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EFFECTS OF WATER, SANITATION AND HYGIENE (WASH) EDUCATION ON LOWER BASIC PUPILS' HEALTH PRACTICES IN ASA LOCAL GOVERNMENT AREA OF KWARA STATE

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Abstract

Water, Sanitation and Hygiene (WASH) are issues that affect the health of every person in the world, everyone needs clean water to drink and a safe place to urinate and defecate. Studies have shown that most primary schools in the country lack good toilet facilities, access to good water, and they lack the requirements needed for health practices. Poor WASH practice or education can impair health, reduce life expectancy and cause gender inequality and also contribute to poor social-economic development. It is on this note that the researchers examined the effects of WASH education on lower basic pupils' health practices in Asa Local Government Area of Kwara State. Pre-test, post-test, control group quasi-experimental design was used for the study. Stratified random sampling technique was used was used to select the schools where the research was carried out into public and private schools. Purposive sampling technique was used to select four (4) primary schools two public and two privates in Asa Local Government Area of Kwara State. These schools were randomly assigned to an experimental groups and control groups respectively. Seven hypotheses were formulated; two instrument were used titled Pupils Health Practices Rating scale (PHPRS) with reliability coefficient of 0.75, one treatment package was used, Instructional Guide for Water Sanitation and Hygiene (IGWASH). Frequency counts, mean and percentage were used for demographical data of the participants while research hypotheses were tested using the Analysis of Covariance (ANCOVA) all at 0.05 level of significance. The study showed that there was a significant main effect of treatment on pupils' health practices in Asa Local Government Area; ($F(1,63) = 30.29$; $p< 0.05$; $\eta2 =0.33$), there was a significant main effect of gender on pupils' health practices in Asa Local Government Area; ($F(1,63) = 7.54$; $p<0.05$; $\eta2 = 0.107$), there was no significant main effect of school type on pupils' health practices in Asa Local Government Area; ($F(1,63) = 0.51$; $p> 0.05$; $\eta2 = 0.008$), there was a significant interaction effect of treatment and gender on pupils' health practices in Asa Local Government;($F(1,63) = 8.10$; $p< 0.05$; $\eta2 = 0.114$), there was no significant interaction effect of treatment and school type on ,pupils' health practices in Asa Local Government Area; $F(1,63) = 0.17$; $p> 0.05$;$\eta2 = 0.003$), there was no significant interaction effect of gender and school type on pupils' health practices in Asa Local Government Area; ($F(1,63) = 1.38$; $p> 0.05$; $\eta2 = 0.021$) and there was a significant interaction effect of treatment, gender and school type on pupils' health practices in Asa Local Government Area ($F(1,63) = 3.85$; $p< 0.05$; $\eta2 = 0.058$). The study concluded that Water Sanitation and Hygiene (WASH) are to be reckoned with if pupils' health practices must be

improved. It was, therefore, recommended among others that teachers should always carry out WASH education where necessary to promote good health practices among pupils; Government and private body should train Early childhood educators on effective procedures for WASH education in their schools by organizing extensive seminars and workshops. This will assist in improving pupils' health practices.
Keywords: WASH Education, Health Practices

Introduction

The importance of good health in the life of every individual cannot be overemphasized, and the need for it must be prepared for on daily basis. Health is created by caring for oneself and others by being able to take decisions and have control over one's life circumstances and by ensuring that the society one lives in creates conditions that allow the attainment of health by all its members. This suggests that the level of health enjoyed is synonymous with the health practices individuals engage in and health practices represent the application of good health habits to one's routine living. The health practices that a person adopts will determine to a great measure, the health of that person (Glaxosmithkleen, 2007). Practices or habits which are harmful to optimum health, such as failure to obtain proper rest or exercise, overeating, over drinking and smoking, or failure to observe certain precautions against contracting diseases, will usually result in poor health. Each part of the body needs adequate care to ensure wholesome health.

