

## Handwashing Practices among Public Primary School Pupils in Bichi Town of Kano State, Nigeria

<sup>1</sup>Yusuf Ja'afar ALIYU, <sup>2</sup>AJANI, Olajide Ezekiel (PhD)\*

&

<sup>3</sup>ALIYU Abdullahi Kutiriko

<sup>1</sup> & <sup>2</sup>Department of Physical and Health Education, School of Secondary Education (Sciences), Federal College of Education (Technical) Bichi, Kano, Kano State

<sup>3</sup>Information and Communication Technology (ICT) Unit, Federal College of Education (Technical) Bichi, Kano.

\*Corresponding Author - jideezekiel@gmail.com

### **Abstract**

*The study was carried out to assess handwashing practices among pupils in public primary schools in Bichi town of Kano State. Two research questions and two null hypotheses guided the study. The study adopted a descriptive cross-sectional survey research design. The population for the study consisted of 157,785 pupils in public primary schools in Bichi Local Government Area of Kano State. The sample was 400 pupils randomly selected from the 10 randomly selected public primary schools. Self-developed questionnaire was used for data collection. It was validated by 5 experts and yielded a reliability index of 0.86 using split-half method. Out of the 400 copies of questionnaire distributed and administered, 373 were duly completed and returned for analyses. Chi-square and t-test statistics were used to test the hypotheses at 0.05 level of significance. Findings revealed that pupils in public primary schools in Bichi town of Kano State significantly practice ( $\chi^2 = 101.944, p < 0.05$ ) handwashing. The outcome of the study further reveals that male and female pupils in public primary schools in Bichi Local Government Area of Kano State did not have significant differences in their practice of handwashing ( $t = -.064, p > 0.05$ ). It was therefore recommended among others that, there is need to include evidence-based handwashing behavioural change approaches in the primary school curriculum to continuously promote handwashing practices among pupils, their families and larger societies especially at critical times.*

**Keywords:** Handwashing, Practices, Pupils, Primary schools, Gender, Bichi town

## Introduction

Proper handwashing practices has to do with rubbing the two hands with soap for at least 20 seconds and then rinse thoroughly under running water. Allow the hands to dry properly afterwards (Munthir, et al., 2021). Handwashing facilities are soap, ash, water, disinfectants, towels, handwashing point, taps and bowls (Dajaan et al., 2018). According to Amha, et al (2022) handwashing could also be defined as the vigorous and brief rubbing together of all surfaces of lathered hands, followed by rinsing under a stream of water, with a fundamental principle of removal, not killing of microorganisms. Handwashing facilities in schools is one of a mechanism to achieve Sustainable Development Goals 4 and 6 (SDG 4 and 6) in schools, to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all and to ensure availability and sustainable management of water and sanitation for all by the year 2030” respectively (UNESCO, 2021).

Handwashing has been generally recognized and accepted as a low-cost practice and effective technique in preventing communicable diseases and this has been recognized as an important public health measure to prevent and control most infectious diseases (Eijkemans, 2001). The global burden of diarrheal disease can be reduced by (9.1%) and (6.3%) of all global deaths can be stopped by improving access to water, sanitation, and hygiene (WASH) (Ministry of Education, 2017). WASH interventions have shown significant reductions in school absenteeism and may have a positive influence on educational outcomes (Biran, et al., 2014). For school children, using restrooms (toilets) and washing their hands properly is a crucial life skill (Almoslem, et al., 2021). Regular handwashing with soap could significantly lower respiratory infections and diarrhea (Yallew, et al., 2012). The ability to properly wash one’s hands is essential to a child’s survival. As a result, inadequate handwashing causes the majority of child deaths worldwide each year (Mane, et al., 2016). However, school-aged children in low- and middle-income nations frequently neglect to wash their hands at crucial intervals, including after using the toilets, before eating, and before preparing food (Eshuchi, 2015).

