on personal hygiene for 1 hour once weekly and CG had training on prevention of HPV for 1 hour once a week, both for six weeks. Two research assistants were trained for 1 hour over a period of two days to serve as health educators.

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

Research Instrument and Data Collection

The research method chosen for this study was quantitative in nature. To create a reliable and valid instrument for data collection, the researcher gathered information from various sources including a review of relevant literature, as well as examining instruments used in similar studies. With this information, an appropriate instrument was developed for use in collecting data from the participants. The instrument was designed to ensure that it aligns with the research objectives and the research questions. The instrument was a semi-structured, participant-administered questionnaire, which was used to solicit information on demographic characteristics, knowledge and perception towards utilization PPE. The same instrument was administered at the baseline, immediate post intervention and 12-weeks follow up. A structured validated questionnaire with Cronbach's alpha reliability index ranging from 0.75 to 0.80 was used to collect data.

Table 1: Description of the Data Collection

Groups	Baseline Data	Interventions	Outcome Evaluation (end of intervention program)	Impact Evaluation (at 12th weeks)
Control Group	O	-	O	O
Experimental Group	O	X	O	O

Key: X = Intervention

O = Outcome

Study Variables

The independent variable for this study is health education intervention program while the dependent variable for this study is personal hygiene practices.

Data Analyses

The data collected for the study was collated, entered and coded using the Statistical Product for Service Solutions (SPSS) version 23. The data was cleaned by running a frequency analysis on each item and checking responses to ensure that the values were accurately coded. Data was analysed using descriptive and inferential statistics at 5% level of significance. Effect size (ES) was used to measure the magnitude of the intervention in the experimental group.

Ethical Clearance

An application for ethical approval for this study was submitted to the Babcock University Research Ethics Committee. The purpose of the study was explained to all participants, after which verbal consent was given by each participant, while they also signed the consent forms. All participants were assured of anonymity and the confidentiality of the information received from them.

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 7, Issue 4, 2024 (pp. 222-231)
www.abjournals.org

RESULTS

Demographic Characteristics of Participants

The age range of participants was 10 to 17 years with a mean ± standard deviation (SD) of 13.49±1.56 years {Control group (13.87 ± 1.38) and Intervention group (13.10 ± 1.71)} and there were more SSS1 and SSS2 female students in the control group, that is, 12 (40%) and 14 (46.7%) respectively, while the intervention group had 13 (44.8%) and 5 (17.2%) of SSS2 and JSS2 respectively. The ethnic group of the female students comprise Hausa (13.3%), Igbo (46.7%) and Yoruba (38.3%). Concerning the religion of respondents, the majority (76.7%) are affiliated to Christianity, followed by those (23.3% of the 60 participants) who are Muslim.

Table 2: Demographic Characteristics of the Participants in the Study for Each Group at the Baseline

Variable	Control group		Experimental group		Total	
	N=30		N=30		N=60	
	N	%	N	%	N (%)	p-value
Ethnic						
Yoruba	12	40.0	11	36.7	23 (38.3)	0.376[a]
Igbo	13	43.3	15	50.0	28 (46.7)	
Hausa	5	16.7	3	10.0	8 (13.3)	
Others	0	0	0	0	0	
Religion						
Christianity	24	80.0	22	73.3	46 (76.7)	0.149[a]
Islam	6	20.0	8	26.7	14 (23.3)	
Tradition	0	0	0	0	0	
Others	0	0	0	0	0	
Age (mean)	13.87 ± 1.38		13.10 ± 1.71		13.49±1.56	0.061[b]

Range of age of participants: 10 - 17 years; **a** implies t-text and **b** implies chi-square

Baseline Evaluation of Personal Hygiene Knowledge and Attitude among Control and Experimental Groups

The results in Table 3 show that the computed mean and standard deviation knowledge score was moderate at maximum point scale of 26 for both groups (CG:18.82 ± 2.09 and EG:17.06 ± 3.55 for the control and experimental groups respectively), which was significant at 0.025 *p*-value. The overall attitude of participants towards personal hygiene for the control group (6.67±2.97) and experimental group (15.03±2.97) is moderate based on the maximum point scale which is 12. (See Table 3 for details.)