World Health Organisation (WHO, 2014), defined health as a state of physical, social, mental and emotional wellbeing and not merely the absence of diseases or infirmity. So many gastro-intestinal diseases like diarrhea, dysentery, typhoid, and cholera can be prevented through adequate health practices (Lucas & Gilles, 2012). Also, the outbreak of pandemics all over the world such as COVID - 19 is a result of deteriorating health practices, (WHO 2020). Pandemics like the Coronavirus create not only an epidemiological crisis but also a psychological crisis such as anxiety, depression, insomnia, trauma, anger, psychosis, panic and boredom like the other pandemics in the past (Balaratnasingam & Janca, 2006; Brooks, 2020; Özdin & Bayrak, 2020; WHO, 2020). The spread of the COVID-19 pandemic is a threat to the current state of health of people in the world and one of the preventive measures given by the World Health Organisation is to maintain and ensure good health practices, (WHO 2020).

In Nigerian society, the frequency and method of health practice have not met internationally recommended standards even though handwashing is a common practice (Azuogu & Onwunaka, 2016.) There exist empirical studies regarding the current state of health practices among pupils in Nigeria; in which many of the studies revealed low compliance to standards of hand washing all over the world even with the availability of soap and water (Azuogu, Ilo, Nwimo, Azuogu & Onwunaka, 2016). For instance, Azuogu, (2016) explored the extent of hand washing practice among secondary school pupils in Ebonyi State, Nigeria and found that extent of hand washing practice among secondary school pupils in Ebonyi State Nigeria was low. This might be because

most schools in the study area were lacking facilities and quality hygiene education that could help to inculcate good habits in pupils (Olukanni, 2013).

Also, Deepak and Shiv (2018) found that hygiene and sanitation practices among pupils are not satisfactory. More so, Azuogu, (2016) confirmed that hand washing before and after eating was the least practiced by pupils in their study with mean scores of 1.10 and 1.09 respectively. This is disturbing because of the extent of contamination which the hand is exposed to at every turn in the school environment. Such heavily contaminated hands will act as vehicles for the transfer of pathogens into the body. Pupils' Health practices are affected by WASH and some of the health practices expected of pupils are hand washing, washing of the hair with soap and water, brushing the hair with a soft-bristled brush, cleaning the ear, regular washing of mouth, cleaning of the classrooms, schools and home environment, (Ana, 2008). Water, Sanitation, and Hygiene (WASH) represents a growing movement focusing on improving quality of life by reducing WASH related diseases. Water, sanitation and hygiene education initiatives in schools have a profound impact not only on the health of children, but also on learning and the teaching environment. The direct impacts of educational interventions on sanitation and hygiene often fade out over time, but long-term benefits may be sustained for school children (Almond & Currie, 2011; Adukia, 2013). This means that water, sanitation and hygiene education is important because diseases related to inadequate water, sanitation and hygiene constitute a huge burden in developing countries causing about 88 percent of diarrhea disease (WHO, 2009).

Other preventable diseases like typhoid, dysentery, hepatitis, polio and cholera have proliferated in Africa because of a lack of access to clean water as well as a poor understanding of proper hygiene (WHO, 2004). The availability of water in schools is important because children's ability to learn is affected by water, especially between the ages of 5 and 14 (WHO 2009). Unavailability of water in children's learning environment may have a negative effect on growth, physical activities, cognition, concentration and school performance (WHO, 2009). The critical importance of water to children is confirmed by Lidonde (2004) who identified that inadequate water supply plays a role in the retention of pupils in schools. WHO (2009) as one of the international development agencies asserted that attention to water can also improve health, life expectancy, children learning, gender equality, and other important issues of international development. Alabi (2010) described sanitation as the principle and practice of effecting healthy and hygienic conditions in the environment to promote public health and welfare, improve quality of life and ensure a sustainable environment. Poor sanitation accounts for almost 50 percent of a child being underweight since it has a direct link to diarrhea. Sanitation is a serious issue that is affecting most parts of the world especially the developing countries. On a global scale, it has indicated that children lose their lives due to diseases caused by poor sanitation and hygiene education (Oyibo, 2010).

Apart from the availability of good water and a positive attitude to sanitation, maintaining personal hygiene is also essential. The essential components of sanitation that are peculiar to children learning environment are solid waste management; medical waste management; excreta and sewage management; food sanitation; sanitary inspection of premises, adequate portable water supply, school sanitation, pest and vector control, weed and vegetation control; hygiene education and promotion. In this note, according to Provision of session 1 sub 3 of the Kwara State Environmental Sanitation Law CAP E4 Law of Kwara State, 2006, the ministry of health declared every Wednesday for schools as sanitation day as well as the ministry of education to ascertain the importance of sanitation to every individual. Hygiene is articulated in the efforts of an individual to safeguard, sustain and enhance health status (Markus, 2002).