Practicing appropriate handwashing with optimum frequency is a fundamental skill for leading a healthy life (Steiner-Asiedu, et al., 2011). Handwashing, especially before eating, is believed to be one of the first techniques to protect children, teens, and adults from many communicable diseases (Al-Bashtawy, 2015). Generally, there is a progressive increase in risks associated with a wide range of diseases directly correlated with handwashing, for example, water- and foodborne diseases, contagious diseases, severe acute respiratory syndrome (SARS), H1N1 influenza A, coronavirus, cholera, malaria, dysentery, meningitis, shigellosis, and multi-resistant *Staphylococcus aureus* (Lee, et al., 2015). Childhood diarrhoea was found to be significantly correlated with handwashing without soap (Soboksa, 2020). Generally,

contaminated hands could be a source of infectious diseases, and this happens after picking one's nose or coughing, using the bathroom, and dealing with garbage (Majorin, 2014) In addition, handwashing is an essential cause for healthy growth and development in the community (WHO World Health Organization (WHO), 2008). Unfortunately, handwashing after visiting the restroom is ill-practiced in many societies, notwithstanding its significant effect on human health (Freeman & Stocks, 2014). Likewise, non-routine handwashing is recorded as a major risk factor associated with head, foot, and mouth diseases (HFMD) among children in China and other Asian countries (Zhang, et al., 2016). Similarly, handwashing is considered an efficient preventive measure for children, with a subsequent reduction in child antibiotic use (Dean, 2017). However, schools are one of the most important places for promoting health education and programs (Sarkar, 2013), where students can gain knowledge, skills, and positive behaviours in terms of handwashing and many other hygiene practices (Lopez-Quintero, et al., 2009). According to Al-Bashtawy (2015), many students in developing countries have shown a lack of handwashing skills. It has been found that the interventions of handwashing and personal hygiene in school children have led to a significant reduction in diarrhea cases and absence rates among students (Joshi & Amadi, 2013). Moreover, the intervention of handwashing has greatly improved school children's knowledge and practices, helping them to communicate the latter with their parents efficiently (Garg, et al., 2013).

## Statement of the Problem

Children/pupils tend to be absent from school, sometimes get sick and academically perform below standard when suffering from communicable diseases especially those related to poor handwashing. The diseases are transmitted during a close relationship or interaction in school. It is believed that diseases are easily spread when the children are in school compared to any other place in the society. Communicable diseases especially diarrhea, respiratory diseases and so on, according to WHO (2017), are preventable by simple handwashing with soap and can significantly reduce deaths due to these diseases by half.

Researchers personal observation shows that handwashing practices among primary school pupils still seems to be very poor, in Kano State and most especially in Bichi town in particular. Proper handwashing would be useful in preventing many communicable diseases amongst the pupils and the entire population. School settings are important contexts for educating pupils/children about hygienic behaviours such as hand washing practices. It is in light of this, that this study was set to examine handwashing practices among public primary school pupils in Bichi town of Kano State, Nigeria

## Purpose of the Study

The major purpose of the study was to assess handwashing practices among pupils in public primary schools in Bichi town of Kano State with the view to preventing communicable diseases and improving on their health. Specifically, the study determined:

1. Level of handwashing practices among pupils in public primary schools in Bichi town of Kano State
2. Differences in handwashing practices among pupils in public primary schools in Bichi town of Kano State based on gender

## Research Questions

Two research questions guided the study:

1. What is the level of handwashing practices among pupils in public primary schools in Bichi town of Kano State?
2. Is there any difference in the level of handwashing practices among pupils in public primary schools in Bichi town of Kano State based on gender?

## Null Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

**Null Hypothesis 1:** Pupils in public primary schools in Bichi town of Kano State do not significantly practice handwashing

**Null Hypothesis 2:** There is no significant difference in the practice of handwashing among pupils in public primary schools in Bichi town of Kano State based on gender

## Methodology

Bichi is one of the 44 local government areas (and headquarter of Bichi Emirate Council) of Kano State, Nigeria. There are many primary schools, both private and public in Bichi town. This study adopted a descriptive cross-sectional survey research design. The population of this study consisted of all the pupils in all the primary schools in Bichi town of Kano State. The total number of pupils in primary schools in Bichi Local Government Area is 157,785 as at 2021/2022 academic session (Bichi Local Government Education Authority, 2023). The sample size was 400 determined using Cohen, Manion, and Morrison (2011) Standardized Table for Sample Size, Confidence Levels and Confidence Intervals for Random Samples, which states that when a population size is 100,000 or above at 95 per cent confidence level (5% intervals), the sample size should be 383 or above. However, in this study, 400 respondents were used to take care of mortality in filling and returning the questionnaire since the respondents are minors. To select the required sample, simple random sampling technique

was used to select ten (10) public primary schools from which 40 pupils (boys and girls) was also randomly selected. This gave a total of 400 respondents for the study (See Table 1).

