EFFECTS OF HYGIENE EDUCATION ON HANDWASHING PRACTICES AMONG PUPILS WITH HEARING IMPAIRMENT IN LAGOS STATE

Owolewa, M., Onwuama, M.A.C., & Haastrup, A. E.
Dept of Human Kinetics & Health Education
Faculty of Education, University of Lagos

Abstract
Handwashing practice encompasses activities geared towards the improvement in health through the promotion of personal cleanliness to achieve positive health behaviours and wellness. This study examined the effects of hygiene education on handwashing practices among pupils with hearing impairment in Lagos State. The study was delimited to the independent variable of hygiene education and dependent variables of handwashing practices. Multistage sampling technique was used to select 218 participants who were public school pupils with hearing impairment between the ages of 9 and 14 years. A pretest-posttest experimental research design was adopted. Eight weeks intervention programme was conducted using hygiene education manual focusing handwashing techniques. American Sign Language was adopted as means of communication with the participants. Pre-test and post-test assessment used Hygiene Education Knowledge and Practices Questionnaire (r= 0.76) to collect data. Analysis was done using descriptive statistics of frequency counts and percentages, while inferential statistics of standard deviation was used to test the hypotheses at 0.05 level of significance. Results showed that age and gender does not significantly affect handwashing knowledge and practices among pupils with hearing impairment in Lagos state. The findings further revealed that hygiene education knowledge has significant effects on handwashing practices (F-value of 14.828 ≥ 3.07). The researchers recommended early inclusion of hygiene education into elementary school curriculum, continuous handwashing awareness programme and provision of running water, handwashing points, and constant supply of hygiene materials in all public primary schools in Lagos state to guarantee infection free learners.

Key words: *Handwashing practices, Hearing impairment, Hygiene education, Personal hygiene, Pupils*

Introduction
Hygiene plays a major role in promoting ones' healthy life. Most of the health problems affecting school children including children with special needs are preventable by promoting hygienic practices through proper health education by the teachers in the school. Good personal hygiene in primary school children would be effective towards preventing infectious diseases when taught at early stage in life (Moronkola, 2016). Schools are consecrated place because they provide an environment for learning positive attitude, skills, and for development of intelligence that can be utilized by pupils to achieve their optimal health in life.

Khatoon, Sachjan, Khan and Srivastava (2017), observed that to learn effectively, children need sound health. Health is a key factor in school entry, as well as continued participation and attainment in school. School is the place where health education regarding important aspects of hygiene, environment, and sanitation, as well as social customs, is being imparted to promote wellness, but some pupils with special needs face communication barriers to receiving adequate healthcare information (Lawal, 2018).

Children with special needs are children who have a disability or a combination of disabilities that makes learning or other activities difficult. Special needs children include those who have: Mental retardation, which causes them to develop more slowly than other 'normal' children, speech and language impairment (Hearing impairment) such as problem expressing themselves or understanding others, physical disability, such as vision problem, cerebral palsy, or other conditions, learning disabilities which distort messages from their senses, emotional disabilities such as antisocial or other behavioural problems (Binders, 2015).

Report shows that 5% of the world's population or 466 million people worldwide have disabling hearing loss (432 million adults and 34 million are children). It is estimated that by 2050, over 900 million people or one in every ten people will have disabling hearing loss (WHO 2019). In Nigeria, 2.8% of 160 million estimated populations (seven million people) are living with hearing impairment of different degrees. Delivery health services to these people are poorly understood in Nigeria (Arulogun, Titiloye, Afolabi, Oyewole, & Nwaorgu, 2013).

Poor personal hygiene practices can lead to poor health derived from infectious or communicable diseases such as food poisoning, gastroenteritis, diarrhoea, trachoma, cough, flu, skin infection, head lice, ring worm among children with hearing impairment.Primary school pupils are more susceptible to infections because of their low immune system, free interaction with dirt, participation in school cleaning exercise, picking dirt with bare hands, lack of personal hygiene knowledge, insufficient clean water, and many more.

As a result of this alarming population, people with disability must be carried along in health information, health maintenance, and health delivery system, especially people with hearing impairment who have communication challenge. This inclusion will be effective when pupils with hearing impairment in primary school are integrated in health information and hygiene practices.

During a global pandemic like Ebola, Severe Acute Respiratory Syndrome (SARS), or even Corona Virus (COVID-19), one of the cheapest, easiest, and most effective ways propounded to prevent the spread of a virus is by frequent handwashing with soap and running water. In the places like schools, where children learn and play, frequent handwashing with soap is one of the simplest ways of keeping them healthy.

