

# Role of Health Education in Promoting Knowledge, towards Personal Hygiene Among Primary School Pupils in Umbada locality, Khartoum State, Sudan (2018 - 2020)

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## Abstract

**Background:** Personal hygiene is the behaviors that must be practiced in daily life, starting from morning to sleep time to protect our health.

**Objectives:** This study aimed to assess the role of health education in promoting knowledge of personal hygiene among Primary School Pupils in Umbada locality, Khartoum State Sudan (2018 - 2020)

**Materials and methods:** The study design an observational interventional study was conducted where a pre- and post- assessment was done. Pre-test and post-test were used to determine the practices of hygiene among primary school Pupils in some selected schools of Umbada locality al emir unit. The targeted population was primary school Pupils in Government schools only. The study populations were the pupils in the Primary public schools with a total number of 37850 Pupils (grade 5, grade 6 and grade7) distributed among 180 public primary schools in the locality. The sample size consisted of (800) pupils during the period of the study. A pre- and post- questionnaire was carefully prepared, tested and directed to the pupils. It covers pupil's age, sex, and the classroom, source of water supply and latrine in the house there, and to obtain data regarding knowledge, attitude, and practices (as regards personal hygiene in both pre- and post-intervention phases. Data was analyzed using Statistical Package for Social Sciences SPSS Computer Program Version (19.0).

**Results:** The study revealed that the overall knowledge of pupils about personal hygiene was increase from 38.7% to 61.3% after intervention of health education packages.

**Conclusion:** Due to gaps in many items of knowledge, attitude and practice regarding personal hygiene, there is need of the proper health education intervention through framework of schools to the school children, for improvement regarding personal hygiene among them, throughout the nation. Health education has significant role in promoting knowledge of school pupils regarding personal hygiene.

## Keywords

Knowledge, health education, Personal hygiene, Umbada locality, Khartoum.

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## INTRODUCTION

Due to inadequate sanitary conditions and poor personal hygiene practices, the increasing burden of communicable diseases among school children remains a concern on the public health agenda in developing countries. (Oyibo et al., 2012) Children are not conscious of personal hygiene at school level. The majority of the schools are not fenced allowing domestic animals to step around the school premises, making children vulnerable to many zoonotic infections. The feet and hands of children playing on such ground with animal poop get contaminated and eventually contaminate their friends and the classroom. In this way the school environment becomes a reservoir for many health hazards due to poor personal hygiene. (Chausa, 2008). For better knowledge and practice, the health education intervention program was very much fruitful to the growing children for their better health and upcoming future. So, this study was undertaken to know the impact of health education on the knowledge and practice regarding personal hygiene among primary school children in an urban area. This study aimed to assess the role of Health Education in Promoting Knowledge, of Personal Hygiene among Primary School Pupils in the Umbada locality, Khartoum State Sudan (2018 - 2020)

## MATERIALS AND METHODS

### *Study design*

An Observational interventional study was conducted where a pre- and post- assessment was done. Pre-test and post-test were used to determine the knowledge, attitude and practices of hygiene among primary school Pupils in some selected schools of Umbada locality al emir unit. The targeted population was primary school Pupils in Government schools only.

### *Study area*

The study was conducted in the Umbada locality al emir unit among primary school Pupils in Government schools during the academic year 2018-2019 at the beginning of the school year.

### *Study Population*

The study population was primary schools' pupils in the Umbada locality.

### *Inclusion criteria*

Primary school children in the age (11 to 16 years old), those lived in the study area from 5th to 7th grade in Government schools only in study area al emir unit Umbada locality Exclusion criteria:

Pupils younger than (11 years old), and above than, (16 years old) 1st to 4th grade and pupils in 8th grade in schools of study, and pupils in primary privet schools not included.

### *Sample size*

The target population is composed of 5 boys' schools, and 5 girls' schools, and one mixed school each was considered as a cluster.

The sample size was determined using the following formula:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample Size

e= is a marginal error (d =0.05).