**Table 1:** Sample Size for the Study

S/N	Name of Schools	Status	Sample
1	Yatsi Primary School, Bichi (YPSB)	Public	40
2	Shamsuddeen Islamiyya Primary School, Bichi Cikin Gari (SIPSB)	Public	40
3	Chiromawa Primary School Bichi (CPSB)	Public	40
4	Yola Primary School, Bichi (YPSB)	Public	40
5	Girawa Primary School Bichi (GPSB)	Public	40
6	Suleiman Community School Bichi (SCSB)	Public	40
7	Tsaraka A'awa Primary School, Bichi (TAPSB)	Public	40
8	Saye Central Primary School, Bichi (SCPSB)	Public	40
9	Lawan Shehu Science Primary School, Bichi (LSSPSB)	Public	40
10	Sabon Layi Primary School, Bichi (SLPSB)	Public	40
<b>Total</b>			<b>400</b>

**Data Collection Instrument:** Self-developed questionnaire was used for data collection. The questionnaire was divided into two sections: A and B. Section A was on bio-data of the respondents. Section B elicited information on handwashing practices. To enable the respondents easily indicate their opinion, the instruments was on “Yes” or “No” type. The questionnaire was validated by five experts and was tested for internal consistency. A reliability index of .86 was obtained using split half and adjudged reliable for the study.

**Data Collection Technique:** The researchers sought for permission to carry out the study. All the students who were in Basic (primary) 4, 5 and 6 during the study period and who were ready to participate voluntarily in the study population were included. The questionnaire was distributed and administered by the researchers and the research assistants who were selected from the participating schools and trained accordingly. The questions were read and interpreted in Hausa Language by the research assistants in a manner that did not influence the pupils’ responses. After the administration and collection of the instrument, Focus Group Discussions (FGDs) were organized to sensitize the pupils on the importance of practicing regular handwashing. Out of 400 copies of the questionnaire distributed and administered, 373 copies were duly filled and returned, which gave a return rate of 93.3 percent. The returned 373 copies were used for analyses.

**Data Analysis:** Inferential statistics of chi-square was used to test hypothesis one and independent t-test was used to test hypothesis two at 0.05 level of significance. The analyses were done by Statistical Package for Social Sciences (SPSS) Version 25.

## Results

**Hypothesis 1:** Pupils in public primary schools in Bichi town of Kano State do not significantly practice handwashing

**Table 2:** Chi-square Analysis on Handwashing Practices

Variable	Observed	Expected	Total	df	$\chi^2$	Prob.	Decision
<b>Practice</b>							
YES	174	186.5	373	1	101.944	0.0001	Rejected
NO	199	186.5					

$$\chi^2_{\text{table}} = 3.841, \text{ df} = 1, (p < 0.05)$$

The Table reveals statistical analysis that p is less than 0.05 and  $\chi^2$  value of 101.944 at  $\text{df}=1$  is greater than  $\chi^2_{\text{table}} = 3.841$ , indicating that pupils in public primary schools in Bichi town of Kano State significantly practice handwashing. Hence, the null hypothesis is rejected.

**Hypothesis 2:** There is no significant difference in the practice of handwashing among pupils in public primary schools in Bichi town of Kano State based on gender

**Table 3:** t-test analysis on handwashing practices based on gender

Variable	N	Mean	SD	Std. Error	df	t	Prob.	Decision
<b>Gender</b>								
Male	196	15.52	1.60	.11448	371	-.064	.703	Accepted
Female	177	15.53	1.64	.12310				

$$t = -.064, \text{ df} = 371, (p > 0.05)$$

The Table revealed statistical analysis of t-value  $-.064$ ,  $\text{df} = 371$ ,  $p > 0.05$  indicating that there is no significant difference in the practice of handwashing among pupils in public primary schools in Bichi town of Kano State based on gender. Hence, the null hypothesis is accepted.

## Discussion of Findings

The study was carried out to assess handwashing practices among pupils in public primary schools in Bichi town of Kano State. Findings of hypothesis 1 showed that pupils in public primary schools in Bichi town of Kano State significantly practice handwashing. The outcome of the study could be attributed to the fact that the pupils must have been taught in schools and at home the practice of regular hand washing as a COVID-19 protocol. The findings agree with the finding of Akwaah, Abankwa & Siaw (2019) that students in Mampong Municipality, Ghana generally practice hand washing in a proper way. The result is also consistent with the students result in the case of Kim, et al (2012) that students do proper hand washing before and after eating food. The findings of this study contradict the findings of Arthur (2014) whose study revealed that their respondents (students) do not practice proper hand washing. This study is not also in agreement with the findings of Azuogu, et al (2016) whose study showed that extent of hand washing practice among students in secondary schools in Ebonyi State, Nigeria was low with a cumulative mean score of 1.31.