The CDC (2018) have published simple-to-follow handwashing guidelines. However, incorrect handwashing practices and low compliance are prevalent among pupils with hearing impairment in Lagos State as observed by the researchers. Whether the pupils with hearing impairment have adequate knowledge on the effect of hand hygiene practices against infectious diseases is an interesting question that needs to be assessed. Approximately 2.4 million deaths can be prevented annually by good hand hygiene practices, reliable sanitation, and drinking clean water (Rabbi & Dey, 2013).

Research Questions

The following research questions were answered:

1. What effects will age have on knowledge of handwashing practices in prevention of infectious diseases among pupils with hearing impairment in Lagos State after exposure to hygiene education?
2. To what level will gender affect handwashing practices compliance in prevention of infectious diseases among pupils with hearing impairment in Lagos State after exposure to hygiene education?
3. What effects will hygiene education knowledge have on handwashing practices among pupils with hearing impairment in Lagos State?

Methodology

The study adopted a test – retest experimental research method. To monitor the effect of the hygiene education intervention, participants were randomly selected from three different special schools in Lagos State. Multistage sampling techniques was used to select participants into the groups: Group A and B (Experimental Groups) and Group C (Control Group).

The population of study consisted of all hearing-impaired pupils in public primary schools for the Children with Special Needs in Lagos State. Sample size of two hundred and eighteen (n=218) were drawn from three (3) public primary schools for the children with special needs (Hearing Impaired schools) namely: Oki Primary School, Inclusive Unit, Iyana Ipaja, Wesley School for the Deaf, School I and School II, Surulere (Experimental Groups A and B) and Local Government Primary School, Inclusive Unit, Ipakodo, Ikorodu (Control Group C). The inclusion criteria were all pupils with special needs in public primary schools (Hearing impaired) within the age of 9 and 14 years who were present and selected for the pre-test (T_1) exercise. Exclusion criteria included pupils who were under 9 years or above 14 years of age as at the time of selection, pupils who have other multiple challenges and pupils who were not selected for the pre-test exercise. An adapted handwashing knowledge questionnaire with thirty-six (36) items was used. The questionnaire was retrieved on spot after completion. Post-test (T_2) was carried out after sixth week of the intervention. Analysis was done using descriptive statistics of frequency counts and percentages, while

inferential statistics ofStandard Deviation (SD) was used to test the three research questions.

Results

The demographic data of respondents for the study are presented using frequency distribution tables

Table 1: Demographic characteristics of respondents

Variables	Experiment A		Experiment B		Control group		Total	
Gender	Freq	%	Freq	%	Freq	%	Freq	%
Male	36	16.5	34	15.6	42	19.3	112	51.4
Female	34	15.6	40	18.3	32	14.7	106	48.6
Total	**70**	**32.1**	**74**	**33.9**	**74**	**34.0**	**218**	**100.0**
Class								
Pry 4	12	5.5	26	11.9	30	13.8	68	31.2%
Pry 5	22	10.1	24	11.0	24	11.0	70	32.1%
Pry 6	36	16.5	24	11.0	20	9.2	80	36.7%
Total	**70**	**32.1**	**74**	**33.9**	**74**	**34.0**	**218**	**100.0%**
Age (Years)								
9-10	6	2.8	6	2.8	8	3.6	20	9.2%
11-12	20	9.2	10	4.6	32	14.6	62	28.4%
13-14	44	20.1	58	26.5	34	15.8	136	62.4%
Total	**70**	**32.1**	**74**	**33.9**	**74**	**34.0**	**218**	**100.0%**
Religion								
Islam	14	6.4	20	9.2	22	10.1	56	25.7%
Christianity	56	25.7	48	22.0	52	23.9	156	71.6%
Traditional	0	0.0	4	1.8	0	0.0	4	1.8%
Others	0	0.0	2	0.9	0	0.0	2	0.9%
Total	**70**	**32.1**	**74**	**33.9**	**74**	**34.0**	**218**	**100.0%**

In Experiment A, male participants were 16.5%, while female participants were 15.6%; in Experiment B, male participants were 15.6%, while female participants were 18.3%; in control group, male participants 19.3%, while female participants

were 14.7%; making a total of 51.4% male pupils and 48.6% female participants. Hence, male participants participated more in this study than female participants. Class of the participants, in Experiment A, primary 4 participants were 5.5%, primary 5 participants were 10.1%, while primary 6 participants were 16.5%. In Experiment B, primary 4 participants were 11.9%, primary 5 participants were 11%, while primary 6 participants were also 11%. In control group, primary 4 participants were 13.8%, primary 5 participants were 11%, while primary 6 participants were 9.2%. This makes a total of 31.2% for primary 4, 32.1% for primary 5 and 36.7% for primary 6 respectively. Hence, primary 6 participants participated mostly in this study.