Measures of hygiene are vital in the fight against diarrhea, the major fatal diseases of the young in developing countries. The most successful interventions against diarrhea are those that break off the transmission of contagious agents at home. Personal and domestic hygiene can be enhanced with such trouble-free actions like ordinary use of water in adequate quantity for hand washing, bathing, laundering and cleaning of cooking and eating utensils; regular washing and change of clothes; eating healthy and clean foods and appropriate disposal of solid and liquid waste (Hunter, 2006). The researcher is of opinion that to ensure a high level of WASH, there is a need to educate pupils on the importance and benefit of WASH to their daily activities and expose them to indebt knowledge of WASH. A review of primary school hygiene facilities in a developed country suggests that the physical quality of any toilet and hand washing facility is an important determinant of whether and how it is used especially for school children (Reeve & Poore, 2012 Dajaan, 2018).

Currently, Nigeria is one of the countries whose sanitation coverage rates are between 20% and 40% points below the MDG targets (Aremu, 2012). Most public primary and secondary schools in Nigeria are short of basic water, sanitation, and hygiene facilities (Aremu, 2012). This has resulted in a high prevalence rate of water and sanitation-related diseases causing many children to fall ill and stay away from school or even die (UNICEF, 2008). Children tend to be absent from school, frequently get sick and perform poorly when suffering from diseases related to poor hand washing. 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. Diarrhea, according to WHO (2017), is preventable by simple hand washing with soap and can significantly reduce deaths due to these diseases by half. WASH education is a programme that ensures the good health of pupils by promoting and maintaining pupils' health to give them a good standing in life (Ghanim, Dash, Abdullah, Issa, Albarazi & Al Saheli, 2016). The purpose of school health education is to help pupils at school to achieve the maximum health possible for them to obtain full benefit from their education. If WASH education is properly managed, it may boost the health practices of the pupils (Kuponiyi, Amoran & Kuponiyi, 2016). Concerning the place of gender in pupils' health practices, Omeka and Durowoju (2010) reported

that gender did not play any significant role in health practices among school pupils. Borchgrevink (2013) reported that gender influences handwashing practices among students, and females engaged in regular hand washing than males. This might be because girls are taught at an early age to maintain good hygienic behaviour especially at the onset of menstruation; they are taught how to take care of themselves than the boys. This is in relation to the observation of Clough (2010) that girls have been taught to be wary of their appearance and cleanliness than the boys.

Another variable capable of exerting an effect on pupils' health practices is school type. A school is either owned by a private individual or public. A public school is one owned, managed and financed entirely by the government, while a private school is established, managed and financed by the private body which conforms to the set minimum standards and may be approved by the government (Knoell, 2012). School types play a significant role in the development of the sense of healthy living among pupils (Kalagbor, 2016). According to Kalagbor (2016), private secondary schools help in the development of good health practices. Kalagbor (2016) opined that private school students enjoy a sense of humour, consistent help and active listening which are necessary for the acquisition of health information. Similarly, there seems to be scanty researches on WASH education. It is on this note that this study aimed at examining the effects of Water, Sanitation and Hygiene (WASH) Education on lower basic pupils' health practices in Asa Local Government Area of Kwara State.

Statement of the Problem

Studies have shown that most primary schools in the country lack good toilet facilities, access to good water, and they lack the requirements needed for health practices. Poor WASH practice or education can impair health, reduce life expectancy and cause gender inequality and also contribute to poor social-economic development. There have been considerable studies that examine the impact of water sanitation and hygiene practices in reducing absenteeism, diarrhea prevalence and acute respiratory infections in school-age children in the northern part of Nigeria. This current examination is not quite the same as the literary works accessible to the researcher because their investigations were directed towards university students, not among pupils and variable, like school type has not been given a lot of considerations which gives the gaps to the current investigation. Access to water, sanitation, and hygiene in schools is important for human health. However, some of its benefits have yet to be fully achieved in Nigeria particularly Asa Local Government Area of Kwara State due to low WASH coverage. In the light of the accessible examinations, there has not been an investigation done on the effect of WASH education on the health practices of pupils based on gender and school type in Asa Local Government Area of Kwara State. Accordingly, this is one of the exploration gaps the researcher intends to fill which will require an empirical investigation, hence this study.