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 7, Issue 4, 2024 (pp. 222-231)

Table 3: Summaries of Baseline Evaluation of Variables Involved in Personal Hygiene of Female Students between Control and Experimental Groups

Variables	Maximum Points on Scale of Measure	Baseline				p-value*
		Control Group		Experimental Group		
		N=30		N=30		
		X̄(SE)	±SD	X(SE)	±SD	
Knowledge	26	18.82 (0.40)	2.09	17.06 (0.65)	3.53	0.025*
Attitude	12	6.67 (0.31)	2.97	5.03 (0.54)	2.97	0.034*

*Significant at P<0.05

Evaluation between the Baseline and 12th Week Follow-up Results for Control Group

On the account of the post-test intervention evaluation for the control group, knowledge of respondents on personal hygiene at the baseline and 12th week follow-up indicates difference does exist with significant *p*-value (0.004). The overall personal hygiene knowledge level of the control group at the 12th week follow-up phase of the intervention is moderate (18.82±2.09) just like the baseline result or phase (19.62± 2.40) on a maximum point scale of 26.

The overall attitudinal disposition of participants towards personal hygiene is moderate at the 12th follow-up phase, and shows that no significant difference (*p*-value 0.034) exists between the baseline (6.69±2.97) and the 12th week follow-up (8.27±2.21) post intervention evaluation on a maximum point scale of 12.

Table 4: Comparing Baseline and 12th Week Follow-up Mean Scores for Personal Level Disposition of Variables Involved in Personal Hygiene for Control Group

Variables	Maximum Points on Scale of Measure	Control group				Paired differences	
		Baseline		12th Week follow -up			
		N=30		N=30			
		X(SE)	±SD	X (SE)	±SD	*ES (95%CI)	p-value
Knowledge	26	18.82 (0.40)	2.09	19.62 (0.46)	2.40	0.68 (2.15 to -0.46)	0.004*
Attitude	12	6.67 (0.31)	2.97	8.27 (0.39)	2.12	0.53 (-1.78 to 0.09)	0.032*

Pair sample t-test: *Significant at P<0.05

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 7, Issue 4, 2024 (pp. 222-231)

www.abjournals.org

12th Week Follow-up Evaluation of Personal Hygiene Knowledge, Attitude and Practice among Control and Experimental Groups

The result of the analysis reveals that there were significant differences at the 12th week follow-up between the control and experimental groups in all the variables measured as regards personal hygiene. The level of knowledge of participants on personal hygiene is very high with the experimental group (23.40±0.93) compared to the control group (19.63±2.40) which is significantly different at a p-value of 0.001. The attitude of participants towards personal hygiene is higher with EG (11.47±0.78) at the 12th week follow-up compared to CG (8.27±2.12) with significant differences (p-value=0.001). Also, at the 12th week follow-up, the personal hygiene practices of the EG (60.21±2.21) had a wide margin compared with CG (22.64±4.98) with group differences having a significant p-value of 0.001.

Table 5: 12th Week Follow-up Evaluation of Variables Involved in Personal Hygiene of Female Students between Control and Experimental Groups

VARIABLES	Maximum Points on Scale of Measure	12th week Follow-up					
		Control		Experimental			
		N=30		N=30			
		X(SE)	±SD	X (SE)	±SD	*ES (95%CI)	p-value
Knowledge	26	19.63 (0.46)	2.40	23.40 (0.17)	0.93	1.84 (-4.77 to -2.77)	0.001*
Attitude	12	8.27 (0.39)	2.12	11.47 (0.14)	0.78	0.79 (-4.03 to -2.37)	0.001*