So, when it was applied in the equation as below:

$$n = \frac{37850}{1 + 37850(0.05)^2}$$

This resulted in a sample of 400 pupils (boys) and 400 pupils (girls) according to design effect (5th, 6th, 7th Grades)

### ***Distribution of the Sample Size***

The schools of boys and girls listed in two groups, group for boys school and the sample was selected according to the stratified sample. The sample includes public schools only and we exclude private schools and include classes from the fifth, sixth and seventh grades, and we exclude classes from the first to the fourth and also the eighth grade due to academic pressure and exams.

The sample was chosen from 12 schools, five girls' schools, five boys' schools and two mixed schools. The data were collected from the students according to the stratified sample and according to what was reported by the World Health Organization, the lowest class has 25 students, this means 75 pupils from each girls' school, 75 pupils from girls' schools and 50 pupils from mixed schools, meaning 25 pupils' girl and 25 pupils' boy.

### ***Methods of Data Collection***

A pre- and post- questionnaire was carefully prepared, tested and directed to the pupils it covers pupil's age, sex, and the classroom, source of water supply and latrine in the house there, and to obtain data regarding knowledge, attitude, and practices (KAPs) as regards personal hygiene in both pre- and post-intervention phases.

### ***Interviewing Teachers***

Teachers were interviewed regarding personal hygiene of their schools' pupils.

### ***Observation Check List***

The observation checklist was applied in terms of pupil's personal hygiene practice.

### ***Phases of the Study***

The study is composed of three phases.

#### ***Phase I***

##### **Pre-intervention phase**

In this phase questionnaires were directed to the pupils to obtain baseline data.

##### **Designing Interventional materials**

In this phase; interventional materials, methods and tools were developed and also training guide or manually designed for teachers and interventionists. A pamphlet was also designed by researcher of the of health education regarding personal hygiene in addition to local materials designed by the researcher.

##### **Training workshop for teachers**

A training workshop for teachers was carried out to increase knowledge of the teachers towards personal hygiene to assist in improving practices, attitudes and knowledge of pupils towards

Elements of personal health. School health teachers from each school of the study received training course on personal hygiene by teachers.

## ***Phase II: Interventional phase***

### **Lectures**

Lectures presented on personal hygiene according to the following standards and criteria.

- One lectures per week for each school on personal hygiene for six months
- Any lecture hasn't exceeded half an hour in time.
- Any lecture followed by a demonstration on proper personal hygiene techniques.
- Good coordination did with educational authorities in the locality for conducting such lectures.
- Ports were used in lectures.
- Manual of the training was applied to follow the guides of the training Manual.

### **Practical Demonstration**

Practical demonstrations were conducted to improve skills of the pupils regarding personal hygiene (hand washing, Tooth brushing) as follows:

The time of any practical demonstrations has not exceeded 10 minutes.

- Source of water is used
- Plastic basins
- Soap
- Towels
- Pupils are encouraged to adopt proper hand washing.

Each school received one demonstration accompanied by the lectures for 24 demonstrations weekly on hand washing, Tooth brushing and all the skills of personal hygiene. Hence the total numbers of all demonstrations for all schools of the study were 264 demonstrations.

### **Posters**

Wall posters were fixed on the walls of the class of the school as reminders for the pupils inside and outside of the class (the poster designed and published by UNICEF and minister of health for health education purposes including written messages and images, new posters were fixed to replace the old ones when ruptured.

Also, local posters were designed by Health Promotion Department and approved by Ministry of Health.

### **Leaflets (pamphlets)**

Leaflets designed by UNICEF and ministry of health were distributed to increase knowledge of the pupils regarding hand washing and Personal hygiene skills. Leaflets were distributed to all pupils regardless participating or not in the study, any pupil received leaflets. So, Leaflets were revised by the interventionists to ensure that every pupil had Leaflet, about 20000 leaflets distributed.

### **Peer education**

Peer education is one of interventional means and methods to make pupils acquire excellent and proper practice of personal hygiene skills, two peers were trained from each class to encourage the class to do proper practice of personal hygiene skills and peers played role of leaders, models and advisors. Peers were selected with the help of the teachers.

## Songs

Electronic songs regarding hand washing produced by water sanitation program UNICEF and approved by Health Promotion Department Khartoum Ministry of Health was broadcast for the pupils by using loudspeakers of the schools, the frequencies of broadcast were done every week accompanied with the lectures.