Hypotheses

The following seven null hypotheses were tested in the study at $p < 0.05$ level of significance

1. Is there any significance main effect of:
    a. treatment
    b. gender
    c. school type

on pupils' health practices in Asa Local Government Area of Kwara State

2. is there any significant interaction effect of:
    a. treatment and gender
    b. treatment and school type
    c. gender and school type
    d. treatment, gender and school type

on pupils' health practices in Asa Local Government Area of Kwara State

Methodology

The study adopted pre-test, post-test, control group quasi-experimental design. The population of this study consisted of all primary school pupils in both public and private schools in Asa Local Government Area of Kwara State. According to Kwara State annual school Census Report Project (2018-2019), there are 165 public primary schools and 66 private schools with a total enrollment of 13,593 and 4,282 respectively in Asa Local Government Area of Kwara State. The target population of the study comprised of all primary three pupils in Asa Local Government Area of Kwara State, with a total enrollment of 2,259 and 870 respectively. The sample size for the study was four primary three classes. Multistage sampling techniques were used to select the schools that participated. Stratified random sampling techniques was adopted for the study to classify the schools where the research was carried out into Public and private schools. First, all schools were divided into two strata (Public and Private) and the purposive sampling technique was used to select four schools which included two private schools and two public schools because of some characteristics and essential materials needed by the researcher such as school toilets. One public and one private school were used as experimental groups and the remaining two schools were used as the control group (one public and one private school). The researchers used intact class for the study, pupils in public school were 47, while pupils in private school were 25, with a total number of 72 participants.

Two research instruments were constructed for use in the study. A self-developed instrument titled Pupils Health Practices Rating scale (PHPRS) for rating the health practices of pupils, and one instructional guide for Water, Sanitation, and Hygiene Education (IGWASH). Pupils Health Practices Rating Scale (PHPRS) was constructed by the researchers with the aid of National Health Policy, WASH document and Primary three Basic Science curriculum. It consists of two sections A and B. Section A consists of the demographic data of the participants like gender and school type. Section B comprises 20 items eliciting information on pupils' health practices. PHPRS was structured on three points modified Likert style of: Always, Sometimes and Never which was

served using 3 points, 2 points and 1 point respectively. Instructional Guide was developed by the researchers to educate the pupils on WASH and was used to guide the class teachers and teachers with science/health-related subject background who were the research assistants for the study. It consisted of four stages introduction, presentation, evaluation, and summary. The treatment package lasted for eight weeks. The data collected were analyzed using Analysis of covariance at 0.05 level of significance.

Face and content validity of the two instruments used in the study were examined by experts in Early Childhood Education, with science/health-related subjects background and Tests and Measurement to ensure the suitability of objectives and the instrument, suitable for the age of the pupils, measurement and to assess the extent to which it contains essential items that are required to achieve the objectives of the study. Test re-test method of reliability was used. The researchers administered twenty copies of the instrument pupils' health practices rating scale (PHPRS) to twenty pupils selected from a school that was not included in the study at the interval of two weeks. Thereafter, Pearson Product-Moment Correlation (PPMC) was used to determine the reliability index, and the reliability coefficient obtained was 0.75 which indicated that the instrument was reliable to use for the study.

Results

Ho1: There is no significant main effect of treatment on pupils' health practices in Asa Local Government Area of Kwara State

Table 1: Summary of Analysis of Covariance (ANCOVA) Showing the Main Effect of Treatment on Pupils' Health Practices

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	874.995[a]	8	109.374	7.483	.000	.487
Intercept	1534.831	1	1534.831	105.013	.000	.625
Pretest	76.580	1	76.580	5.240	.025	.077
Main Effect						
Treatment	442.740	1	442.740	30.292	.000	.325
Schooltype	7.380	1	7.380	.505	.480	.008
Gender	110.148	1	110.148	7.536	.008	.107
Two Way Interaction						
Treatment * schooltype	2.456	1	2.456	.168	.683	.003
Treatment * Gender	118.364	1	118.364	8.098	.006	.114
schooltype * Gender	20.185	1	20.185	1.381	.244	.021
Three Way Interaction						