Findings of hypothesis 2 also revealed that there is no significant difference in the practice of handwashing among pupils in public primary schools in Bichi town of Kano State based on gender. The similarity in practice of handwashing between male and female respondents could be as a result of similar exposure to environmental condition which exposes them to communicable diseases and the need for proper hand hygiene. The findings of this study disagreed with that of Alshammary et al (2021) that showed that Saudi females are well equipped with a higher level of knowledge and practice on hand hygiene than males during the COVID-19 pandemic (86% and 80%, respectively). The study also contradicts Dajaan et al (2018) who identified that female students have higher handwashing practices than males. The study is in contrast to the findings of Azuogu, et al (2016) whose study revealed that extent of handwashing practice is low for both male and female students and the extent of practice is higher in male than in female students with cumulative mean scores of 1.37 and 1.25 respectively and that this difference is significant at a 95% confidence level.

## Conclusions

Based on the findings of this study, the following conclusions were drawn that: Pupils in public primary schools in Bichi town of Kano State do significantly practice handwashing. Male and female pupils in public primary schools in Bichi Local Government Area of Kano State did not have significant differences in their practice of handwashing

## Recommendations

Based on the findings and conclusions of this study, it was recommended that:

1. There is need to include evidence-based handwashing behavioural change approaches in the primary school curriculum to continuously promote handwashing practices among pupils, their families and larger societies especially at critical times.

2. Health educators and school teachers as a matter of fact should sustain and possibly improve on the practice by always reminding the pupils about their regular hand washing.
3. There is urgent need to creating a culture where regular handwashing is a social norm and everyone's habit.

**Acknowledgments: The researchers would like to gratefully thank the Tertiary Education Trust Fund (TETFUND) for sponsoring the research.**

## References

- Al-Bashtawy, M. (2015). "Personal hygiene in school children aged 6–12 years in Jordan," *British Journal of School Nursing*, 10 (8);395–398
- Akwaah, V., Abankwa, A. & Siaw, W. N. (2019). Perception of Students on Hand Washing Practices in Selected Senior High Schools in Mampong Municipality, Ghana. *European Journal of Education Studies*, 6 (2); 275-286
- 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 Public Health*, 6638443.
- Alshammary, F., Siddiqui, A. A., Amin, J. et al. (2021). "Prevention knowledge and its practice towards COVID-19 among general population of Saudi Arabia: a gender-based perspective," *Current Pharmaceutical Design*, vol. 27, no. 13, pp. 1642–1648.
- Amha, A., Alemu, G. & Fentaw, W. F. (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* Volume 16: 1–10. [sagepub.com/journals-permissions](https://www.sagepub.com/journals-permissions). DOI: 10.1177/11786302221086795
- Arthur, W. E. (2014). Microbiological Quality of Water in Hand washing Bowls in Basic Schools in the Ablekuma South Sub- Metropolis of Accra, Ghana.
- 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.
- Biran, A., Schmidt, W. P., Varadharajan, K. S, et al. (2014). Effect of a behavior-change intervention on handwashing with soap in India (SuperAmma): a cluster-randomized trial. *Lancet Glob Health*;2:e145-e154.