Every school received weekly session of song listening. The purpose of these songs was to increase knowledge and improve practicing of pupils in polite, attractive and untraditional way.

## Morning Assembly Message

One of the most essential interventional methods to promote practice regarding personal hygiene elements among the pupils was the morning assembly message. It was designed and distributed every week. It was written carefully and revised by Health Promotion Department, Khartoum Locality. It was read by the pupils in the morning assembling for all school classes.

## Phase III

### Post -intervention phase

This is an evaluation phase in data regarding the indicators of the study was collected using the same methods of data collection used in phase one about the pupils' KAPs regarding personal hygiene the same pupils in pre-evaluation phase.

### Mechanisms to assure the quality of the study

To avoid bias and ensure this study should be in the good quality some procedures took place as follows:

- The sample size of this study was selected scientifically by using references.
- All data collectors and interventionists were public health officers working in health promotion department in umbada locality.
- Data collectors and interventionists were trained.
- A pilot study conducted before starting data collection.
- Using official data and information
- Computer was used in data analysis.
- Both hard copies and soft copies used for data saving.
- Credible references and published research abstracts were used.
- This study edited by professionals in English language.
- Auditing all figures that will be mentioned in this study.
- Sound computer was used.

### Limitations of the study

- There were many limitations found can be mentioned as follows:
- Irregularity of the periods of school class.
- Self-reporting of pupils was very difficult
- Sense of fear among the pupils in all phases of the study.

### Ethical considerations

- An agreement letter was issued from the educational affairs Umbada locality.
- Managers of the schools were oriented by the objectives of this research and its benefits.
- Letters of performance were issued from the schools of the study.

## Data Analysis

Data was analyzed using Statistical Package for Social Sciences SPSS Computer Program Version (19.0). Frequency distribution was used; Chi-square( $X^2$ -test) was used to verify possible associations between different variables. Values were considered to be statistically significant when the P-value obtained was less than 0.05.

## Ethical Clearances

The ethical approval for the study was obtained from the Education Department, the primary stage, Umbda locality, then the schools administration in the study areas, al emir Unit, the study was explained to school principals and professors prior to the interviews and they were informed that their participation was voluntary.

## RESULTS

Overall knowledge	Pre-intervention (n=800)		Post –intervention (n=800)	
	No.	(%)	No.	(%)
Knowledge about personal hygiene	430	53.75	800	100
Knowledge about personal hygiene requirements	430	53.75	650	81.25
Knowledge about public health requirement	582	72.8	700	87.5
Personal hygiene items	139	32.3	350	43.8
Knowledge about importance of hand washing	670	83.75	780	97.5
Knowledge about importance of foot washing	500	62.5	770	94.6
Knowledge about importance of cleaning ear	455	56.9	745	93.1
Knowledge about importance of tooth washing	679	84.9	779	97.4
Knowledge about difference between personal and general Hygiene requirement	174	40.5	526	65.75
Knowledge about the harm of nail biting on health	270	33.75	566	70.8
Knowledge about of harm of poor personal hygiene	310	72	544	68
Knowledge about the disease related to poor personal hygiene	300	69.8	690	86.25
Type of disease	300	30.3	690	69.7
Knowledge about the times of tooth brushing/day	622	77.8	723	90.4
Knowledge about the importance of hand washing with soap	516	64.5	700	87.5
Knowledge about times of bathing/week	460	57.5	618	77.25
Knowledge about the important of washing hands with soap	498	62.3	778	97.25
<b>Overall knowledge</b>	<b>7653</b>	<b>38.7</b>	<b>12097</b>	<b>61.3</b>

**Table 1:** Distribution of the pupils according to the overall Knowledge about personal hygiene

Table 1 indicates that the overall knowledge of pupils about personal hygiene was increase from 38.7% to 61.3% after intervention. The knowledge of pupils about personal hygiene was increase from pre-intervention 53.75% to 100 % during post-intervention by 46.25%. Also, knowledge of pupils about personal hygiene requirements was improved from 53.75% to 81.25% by 27.5% from pre-intervention to post-intervention. However, the knowledge about public health requirements was increase from 72.5% to 87.5% by 15% during pre and post - intervention. There was slightly increase in knowledge of personal hygiene in terms of medical and public health during pre- and post-intervention from 1.6% to 8.1% while there was a decrease in knowledge of personal hygiene concerning oral hygiene (oral care) from 15.8% to 5.1%. Knowledge regarding hand washing (hand care) was witnessed also a decrease from 23.7% to 15.8% during pre- and post- intervention.

