



EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME AND DEMONSTRATION ON THE LEVELS OF KNOWLEDGE AND PRACTICE REGARDING HAND WASHING AMONG SCHOOL AGED CHILDREN, AT SELECTED SCHOOL BANGALORE

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Abstract: A study to assess the effectiveness of structured teaching programme and demonstration on the levels of knowledge and practice regarding hand washing among school aged children, at selected school, Bangalore.

Objectives: To assess the levels of knowledge regarding hand washing among school aged children, to assess the levels of practice of hand washing among school aged children, to find the effectiveness of structured teaching programme and demonstration on hand washing among school aged children, to find an association between the post test levels of knowledge and practice and the selected demographic variables of school aged children. **Methods:** A quantitative research approach of pre experimental with one group pre and post test design was chosen for this study. By using stratified random sampling technique a total of 40 samples were selected for the study. The structured teaching programme and demonstration was given by researcher. Pre and post test was conducted by structured questionnaire and observation check list. Data were recorded and coded. The data analysis was done by using descriptive and inferential statistics. **Results:** In the pretest out of 40, 38 (95%) of school aged children had inadequate knowledge, two (5%) had moderately adequate knowledge and none of them had adequate knowledge. whereas after structured teaching programme 28 (70%) of school aged children had adequate knowledge, 12 (30%) had moderately adequate knowledge and none of them had inadequate knowledge. In the pretest 40 (100%) of school aged children had poor practice and none of them had good and excellent practice. Whereas after demonstration 36 (90%) of school aged children had excellent practice, three (7.5%) had good practice and one (2.5%) had poor practice. The post assessment findings revealed that there was a significant difference at ($p < 0.05$) in the mean difference score of pre and post test on effectiveness of structured teaching programme and demonstration. In this study result shows that structured teaching programme and demonstration on hand washing was effective in improving the levels of knowledge and practice among school aged children. Hence the H1 was accepted. There was a significant association ($p < 0.05$) between the post test levels of knowledge and practice and the selected demographic variables. Hence the H2 was accepted. **Conclusion:** From the study findings, it can be concluded that the structured teaching programme and demonstration was effective in improving the levels of knowledge and practice regarding hand washing among school aged children.

Keywords- Structured Teaching Programme, demonstration, School aged Children, Knowledge, Practice, effectiveness, hand washing.

I. INTRODUCTION

Clean hands - a recipe for health.

Hand washing is described to be the efficient yet short rubbing of all surfaces of the hands with lathered soap which is then followed with rinsing and cleansing under flowing streaming water (CDC 2009). Hand washing complies of manually getting rid of visible short term contaminants from hands by using soap and water (SAH 2015). Alcohol based hand rub is basically using any mixture with alcohol in rubbing the whole hands surface area (WHO 2009).

Hand washing remains a number one tip for preventing the spread of COVID -19. Proper hand washing not only reduces the spread of COVID – 19, it can prevent the spread of other illnesses such as cold and flu. Hand washing also reduces the risk of getting other easily spread infections like severe acute respiratory syndrome (SARS) and middle east respiratory syndrome (MERS).

Evidence from both the SARS and COVID – 19 epidemics, shows that hand hygiene is very important to protect from infection (Clin Infect Dis 2020). There are situations and moments in which hand washing must be maintained at all cost. These moments are situations where there is an instinctual or real danger of transferring microbes from one point of contact to the other by aid of the hands.

Having contact with contaminants from infected environment is one of the reasons an individual needs to clean the hands by proper hand washing and using alcohol hand rub to prevent carrying harmful pathogens from the hands to other surfaces and objects in the school environment (WHO 2006). Another instance is when there is contact with body fluids such as urine or blood. Hands then must be washed clean and disinfected to prevent spreading any microbes and this is to protect the individual and the school environment from contamination (WHO 2006). On a regular day, certain activities require an individual to perform hand washing. These activities include changing a baby or elderly diapers, using the toilet, before and after handling food, after sneezing, coughing or blowing nose, after taking care of someone who is ill, after throwing garbage away, and after smoking (SAH 2012).

About 1.8 million children under the age of five die each year from diarrheal diseases and pneumonia, the top two killers of young children around the world. Hand washing with soap could protect about one out of every three young children who get sick with diarrhea and almost one out of five young children with respiratory infections like pneumonia. Hand washing with soap at critical times - including before eating or preparing food and after using the toilet - can reduce diarrhoea rates by more than 40 percentage and acute respiratory infections (ARI's) by around 23 percent.

Globally 2,195 children every day affected with diarrhea. Diarrheal diseases account for one in nine child deaths worldwide, making diarrhea the second leading cause of death among young children. About 88 percent of diarrhea-associated deaths are attributable to unsafe water, inadequate sanitation, and improper hand washing. Although people around the world clean their hands with water, very few use soap to wash their hands. Washing hands with soap removes germs much more effectively. Estimated global rates of hand washing after using the toilet are only 19 percent.