- Cohen, L., Manion, L. & Morrison, K. (2011). *Research Methods in Education* (7th ed). United Kingdom: Routledge.
- Dajaan, D. S., Addo, H. O., Ojoh Amegah, K. E., Loveland, F., Bachala, B. D., & Benjamin, B. B. (2018). Hand washing, knowledge and practices among public primary schools in the Kintampo municipality of Ghana. *International Journal of Community Medicine and Public Health*, 5(6); 2205-2216.
- Dean, E. (2017). "Hand-washing," *Nursing Children and Young People*, vol. 29, no. 2, p. 11.
- Eijkemans, G. (2001). Meeting Report: WHO-ILO Joint Effort on Occupational Health and Safety in Africa. World Health Organization with input of WHO/ILO Joint Effort Taskforce.
- Eshuchi, R. (2015). Promoting Handwashing with Soap Behaviour in Kenyan Schools: Learning from Puppetry Trials Among Primary School Children in Kenya, in *Faculties and Divisions > Creative Industries Faculty Past > Schools > School of Media, Entertainment & Creative Arts*. Queensland University of Technology
- Freeman, M.C., Stocks, M.E., Cumming, O. et al., (2014). "Hygiene and health: systematic review of hand-washing practices worldwide and update of health effects," *Tropical Medicine & International Health*, vol. 19, no. 8, pp. 906–916.
- Garg, A., Taneja, D.K., Badhan, S.K. & Ingle, G.K (2013). "Impact of a school-based hand-washing promotion program on knowledge and hand-washing behavior of girl students in a middle school of Delhi," *Indian Journal of Public Health*, 57(2); 109.
- Global hand washing day (2017). Our hands our future. USAID. from <https://www.globalwaters.org/events/global-handwashing-day>
- Joshi, A. & Amadi, C. (2013). "Impact of water, sanitation, and hygiene interventions on improving health outcomes among school children," *Journal of Environmental and Public Health*, vol. 8456, Article ID 984626,
- Kim, E. J., Pai, A. J., Kang, N., Kim, W. K., Kim, Y.S., Moon, H. & Ha, A. W. (2012). The effects of food safety education on adolescents' hand hygiene behavior: An analysis of stages of change. *Nutrition Research and Practice (Nutr Res Pract)*, 6(2):169-174.
- Lee, M. S., Hong, S. J. & Kim, Y. T. (2015). "Hand-washing with soap and national hand-washing projects in Korea: focus on the national hand-washing survey, 2006-2014," *Epidemiology and Health*, vol. 37, Article ID e2015039.

- Lopez-Quintero, C., Freeman, P & Neumark, N. (2009). "Handwashing among school children in Bogota, Colombia," *American Journal of Public Health*, 99(1); 94–101.
- Majorin, F., Freeman, M. C., Barnard, S., Routray, P., Boisson, S & Clasen, T. (2014). "Child feces disposal practices in rural Orissa: a cross sectional study," *PloS One*, vol. 9, no. 2, Article ID e89551, 2014.
- Mane, A. B, Reddy, N. S, Reddy, P., Chetana, K.V, Srijith, S.N. & Srinivas, T. (2016). Differences in hand hygiene and its correlates among school-going children in rural and urban area of Karnataka, India. *Arch Med*. 8:1-5.
- Ministry of Education (2017). National School Water, Sanitation and Hygiene (SWASH) Implementation Guideline. FDRE Ministry of Education;45.
- Munthir, M. A., Talal, A. A., Arwa, A. A., Mohammed, T. A., Mohamed, E., H. & Mahmoud, M. B. (2021). Handwashing Knowledge, Attitudes, and Practices among Students in Eastern Province Schools, Saudi Arabia. *Hindawi Journal of Environmental and Public Health*, Article ID 6638443, 10 pages <https://doi.org/10.1155/2021/6638443>
- Sarkar, M. (2013). "Personal hygiene among primary school children living in a slum of Kolkata, India," *Journal of Preventive Medicine and Hygiene*, 54 (3); 153–158
- Soboksa, N.E., Gari, S.R., Hailu, A.B & Alemu, B.M. (2020). Association between microbial water quality, sanitation and hygiene practices and childhood diarrhea in Kersa and Omo Nada districts of Jimma Zone, Ethiopia," *PloS One*, vol. 15, no. 2, Article ID e0229303
- Steiner-Asiedu, M., Van-Ess, S.E., Papoe, M., Setorglo, J., Asiedu, D. K. & Anderson, A. K. (2011). "Hand-washing practices among school children in Ghana," *Current Research Journal of Social Sciences*, 3 (4); 293–300.
- UNESCO (2021). SDG 4 Education 2030. High-Level Steering Committee Secretariat. Sustainable Development Goal 4. Education2030@ unesco.org
- WHO World Health Organization (2008). Handwashing Day. Planners Guide. Clean Hands Save Lives. CDC Report. 2008; Retrieved From: <https://www.cdc.gov/handwashing/global-handwashing-day.html>.
- World Health Organization (WHO) (2017). Diarrhoeal disease factsheet. WHO, Geneva. from <http://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease>

Yallew, W.W., Terefe, M.W., Herchline, T.E., et al. (2012). Assessment of water, sanitation, and hygiene practice and associated factors among people living with HIV/AIDS home-based care services in Gondar city, Ethiopia. *BMC Public Health*;12: 1057.

Zhang, D., Li, Z., Zhang, W. et al., (2016). "Hand-washing: the main strategy for avoiding hand, foot and mouth disease," *International Journal of Environmental Research and Public Health*, 13 (6),610