Also, decrease in knowledge was reported in terms of clothes hygiene from 16.2% to 15.8%. While a decrease was shown in knowledge in terms of foot hygiene (foot care) from 10.2% to 5.6%. However, the overall knowledge of pupils in terms of personal hygiene items was increase during pre- and post-intervention from was slightly increase from 32.2% to 43.8% by 11.6%. On the other hand, the knowledge of pupils regarding importance of hand washing was improved during pre- and post-intervention from 83.75 to 97.5% by 13.75%. A dramatic increased in knowledge of pupils regarding importance of foot washing during pre- and post-

intervention from 62.5% to 94.6% by 32.1%. Hence a sharp increase in knowledge of pupils regarding the importance of cleaning ear during pre- and post- intervention was reported from 56.9% to 93.1% by 36.2%. The knowledge about importance of tooth washing was increase from 84.9% to 97.4% during pre and post -intervention by 12.5%. Hence the knowledge about difference between personal and general hygiene requirements was witnessed increase from 40.5% to 65.75% by 25.25% during pre- and post- intervention. Also, the knowledge of pupils about the harm of nail biting on health was showed increase from 33.75% during pre-intervention 70.8% during post- intervention. No improvement in knowledge was reported among pupils regarding harm of poor personal hygiene, however a decreased in knowledge was reported from 72% to 68% during pre- and post- intervention.

There was increase in knowledge of pupils about the risks resulting from neglect of personal hygiene from 74% to 86% during pre- and post- intervention by 12%. The knowledge of pupils regarding disease related to poor personal hygiene was witnessed increase from 69.8% to 86.25% by 16.45%. Moreover, the knowledge of pupils regarding type of disease in terms of diarrheal disease was slightly increase from 31.7% to 43.3% while knowledge concerning malaria was decreased from 17.3% to 11.6%. However, knowledge of pupils in terms of eye infection was increase from 5.7% to 16.1%. In addition, knowledge regarding diarrheal diseases and eye infection was decreased from 45.3% to 16.1%.

Minor improvement in pupils' knowledge in terms of times of tooth brushing/day was increase from 77.8% to 90.4% during pre- and post- intervention. While the knowledge of pupils regarding importance of hand washing with soap was increase from 64.5% to 87.5% by 23%. Also, knowledge of pupils about times of bathing/week was witnessed sharp increase from 57.5% to 77.25% by 19.75%. Furthermore, knowledge about the important of washing hands with soap showed an improvement from 62.3% to 97.25% by 34.95%.

## DISCUSSION

This study aimed to assess the role of Health Education in Promoting Knowledge, towards Personal Hygiene among Primary School Pupils in Umbada locality, Khartoum State Sudan (2018 - 2020). This study showed that the overall knowledge of pupils in terms of personal hygiene was increase during pre- and post- intervention from 38.7% to 61.3% after intervention. While the overall practice of pupils about personal hygiene was increase from 39% to 61% after intervention. The overall attitude was promoted after intervention from 45.8% to 54.2% during pre and post- intervention. Also, knowledge of pupils about personal hygiene was increase from pre-intervention 53.75% to 100 % during post-intervention by 46.25%. A similar study showed there was significant increase in knowledge and practice score of school children after health education intervention ( $p < 0.05$ ) which was supported by the study conducted by Siwach M. They reported significant increase in knowledge and practice after health education intervention in Panipat, India (Siwach, 2009). Also, the findings were similar to the study conducted by Greene et al in Western Kenya where increase in knowledge was statistically significant after intervention (Greene et al., 2012).