Treatment*schooltype* Gender	56.284	1	56.284	3.851	.054	.058
Error	920.782	63	14.616			
Total	102746.000	72				
Corrected Total	1795.778	71				

a. R Squared = .487 (Adjusted R Squared = .422)

Table 1 shows that there is a significant main effect of treatment on pupils' health practices in Asa Local Government Area ($F(1,63) = 30.29$; $p < 0.05$; $\eta 2 = 0.33$). The effect size is 33%. Therefore, hypothesis 1 is rejected. To determine the magnitude of treatment size, table 2 presents the estimated marginal mean score.

Table 2: Estimated Marginal Mean Score of Pupils ' Health Practices by Treatment

			95% Confidence Interval	
Treatment	**Mean**	**Std. Error**	**Lower Bound**	**Upper Bound**
Control	34.388[a]	.725	32.939	35.837
experimental	39.708[a]	.640	38.428	40.988

a. Covariates appearing in the model are evaluated at the following values: Pretest = 39.2639.

Table 2 shows that the pupils exposed to the experimental group had a higher mean score (mean= 39.71) than pupils exposed to the conventional strategy group (mean = 34.39). This mean score difference is statistically significant.

Ho2: There is no significant main effect of gender on pupils' health practices in Asa Local Government Area of Kwara State.

Table 1 shows that there is a significant main effect of gender on pupils' health practices in Asa Local Government Area ($F(1,63) = 7.54$; $p < 0.05$; $\eta 2 = 0.107$).Therefore hypothesis 2 is rejected because the significant value is less than 0.05. The effect size is 10.7%, however, To determine the magnitude of the main effect, the estimated marginal mean score is presented in table 3 below.

Table 3: Estimated Marginal Mean Score of Pupils' Health Practices by Gender

			95% Confidence Interval	
Gender	**Mean**	**Std. Error**	**Lower Bound**	**Upper Bound**
Male	35.724[a]	.717	34.292	37.157
Female	38.372[a]	.648	37.076	39.667

a. Covariates appearing in the model are evaluated at the following values: Pretest = 39.2639.

Table 3 shows that the female pupils had a higher mean score (mean = 38.37) than the male pupils (mean = 35.72). This mean score difference is statistically significant.

Ho3: There is no significant main effect of School type on pupils' health practices in Asa Local Government Area of Kwara State

Table 1 shows that there is no significant main effect of school type on pupils' health practices in Asa Local Government Area($F(1,63) = 0.51$; $p > 0.05$; $\eta 2 = 0.008$). Therefore, hypothesis 3 is not rejected, because the significant value is greater than 0.05

Ho4: There is no significant interaction effect of treatment and gender on pupils' health practices in Asa Local Government Area of Kwara State

Table 1 shows that there is a significant interaction effect of treatment and gender on pupils' health practices in Asa Local Government Area ($F(1,63) = 8.10$; $p < 0.05$; $\eta 2 = 0.114$).Therefore hypothesis 4 is rejected because the significant value is less than 0.05. The effect size is 11.4%, however, To determine the magnitude of an interaction effect, the estimated marginal mean score is presented in table 4 below.

Table 4: Estimated Marginal Mean Score of Pupils' Health Practices by Treatment and Gender

				95% Confidence Interval	
Treatment	**Gender**	**Mean**	**Std. Error**	**Lower Bound**	**Upper Bound**
Control	Male	34.435[a]	1.071	32.294	36.576
	Female	34.341[a]	.968	32.407	36.274
experimental	Male	37.013[a]	.945	35.124	38.903
	Female	42.402[a]	.867	40.669	44.136

a. Covariates appearing in the model are evaluated at the following values: Pretest = 39.2639.

Table 4 shows that male pupils had a higher mean score (mean = 34.44) than female pupils (mean = 34.34) in the control group while female pupils had a higher mean score (mean =42.40) than male pupils (mean = 37.01) of the experimental group.