Concerning age of the participants, in Experiment A, 2.8% participants were within 9-10 years old, 9.2% participants were within 11-12 years old, while 20.1% participants were within 13-14 years old. In Experiment B, 2.8% were within 9-10 years old, 4.6% were within 11-12 years old, while 26.5% were within 13-14 years old. In control group, 3.6% were within 9-10 years old, 14.6% were within 11-12 years old, while 15.8% were within 13-14 years old. This gave a total of 9.2% for participants within 9-10 years old, 28.4% for participants who were within 11-12 years old and 62.4% for participants within 13-14 years old. Hence, participants who were within 13-14 years of age participated mostly in this study.

Regarding religion of the participants, in Experiment A, 6.4% participants were Muslim faithful, 25.7% participants were Christian faithful, no participant was traditional and other religions. In Experiment B, 9.2% participants were Muslim faithful, 22% participants were Christian faithful, 1.8% participants were in Traditional religion, while 0.9% participants were in other religions. In control group, 10.1% participants were Muslim faithful, 23.9% participants were Christian faithful, none was traditional and other religions. This gave a total of 25.7% participants Muslim faithful, 71.6% participants Christian faithful, 1.8% participants Traditional faithful, and 0.9% participants claimed other religion. Hence, participants in Christian faithful participated mostly in this study.

Response to Research Questions

Question One

What effects will age have on knowledge of handwashing practices in prevention of infectious diseases among pupils with hearing impairment in Lagos State after exposure to hygiene education?

Table 2: Descriptive analysis of effect of age on knowledge of handwashing practices in prevention of infectious diseases among pupils with hearing impairment in Lagos State after exposure to hygiene education

Group	Age	N	Pre-test		Post-test		Mean Difference	Effect size
			Mean	SD	Mean	SD		
Experiment A	9-10 years	6	8.67	1.366	10.00	0.000	1.33	
	11-12 years	20	8.70	0.801	10.00	0.000	1.30	
	13-14 years	44	9.32	1.029	9.95	0.211	0.63	
	Total	70	9.09	1.032	9.97	0.168	0.88	
Experiment B	9-10 years	6	8.00	0.000	9.33	1.033	1.33	
	11-12 years	10	8.20	1.033	10.00	0.000	1.80	
	13-14 years	58	8.00	0.991	9.90	0.307	1.90	0.001
	Total	74	8.03	0.950	9.86	0.416	1.83	
Control Group	9-10 years	8	8.75	0.886	9.25	1.389	0.50	
	11-12 years	32	8.50	1.244	8.87	1.385	0.37	
	13-14 years	34	8.35	0.849	8.82	1.445	0.47	
	Total	74	8.46	1.036	8.89	1.400	0.43	
Total	9-10 years	20	8.50	0.946	9.50	1.051	1.00	
	11-12 years	62	8.52	1.083	9.42	1.139	0.90	
	13-14 years	136	8.51	1.122	9.65	0.891	1.14	
	Total	218	8.51	1.091	9.57	0.982	1.06	

Reference Point: Small effect (0.2); Medium effect (0.5); Large effect (0.8).
Source: (Cohen, 1992)

Table 2 shows effect of age on knowledge handwashing practices in prevention of infectious diseases among pupils with hearing impairment after exposure to the hygiene education intervention. From the results, for the participants within the age group of 9-10 years, the pre-test mean scores were (Mean=8.67, SD =1.366) for Experiment A; (Mean = 8.00, SD = 0.000) for Experiment B; and (Mean = 8.75, SD = 0.886) for control group respectively. Similarly, for the participants within the age group of 11-12 years, the pre-test mean scores were (Mean=8.70, SD =0.801) for Experiment A; (Mean = 8.20, SD = 1.033) for Experiment B; and (Mean = 8.50, SD = 1.244) for control group respectively. Also, for the participants within the age group of 13-14 years, the pre-test mean scores were