Our study showed that, the most source of knowledge about personal hygiene were school 47.7% followed by media 23.3% and parents 21%. These observations clearly demonstrated that the schools and its teachers could play a vital role in imparting the knowledge and practices of personal hygiene very early in the Childs' life. It is well known that children are more receptive to learning and are very likely to adopt healthy behaviors at a younger age. Furthermore, they have also demonstrated that they can also be agents of change by spreading what they have learned in school to their families and community at large (Vivas et al., 2010, Sarkar, 2013). On the other hand, the study explained that the knowledge of pupils about personal hygiene requirements, public health requirements, personal hygiene in terms of

medical and public health was increase due to effect of health education sessions. Moreover, the study showed that there was a decreased in knowledge of personal hygiene concerning oral hygiene (oral care), hand washing (hand care), clothes hygiene and foot hygiene (foot care). Poor personal hygiene, in combination with insanitary conditions and contaminated water, creates a serious public health threat to school children. Globally, 2.5 billion people had inadequate sanitation facilities and live with poor personal hygiene.

There are nearly 7 lakhs primary schools in India. Out of them only half has safe drinking water facility and only 10% have sanitary facilities. Due to a lack private and decent sanitation facilities at schools many children had low personal hygiene and increase burden of diseases (United Nation Children's Fund., 2013, Snel et al., 2002). Poor personal hygiene is related to nutrition deficiencies, worm infestations and diarrhea. It adversely affects attendance at school and learning process (United Nation Children's Fund, 2013).

Due to inadequate sanitary conditions and poor personal hygiene practices, the increasing burden of communicable diseases among school children remains a concern on the public health agenda in developing countries (Oyibo, 2012). Children are not conscious of personal hygiene at school level. The majority of the schools are not fenced allowing the domestic animals to step around the school premises, making children vulnerable to many zoonotic infections. Feet and hands of children playing at such ground with animal dung get contaminated and eventually contaminate their friends and the classroom. In this way the school environment becomes a reservoir for many kinds of health hazards due to poor personal hygiene (Chausa, 2008) or better knowledge and practice, the health education intervention program was very much fruitful to the growing children for their better health and upcoming future. So, this study was undertaken to know the impact of health education on the knowledge and practice regarding personal hygiene among primary school children.

This study also indicated that knowledge of pupils regarding importance of hand washing was improved during pre and post, knowledge of pupils regarding importance of foot washing, importance of cleaning ear and knowledge of importance of tooth washing. The finding in line with a study done in Gombang Mlati Sleman, Yogyakarta showed similar results p-value of 0.001, which means that there is an effect of health education on handwashing techniques in students of State Primary School by raising student awareness about hand washing by using the Wilcoxon test. (Effect et al., 2020).

A cross-sectional study was conducted for 1008 students from the 6th to 12th class of governmental schools in Bikaner. The result revealed that more than 90% of the students know about personal hygiene, clothes, and oral hygiene, 46% of them are using toilet paper, and 29.8% for a sanitary pad. More than 90% bath, brush teeth every day, hand washes before a meal and after using the toilet. Less than 70% hand wash after handling the animal and cutting their nails, the school was the major source of knowledge for the students (71%) (Shekhawat et al., 2019).

Furthermore, the study showed that knowledge about difference between personal and general hygiene requirements was witnessed also knowledge of pupils about the harm of nails biting on health was showed increase after health education intervention. A study conducts to assess the effectiveness of nail-biting prevention program in turkey found that children's frequency of biting their nail varies, 57.7% children bite their nail occasionally, and 11.7% children bite their nail all the time, however, 30.8% children replied that they have habit of biting nail seldom (Gür et al., 2018).

According to a study in Banaras Hindu University of India, nail biting is an unintentional behavior observed children when they experience severe mental and physical pain, do not know lessons, read or listen horror stories. These are the reason that makes children more prone to nail biting habits (Sachan and Chaturvedi, 2015). A nail-biting program under the title of "Do



*Not bite nail, but cut your nail*” conducted in primary school in turkey found that children can also be adopted nail biting habit if someone around them has nail biting habits. 50.8% of the children reported that their mother has habit of nail biting, 28.8% asked about their father, 9.4% said brother/sister were nail biter, however only 1.7% children don't have anyone around them who have habit of nail biting (Gür et al., 2018). Another study explore that many parents worried about the nail-biting habit of their children, they done multiple options to stop nail bit-ing such as punish their children even put them under stress, but unfortunately these practices are not affective for long time (Ergun et al., 2013). A study was done in Iran discussed the nail biting's etiological factor, consequences and its management. Nail biting's prevention or its treatment is a challenging task. It is an important consideration in health-related issues.