Ho5: There is no significant interaction effect of treatment and school type on pupils' health practices in Asa Local Government Area of Kwara State

Table 1 shows that there is no significant interaction effect of treatment and school type on pupils' health practices in Asa Local Government Area ($F(1,63) = 0.17$; $p > 0.05$; $\eta 2 = 0.003$). Therefore, hypothesis 5 is not rejected.

Ho6: There is no significant interaction effect of gender and school type on pupils' health practices in Asa Local Government Area of Kwara State

Table 1 shows that there is no significant interaction effect of gender and school type on pupils' health practices in Asa Local Government Area ($F(1,63) = 1.38$; $p > 0.05$; $\eta 2 = 0.021$). Therefore, hypothesis 6 is not rejected, because the significant value is greater than 0.05

Ho7: There is no significant interaction effect of treatment, gender and school type on pupils' health practices in Asa Local Government Area of Kwara State

Table 1 shows that there is a significant interaction effect of treatment, gender and school type on pupils' health practices in Asa Local Government Area ($F(1,63) = 3.85$; $p < 0.05$; $\eta 2 = 0.058$). Therefore, hypothesis 7 is rejected because the significant value is less than 0.05. The effect size is 5.8%, however, in order to determine the magnitude of interaction effect, the estimated marginal mean score is presented in table 5 below.

Table 5: Estimated Marginal Mean Score of Pupils' Health Practices by Treatment, Gender and School type

					95% Confidence Interval	
Treatment	**Schooltype**	**Gender**	**Mean**	**Std. Error**	**Lower Bound**	**Upper Bound**
Control	Public	Male	33.909[a]	1.284	31.344	36.474
		Female	34.537[a]	1.330	31.879	37.194
	Private	Male	34.962[a]	1.748	31.468	38.456
		Female	34.145[a]	1.550	31.048	37.242
experimental	Public	Male	37.962[a]	1.071	35.822	40.102
		Female	40.293[a]	.985	38.325	42.261
	Private	Male	36.065[a]	1.561	32.945	39.184
		Female	44.511[a]	1.453	41.608	47.415

a. Covariates appearing in the model are evaluated at the following values: Pretest = 39.2639.

Table 5 shows that female pupils had a higher mean score (mean = 34.54) than male pupils (mean = 33.91) in the public school for the control group while male pupils had a higher score (34.96) than female pupils (mean 34.15) in the private school for control. Female pupils had a higher score (mean = 40.29) than male pupils (37.96) in the public school for experimental also female pupils had a higher score (mean = 44.51) than male pupils (36.07) in the private school for the experimental group. This mean difference is shown to be statistically significant.

Summary of findings

1. There is a significant main effect of treatment on pupils' health practices in Asa Local Government Area
2. There is a significant main effect of gender on pupils' health practices in Asa Local Government Area
3. There is no significant main effect of school type on pupils' health practices in Asa Local
3. Government Area
4. There is a significant interaction effect of treatment and gender on pupils' health practices in Asa Local Government
5. There is no significant interaction effect of treatment and school type on pupils' health practices in Asa Local Government Area
6. There is no significant interaction effect of gender and school type on pupils' health practices in Asa Local Government Area
7. There is a significant interaction effect of treatment, gender and school type on pupils' health practices in Asa Local Government Area

Discussion of findings

The finding of this study revealed that there was a significant main effect of treatment on pupils' health practices in Asa Local Government Area. This means that the experimental group (group exposed to health practices) had a higher means score in health practices than their counterparts (group exposed to the conventional method). This result is possible where WASH education equips pupils with how they could engage in effective hand washing, washing of the hair with soap and water, brushing the hair with a soft-bristled brush, cleaning the ear, toilets`, regular washing of mouth, cleaning of the classrooms, schools and home environment. The result of this study supported that of Tania, Ryan, Wanda, Octavio, Rinko and Jamie (2015) who examined how water, sanitation, and hygiene (WASH) in schools contributes to better health among school-aged children and found that WASH education significantly promoted better health outcomes.

The result of the study also showed that there was a significant main effect of gender on pupils' health practices in Asa Local Government Area. This means that gender interferes with the pupils' health practices in Asa Local Government Area with female pupils having a higher mean score on health practices than their male counterparts. This result is possible where female pupils see more reasons why they should practice WASH than their male counterparts. This result is in line with that of Ashish and Chioma (2013) who found a significant difference in hygiene practices of male and female pupils in favor of females. On the contrary, this result contradicts that of Ekong (2015) who found that male pupils participate WASH than females. Also, Omeka and Durowoju (2010) reported that gender did not play any significant role in health practices among school pupils. The difference observed in the result of this study and that of Omeka and Durowoju (2010) and Ekong (2015) might be due to the differences in study location and research design employed.