(Mean=9.32, SD =1.029) for Experiment A; (Mean = 8.00, SD = 0.991) for Experiment B; and (Mean = 8.35, SD = 0.849) for control group, respectively.
After the treatment, participants within the age group of 9-10 years had higher mean scores of (Mean=10.00, SD = 0.000) for Experiment A and (Mean = 9.33, SD = 1.033) for Experiment B than the control group with (Mean = 9.25, SD = 1.389) respectively. Moreover, participants within the age group of 11-12 years had higher mean scores of (Mean=10.00, SD = 0.000) for Experiment A and (Mean = 10.00, SD = 0.000) for Experiment B than the control group with (Mean = 8.87, SD = 1.385) respectively. Furthermore, participants within the age group of 13-14 years had higher mean scores of (Mean=9.95, SD = 0.211) for Experiment A and (Mean = 9.90, SD = 0.307) for Experiment B than the control group with (Mean = 8.82, SD = 1.445) respectively.

Therefore, for participants within the age group of 9-10 years, the observed mean difference of 1.33 in Experiment A and 1.33 in Experiment B indicated the effectiveness of the hygiene education. Also, for participants within the age group of 11-12 years, the observed mean difference of 1.30 in Experiment A and 1.80 in Experiment B indicated the effectiveness of the hygiene education. Similarly, for participants within the age group of 13-14 years, the observed mean difference of 0.63 in Experiment A and 1.90 in Experiment B indicated the effectiveness of the hygiene education. Hence, age has a positive effect onknowledge of handwashing practices in prevention of infectious diseases among pupils with hearing impairment in Lagos State after exposure to hygiene education. However, since the effect size gave a value of 0.001 is an indication of a very low effect of age on knowledge and practices. It can therefore be concluded that there is no significant effect of age on knowledge of handwashing practices in infectious diseases prevention among pupils with Hearing Impairment after exposure to the hygiene education. Hence, handwashing practices could be taught to any school age without waiting for specific age of learners which is more beneficial to personal hygiene and wellbeing.

Question Two

To what level will gender affect handwashing practices compliance in infectious diseases prevention among pupils with hearing impairment in Lagos State after exposure to hygiene education?

Table 3: Descriptive analysis of effect of gender on handwashing practices compliance ininfectious diseases prevention among pupils with hearing impairmentafter exposure to hygiene education intervention

Group	Gender	N	Pre-test		Post-test		Mean Difference	Effect size
			Mean	SD	Mean	SD		
Experiment A	Male	36	7.22	1.456	9.83	0.507	2.61	
	Female	34	7.41	1.559	9.65	0.597	2.24	
	Total	70	7.31	1.499	9.74	0.557	2.43	
Experiment B	Male	34	8.53	1.107	9.65	0.774	1.12	
	Female	40	8.95	1.131	8.95	0.986	0.00	0.006
	Total	74	8.76	1.132	9.27	0.955	0.51	
Control Group	Male	42	7.95	1.306	8.19	1.273	0.24	
	Female	32	8.50	1.295	8.56	1.684	0.06	
	Total	74	8.19	1.321	8.35	1.466	0.16	
Total	Male	112	7.89	1.391	9.16	1.197	1.27	
	Female	106	8.32	1.471	9.06	1.225	0.74	
	Total	218	8.10	1.443	9.11	1.209	1.01	

Reference Point: Small effect (0.2); Medium effect (0.5); Large effect (0.8).
Source: (Cohen, 1992)

Table 3 shows effect of gender on handwashing practices compliance in infectious diseases prevention among pupils with hearing impairment in Lagos State after exposure to hygiene education intervention. From the results, for male participants, the pre-test mean scores were (Mean=7.22, SD =1.456) for Experiment A; (Mean = 8.53, SD = 1.107) for Experiment B; and (Mean = 7.95, SD = 1.306) for control group, respectively. Similarly, for female participants, the pre-test mean scores were (Mean=7.41, SD=1.559) for Experiment A; (Mean = 8.95, SD = 1.131) for Experiment B; and (Mean = 8.50, SD = 1.295) for control group, respectively.

After the treatment, male participants exposed to hygiene education intervention had higher mean scores of (Mean=9.83, SD = 0.507) for Experiment A and (Mean = 9.65, SD = 0.774) for Experiment B than the control group with (Mean = 8.19, SD = 1.273) respectively. More so, female participants exposed to hygiene education intervention had higher mean scores of (Mean=9.65, SD = 0.597) for Experiment A and (Mean = 8.95, SD = 0.986) for Experiment B than the control group with (Mean = 8.56, SD = 1.684) respectively.