For the reason that a need to detailed assessment or influence the nail examination of factors that in biting behavior among children and should be address in early stage for affective results (Ghanizadeh, 2014). In addition, nail biting habits can be converted into chronic habit if children's or their family not take them seriously to quit nail biting. It harmfully affects children's oral health for instants infections, gum bleeding, cuticle bleeding, and teeth related issue (Ergun et al., 2013).

*“Healthy Nail”* A program organized for school ed that children may children of turkey identify their nails due to many reasons for example: 28.2% children don't know about the hazard of nail biting, 45.6% children done have nail cutter and 52.4% not aware about nail biting weather it has hazard or not (Ergun et al., 2013)

No improvement in knowledge was reported among pupils regarding harm of poor personal hygiene, while there was increase in knowledge of pupils about the risks resulting from neglect of personal hygiene after intervention. However, this finding not consistent with studies done in India and other countries where personal hygiene knowledge plays a significant role in improving personal hygiene practices and attitudes (Mukherjee et al., 2014). Studies from different parts of the world also showed that there was a significant difference in personal hygiene knowledge and practices with the duration of intervention (Joshi and Amadi, 2013).

This finding indicated that knowledge of pupils regarding disease related to poor personal hygiene was witnessed increase; knowledge of pupils regarding type of disease regarding of diarrheal disease was slightly increase due to health education intervention while knowledge concerning malaria was decreased. However, knowledge of pupils in terms of eye infection was increase while knowledge regarding diarrheal diseases and eye infection was decreased due to health education sessions. Health education to prevent diarrhea is important to identify health behavior of preschoolers. Educating healthy behavior to children in their early life requires appropriate educational strategy.

Therefore, things that are needed for that are (1) knowing the behavior of people to prevent health which can be taught to children in school, (2) knowing health education model that can be applied to children, (3) knowing the effectiveness of the education model that can improve the use of behaviors in diarrhea prevention, and (4) knowing the components of the educational model that must be considered in providing health education (Tamiru et al., 2017).

Research review from developing countries similarly showed that health education had a significant input to sanitation behavior of school adolescents and their families. It has positive health consequences related to increase health education (Joshi and Amadi, 2013). Other studies also showed that infectious diseases like diarrheal morbidity and behavioral change about personal hygiene are very personal subject, and encouraging changes in hygiene requires skill that can be improved through individual and community-based education (Belachew et al., 2013).

Our study showed minor improvement in pupils' knowledge in terms of times of tooth brushing/day after intervention. Our findings were similar to the study conducted by Amol et al. in Maharashtra, India where knowledge about tooth decay increase and was statistically significant (Donger et al., 2011). Also, findings were similar to the studies conducted Lee et al. where tooth brushing steps increase in Hong Kong (2008), Ingole et al where oral hygiene increase significantly after health education intervention (Ingole et al., 2012).

The study showed that knowledge of pupils regarding importance of hand washing with soap was increase, Knowledge of pupils about times of bathing/week was witnessed sharp increase and Knowledge about the importance of washing hands with soap after health education programs. Showering was the most important aspect of personal hygiene (62%) (N=265), as ranked by the students. This observation was unique to this study. We believe that the local hot, dry and dusty desert climate and adequate water availability might have influenced in ranking showering or bathing to be the most important hygiene practice among the students.

This is in contrast to studies from Africa and Asia where the researchers have reported bathing and washing of hair are the least common practices of personal hygiene (Vivas et al., 2010) and the reason was due to inadequate water availability. When it comes to hand washing, our results are consistent with previous studies (Scott et al., 2007). Just before eating, after using toilets and after playing were the major episodes when the students washed their hands and a great proportion of the study population (71%) used soap. As we know that hand washing with soap is the simplest cost-effective health prevention technique; it was reassuring to observe this hand washing behavior in majority of our students.

Also, adequate hand hygiene is great deterrent to the spread of gastro intestinal and respiratory tract infections especially in children. Previous studies have shown that washing of hands using soap can prevent these infections and in turn reduces absenteeism in the schools (Inge, 2009). It was also interesting to note that hand sanitizer usages are also being encouraged as a practice of hand hygiene among the primary school children.

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