*Significant at P<0.05. **Test of significance for an independent sample t-test**

Evaluation of Baseline and 12th Week Follow-up Values for Experimental Groups

Table 6 shows the pair sample t-test result of comparing the baseline and post intervention mean scores of a matched experimental group. This study shows that there were significant differences and large effect sizes between baseline values (17.06± 3.53) for knowledge and values (23.40± 0.93) at the 12th week follow-up in all the variables measured in the experimental group. Furthermore, the attitude of the EG participants towards personal hygiene was very low (5.03±2.97) at the baseline phase but at the end of the educational interventions, the 12th week follow-up evaluation revealed a mean score of 11.47±0.78 which is also significant at p-value=0.0001.

This expressively validates the usefulness of educational-intervention programs in improving personal hygiene knowledge and attitude of participants.

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

Table 6: Paired Sample t-test Summary Statistics for Personal Hygiene Variables Involved in Intervention for Experimental Group by Comparing the Baseline and the 12th Week Follow-up

Variables	Maximum Points on Scale of Measure	Experimental group				Paired differences	
		Baseline		12th week Follow up			
		N=30		N=30			
		X(SE)	±SD	X (SE)	±SD	*ES (95%CI)	p-value
Knowledge	26	17.06 (0.65)	3.53	23.40 (0.17)	0.93	1.93 (-7.56 to -5.11)	.000
Attitude	12	5.03 (0.54)	2.97	11.47 (0.14)	0.78	2.21 (-7.19 to -5.13)	.000

Paired sample t-test: *Significant at P<0.05

DISCUSSION

The results from the baseline evaluation of knowledge of personal hygiene among female adolescents in selected secondary schools in Lagos State was moderate. This was within a mean score 17 to 19 on a maximum point scale of 26 for both groups. On the account of the post-test intervention evaluation for the control group, knowledge of respondents on personal hygiene at baseline and 12th week follow-up indicates difference does exist [ES 0.68 (2.15 to -0.46)] with significant *p*-value (0.004). The post intervention evaluation of knowledge of personal hygiene among female adolescents in selected secondary schools in Lagos State revealed that the level of knowledge of participants on personal hygiene is very high with the experimental group (23.40±0.93) compared to the control group (19.63±2.40) which is significantly different at p-value of 0.001.

On the contrary, a research study which assessed the knowledge, attitude, and practice of personal hygiene among secondary school students in Anaocha Local Government Area, Anambra State, Nigeria found that the majority of the students had good knowledge of personal hygiene and approved of the practice of personal hygiene. It also upheld that students also practiced personal hygiene properly and adequately. The study concluded that the students of Anaocha Local Government Area have good knowledge and attitude towards good hygiene and they have good personal hygiene practices (Obiageli et al., 2023).

The baseline evaluation of attitude towards personal hygiene among female adolescents in selected secondary schools in Lagos State was done by comparing the overall attitude of participants towards personal hygiene for the control group and the experimental group respectively and no notable difference was observed at the baseline, although the CG (96.7%) was more inclined in the belief that maintaining proper personal hygiene is essential for participants health and well-being compayre to 73.3% EG participants, and this was significant

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

across the group. Those who believe that proper personal hygiene is crucial in preventing the spread of diseases showed no significant differences among the two groups.

Furthermore, the study findings revealed a similar trend among groups on personal hygiene attitude towards motivation to adopt and maintain proper personal hygiene habits, coupled with confidence in discussing personal hygiene topics with others, not being aware of the potential risks associated with poor personal hygiene, and the attitude of no risk of infections by sharing personal items.

CONCLUSION

The purpose of this study was to examine the impact of a health education intervention program on personal hygiene knowledge and attitude among female adolescents from selected secondary schools in Lagos State, Nigeria. The post intervention evaluation of knowledge of personal hygiene among female adolescents in selected secondary schools in Lagos State has proven that the level of knowledge of participants on personal hygiene is very high with the experimental group compared to the control group which was significantly different. A similar trend was discovered for attitude towards personal hygiene among female adolescents which revealed that the overall attitudinal disposition of participants had improved at the 12th follow-up in the experimental group. So, there is a big need to encourage adolescents at school level to practice safe and hygienic behaviours.