Furthermore, the result of this study showed that there was no significant main effect of school type on pupils' health practices in Asa Local Government Area. This implies that school type does not affect the WASH education given to the pupils; as pupils from both public and private schools in the treatment, group performs at the same level. This result refuted that of Ashish and Chioma (2013) who found that there was a significant effect of school type on WASH education and practices of pupils. The variation observed in the result of this study and that of Ashish and Chioma (2013) might be due to differences in study location, year of study, sample size and research design employed.

The result of the study further showed that there was a significant interaction effect of treatment and gender on pupils' health practices in Asa Local Government. This means that gender affects the treatment given to the pupils on WASH as female pupils outperformed their male counterparts in health practices having been exposed to WASH education. The result supported the earlier work of Nwakile, Eze, and Okanya (2017) who examined the effects of sanitation practices on students' health in the University of Nigeria, Nsukka and found that there was a significant interaction effect of treatment and gender on students' health practices and wellbeing.

Also, the result of this study showed that there was no significant interaction effect of treatment and school type on pupils' health practices in Asa Local Government Area. This means that school type does not interfere with WASH education given to the pupils in Asa Local Government Area because pupils from both private and public schools had relatively the same level of health practices after exposure to treatment. This result is possible where the treatment had an equal level of effect on the pupils from both private and public schools, there was no bias during treatment irrespective of school the respondent comes from. This result supported that of Shilunga, Amukugo and Mitonga (2018) who found that the level of WASH education and health practices among pupils is the same irrespective of school location and type. The result of this study further revealed that there was no significant interaction effect of gender and school type on pupils' health practices in Asa Local Government Area. This means that gender and school type do not interfere with WASH education given to the pupils in Asa Local Government Area because male and female pupils from both private and public schools had relatively the same level of health practices after they received treatment. This result is possible where the treatment had an equal level of effect on pupils with regards to gender and school type. This result is in line with that of Omeka and Durowoju (2010) who found that gender has no significant effect on students' health practices also this finding negates that of Kalagbor, (2016) who found that school type plays a significant role in the development of the sense of healthy living among pupils.

On the final note, the result of this study showed that there was a significant interaction effect of treatment, gender and school type on pupils' health practices in Asa Local Government Area. This means that gender and school type interacted with the treatment given to the pupils on WASH. This result supported that of Kalagbor (2016) who opined that private school students enjoy a

sense of humour, consistent help and active listening which are necessary for the acquisition of health information.

Conclusion

Based on the findings of this study it was concluded that Water Sanitation and Hygiene (WASH) are to be reckoned with if pupils' health practices must be improved. This is premised on the observed significant effect of treatment on pupils' health practices; as the experimental group (group exposed to WASH education) outperformed their counterparts (group exposed to the conventional method) in health practices. This suggests that WASH education is effective in teaching and promoting good health practices.

Recommendations

Based on the finding of this study, the following recommendations were made.

1. Since WASH education was found to have significant effects on pupils' health practices, teachers should always try their best to carry out WASH education every day to promote good health practices among pupils.
2. Government and private body should train Early childhood educators on effective procedures for WASH education in their schools by organizing extensive seminars and workshops
3. Early childhood educators, professional associations in early childhood as well as authors should incorporate WASH education procedures in their future publications for enhanced pupils' healthy practices.
4. Teacher-training institutions should include WASH education strategies in their methodology course content. This will greatly assist in ensuring that prospective primary education teachers are adequately trained on how to promote and improve the health and well-being of pupils.
5. The Government as well as the school owners should make provisions for all the requirements needed for health practices in schools to inculcate WASH Education in their daily activities.
6. Parent-teacher association, Non-governmental organization, and Community should endeavour to assist schools by providing health facilities such as toilets, water supply to increase their health practices
7. Curriculum planners should incorporate WASH into the school curriculum so pupils would imbibe positive health habits right from primary school level

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