For male participants, the observed mean difference of 2.61 in Experiment A and 1.12 in Experiment B indicated the effectiveness of the hygiene education. Also, for female participants, the observed mean difference of 2.24 in Experiment A and 0.00 in Experiment B indicated the effectiveness of the hygiene education. Hence, gender has a positive effect on compliance to handwashing practice in infectious diseases prevention among pupils with hearing impairment after exposure to hygiene education intervention. However, since the effect size gave a value of 0.006 which is an indication of a very low effect of gender on compliance to handwashing practice. It can therefore be concluded that there is no significant effect of gender on handwashing practices compliance among pupils with hearing impairment in Lagos State after exposure to hygiene education intervention. Hence, both male and female can practice cautious handwashing when adequately taught.

Question Three

What effects will hygiene education knowledge have on handwashing practices among pupils with hearing impairment in Lagos State?

Table 4: Descriptive analysis of effect of hygiene education on handwashing practices among pupils with hearing impairmentin Lagos State

		Pretest		Posttest		Mean	Effect size
Group	N	Mean	SD	Mean	SD	Difference	
Experiment A	70	7.31	1.510	9.74	0.561	2.43	
Experiment B	74	8.76	1.140	9.27	0.962	0.51	0.833
Control Group	74	8.19	1.330	8.35	1.476	0.16	
Total	218	8.10	1.446	9.11	1.212	**1.01**	

Reference Point: Small effect (0.2); Medium effect (0.5); Large effect (0.8).
Source: (Cohen, 1992)

Table 4 shows effects of hygiene education knowledge on handwashing practices among pupils with hearing impairment in Lagos State after the hygiene education intervention. From the results, pre-test mean scores of the participants were (Mean=7.31, SD =1.510) for Experiment A; (Mean = 8.76, SD = 1.140) for Experiment B; and (Mean = 8.19, SD = 1.330) for control group, respectively. After the treatment, participants exposed to hygiene education intervention had higher mean scores of (Mean=9.74, SD = 0.561) for Experiment A and (Mean =

9.27, SD = 0.962) for Experiment B than the control group with (Mean = 8.35, SD = 1.476) respectively. The observed mean difference of 2.43 for Experiment A and 0.51 for Experiment B indicated the effectiveness of the hygiene education. Therefore, there is a significant effect of hygiene education knowledge on handwashing practices among pupils with hearing impairment in Lagos State. Furthermore, since the effect size gave a value of 0.833 which is an indication of large effect of the hygiene education on handwashing practices. It can therefore be concluded that there is a significant effect of hygiene education knowledge on handwashing practices among pupils with hearing impairment in Lagos State.

Haastrup, Maduka, Nzuki, Ozoh, Arthur, Nyanti, Akosile, Oyewoga, & Shuaib, (2017) believed that children are quicker in the uptake of health messages and had better recall than adults. Children also demonstrated handwashing practices better than adults implying that children may be better adoptors of behaviour change than the adults.

Onwuama (2017) emphasised the importance of Health Education in elementary school curriculum as a learning window for initiating positive behaviour change among learners, parents, Staff and community members. Promoting hygiene education in school will further establish the culture of handwashing among learners and Staff in the school. It will also involve children as active participants and change agents against childhood diseases and other communicable diseases within the school and communities (UNICEF Nigeria, 2020).

In summary, findings of the analyses conducted were:

1. Age had no significant effect on knowledge of handwashing as infectious diseases prevention among pupils with hearing impairment in Lagos state after exposure to the hygiene education. Hence, handwashing practices should be introduced to all learners in school without waiting for specific age. The implication is that the earlier hand hygiene practices is introduced to learners the better the uptake of personal hygiene and wellbeing.
2. Gender had no significant effect on handwashing compliance among pupils with hearing impairment in Lagos state after exposure to hygiene education intervention. It is therefore deduced that both male and female can practice handwashing when adequately taught irrespective of their gender.
3. Knowledge of hygiene education had significant effect on handwashing practices among pupils with hearing impairment in Lagos State after exposure to hygiene intervention which has contributed to participants knowledge, health belief, positive health habits and wellness promotion.