FUTURE RESEARCH

Based on the findings from the study, the following recommendations are therefore proposed:

- There should be focus on health education in addition to counselling centres and clinics that engage the female adolescents routinely. This means that the role of the health educator in institutions should be modified to accommodate outreach activities that can serve as cues to actions for female adolescents in Lagos State.
- There should be frequent training of school administrators by public health educators about new strategies to improve the personal hygiene of adolescent girls which will strengthen the work of health counsellors to identify potential behavioural and environmental risks.
- The role of the media, including television, social media, and advertisements, can shape students' perceptions and attitudes towards personal hygiene. Therefore, school administrators should jointly sponsor positive depictions of hygiene practices in the media that can encourage students to adopt these behaviors. The use of handbills, bulletin designs from this research intervention, and digital billboards can be deployed.
- Beyond the school environment, government should support scientific research for the improving the most suitable

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY

REFERENCES

Akoteyon, I., & Otusanya, O. (2023). Water, Sanitation, and Hygiene in Parts of Lagos Metropolis. *Ghana Journal of Geography*, *15*(1), 84–112. https://doi.org/10.4314/gjg.v15i1.6

Almoslem, M. M., Alshehri, T. A., Althumairi, A. A., Aljassim, M. T., Hassan, M. E., & Berekaa, M. M. (2021). Handwashing Knowledge, Attitudes, and Practices among Students in Eastern Province Schools, Saudi Arabia. *Journal of Environmental and Public Health*, *2021*, e6638443. https://doi.org/10.1155/2021/6638443

Backes, E. P., & Bonnie, R. J. (2019). Adolescent Development. Retrieved from Nih.gov website: https://www.ncbi.nlm.nih.gov/books/NBK545476/

Breiner, H., Ford, M., & Gadsden, V. L. (2016). Parenting Knowledge, Attitudes, and Practices. Retrieved from Nih.gov website: https://www.ncbi.nlm.nih.gov/books/NBK402020

Đurišić, M., & Bunijevac, M. (2017). Parental Involvement as a Important Factor for Successful Education. *Parental Involvement as a Important Factor for Successful Education*, *7*(3), 137–153. https://files.eric.ed.gov/fulltext/EJ1156936.pdf

Gebreeyessus, G. D., & Adem, D. B. (2018). Knowledge, Attitude, and Practice on Hygiene and Morbidity Status among Tertiary Students: The Case of Kotebe Metropolitan University, Addis Ababa, Ethiopia. *Journal of Environmental and Public Health*, *2018*.

Kabir, A., Roy, S., Begum, K., Kabir, A. H., & Miah, M. S. (2021). Factors influencing sanitation and hygiene practices among students in a public university in Bangladesh. *PLOS ONE*, *16*(9), e0257663. https://doi.org/10.1371/journal.pone.0257663

Patil, S., Deshpande, T., Gharai, S., Patil, S., & Durgawale, P. (2018). Menstrual hygiene among adolescent girls – A study from urban slum area. *Journal of Family Medicine and Primary Care*, *7*(6), 1439. https://doi.org/10.4103/jfmpc.jfmpc_80_18

UNICEF (2023). *Hygiene*. https://data.unicef.org/topic/water-and- sanitation/hygiene/

World Health Organization. (2019). *Hygiene*. WHO | Regional Office for Africa. https://www.afro.who.int/health-topics/hygiene

World Health Organisation (2023) *Hygiene*. https://www.afro.who.int/health-topics/hygiene

Article DOI: 10.52589/AJHNM-AQG5X2LY
DOI URL: https://doi.org/10.52589/AJHNM-AQG5X2LY