Conclusion

Pupils with hearing impairment in their primary schooling age can learn specific health-promoting behaviours, even if they do not fully understand the

connections between illness and behaviour, health habits can be developed in this period. The present inadequate knowledge base hinders the development of improved strategies for enhancing the maintenance of personal hygiene, which is of great importance to decrease the burden of communicable diseases among school age children in the developing countries.The following are recommended:

1. Early inclusion of hygiene education into elementary school curriculum in Lagos state.
2. Provision of basic hygiene amenities in the school and strategic places in the community such as handwashing points, portable water stations, waste baskets/bins and enforcement of clean surroundings to promote personal hygiene and wellness in Lagos state.
3. Education of the community through continuous awareness programme on the need to involve both genders in hygiene education and hygiene practices

References

Arulogun O. S., Titiloye, M. A., Afolabi, N. B., Oyewole, O. E., & Nwaorgu, O. G. (2013). Experiences of girls with hearing impairment in accessing reproductive health care services in Ibadan, Nigeria.*African Journal of Reproductive Health* 17(1):85-93

Binders J. A. D. (2015). Who are the children with special needs? *Jamaica Association for the Deaf.*Papine Kingston 6, Jamaica (www.jamdeaf.org)

Centers For Disease Control and Prevention. (2018). *Hand washing: Cleanhands save lives*. Retrieved from https://www.cdc.gov/handwashing/ whyhandwashing.html.

Cochrane Collaboration (2010).Interventions to improve disposal of human excreta for preventing diarrhea (Review), p14. John Wiley & Sons, UK. Available at: www.thecochranelibrary.com/userfiles/ccoch/file/ Watersafety/CD007180. Retrieved, 3 August, 2020.

Ejemot & Regina, I. (2008). Hand-washing for preventing diarrhoea.*Cochrane Database of Systematic Reviews* Issue 1, 20.

Haastrup, E. A., Maduka, O., Nzuki, C., Ozoh, H. C., Arthur, T., Nyanti, S. B., Akosile, C. F., Oyewoga, D., & Shuaib, F. (2017) House-to-house interpersonal communication in the containment of Ebola in Nigeria.*Journal of Communication in Healthcare*, 10: 1 , 31 – 36 Retrieved August, 2022 from: http://dx.doi.org/10.1080/17538068. 2017. 1304013

Khatoon, R., Sachan, B., Khan, M. A., & Srivastava, J. P. (2017).Impact of school health education programme on personal hygiene among school children of Lucknow District. J. *Family Med. Prim. Care* 6 (1), 97–100.

Lawal, Y. A. (2018).Gateway to success in special education for undergraduates.Lagos:Boon Global Ventures, Morocco, Yaba,. Pg 119

Moronkola, A. O. (2016). Vital statistics for health professionals.(2nd ed.)Ibadan:Royal People (Nigeria) Ltd.

Okoroiwu, H.U., Uchendu K., & Essien, R. A. (2020). Causes of morbidity and mortality among patients admitted in a tertiary hospital in Southern Nigeria. A 6-year

evaluation.*Journal PLOS ONE* 15(8): e0237313. www.journals.plos.org/plosone Retrieved Feb. 2022.

Onwuama, M. A. C. (2017). School health education strategies.Heath education for tertiary institution students.A publication of Nigeria School Health Association. 120 – 135. Ibadan:His Lineage Publishing House, , Nigeria.

Rabbi, S. E., & Dey, N. C. (2013).Exploring the gap between handwashing knowledge and practices in Bangladesh: A cross-sectional comparative study.BioMed Central Public Health, 13, 89.doi: 10.1186/1471-2458-13-89

UNICEF.(2020). Water, sanitation, hygiene, and waste management for the COVID-19 Virus. World Health Organization, Geneva

UNICEF/WHO (2009) Diarrhoea: Why children are still dying and what can be done. *UNICEF/World Health Organisation*. Available at: www.unicef.org/health/files/ Final_ Diarrhoea_Report_October_2009_final. Retrieved August, 2020.

WHO.(2015). Progress on Sanitation and Drinking Water 2015 Update and MDG Assessment.*World Health Organization*, Geneva.

WHO. (2018). Drinking water, sanitation and hygiene in schools: Global Baseline Report. United Nations Children's Fund and World Health Organization, New York.

WHO/UNECE, (2019). Surveillance of water, sanitation and hygiene in schools: A practical tool. https://apps.who.int/iris/bitstream/handle/10665/ 329394/97 89289054393 Retrieved November, 201