Hand washing with soap has been cited as one of the most cost-effective interventions to prevent diarrhoeal related deaths and disease. A review of several studies shows that hand washing in institutions such as primary schools and daycare centers reduce the incidence of diarrhoea by an average of 30 percent. Rates of hand washing around the world are low. Observed rates of hand washing with soap at critical moments – i.e, before handling food and after using the toilet - range from zero percent to 34 percent. New studies suggest that hand washing promotion in schools can play a role in reducing absenteeism among primary school children.

Many illnesses starts with poor hand washing that is commonly prevailing among school children, because of poor hand hygiene. Hand washing is scientifically proved effective method to protect the school children from the infectious diseases, because frequent hand washing keeps germs away.

II. OBJECTIVES

- ◆ To assess the levels of knowledge regarding hand washing among school age children.
- ◆ To assess the levels of practice of hand washing among school age children.
- ◆ To find the effectiveness of structured teaching programme and demonstration on hand washing among school age children.
- ◆ To find an association between the posttest levels of knowledge and practice and the selected demographic variables of school age children.

III. HYPOTHESIS

H1- There will be a significant difference between the pretest and posttest levels of knowledge and practice regarding hand washing among school age children.

H2- There will be a significant association between posttest levels of knowledge and practice and selected demographic variables regarding hand washing among school age children.

IV. REVIEW OF LITERATURE

Literature related to knowledge and practice on hand washing among school aged children.

Alula Seyum Buda (2018), conducted a cross sectional study to assess knowledge, attitude and practice of hand washing and associated factors among primary school children in Hosanna town, Southern Ethiopia. 246 students in Girma Bekele primary school in Hosanna town were selected as a sample. Data was collected using a structured questionnaire. From students participated in this study, over all 167(69.9%) students have good knowledge and 72 (30.1%) have poor knowledge. Knowledge of students in this primary school is affected by grade of student and area of residence with (AOR, 95% CI 9.099(.587-.850) and (AOR.384; 95% CI (.114-.299)) respectively. Regarding the attitude of students 142 (59.4%) have good attitude and 97 (40.6%) have poor attitude respectively. Overall 172 (71.97%) of students have good practice and 67 (28.03%) have poor practice toward hand washing. Majority of the study subjects has adequate knowledge and about more than half of them have positive attitude. Overall practice of hand washing is good but utilization of soap and hand washing after toilet visit is low. Maternal educational status, area of residence, age, sex and grade of student are factors that affect KAP of school children toward hand washing with soap.

Dubik S. Dajaan (2018), conducted a study to assess the hand washing knowledge and practices among public primary schools in the Kintampo Municipality of Ghana. A cross sectional survey was carried out among 300 children and 10 headmasters in 10 selected schools. Data were collected using questionnaires and observation checklist regarding socio-demographic characteristics, knowledge of hand washing, hand washing practices and availability of hand washing facilities in the selected schools. The results shows that (37.67%) washed their hands in order to prevent diseases, 53.33 percent had never been educated on how to wash their hands. Only 23.33 percent of the children demonstrated correctly on how to wash hands, a little over 15 percent washed their hands under clean running water while 23.33 percent wipe their hands using handkerchiefs. 43 percent indicated after visiting toilet as necessary to wash hands while 42.33 percent cited lack of water as the barrier to hand washing. About 39.88 percent always washed their hands with soap after using the toilet; about 60 percent of the schools had hand washing points. Only 30 percent of the schools have clean running water. The study found that there is the need for effective hand washing education in the schools to help improve hand washing knowledge and practices. Hand washing facilities in the schools were found to be inadequate.

Literature related to educational intervention on hand washing among school aged children.

Nurul Mohammed (2019), Conducted a quasi-experimental study to assess the effectiveness of hand hygiene intervention on the absenteeism of pre-school children in Klang Valley, Malaysia. A total of 377 male and female school children, aged five – six years old, participated in the study and were assigned to either the intervention or a control group. During the two months intervention period, children in the test group were trained on proper hand hygiene practices and techniques with the aid of the interactive android-based tablets. The numbers of absent days of all the children were recorded for two months before the intervention and during the intervention. The result shows that in the test group, there was a 25 percent decrease in the total number of absent days from the intervention period, as compared to that of control group. There is a significant difference ($P < 0.05$) between the absenteeism rates for the test and control group during the intervention period. These results suggest that proper education and intervention increase hand hygiene compliance, which may help decrease school absenteeism due to illness; however, a longer study duration may be necessary to evaluate the benefit further KaurParminder (2019), conducted a quantitative study to assess the effectiveness of child to child approach on knowledge and practices regarding hand washing among the primary school children at selected school of Faridkot, Punjab. One group pre test-post test research design was selected for the study. With simple random sampling (100) school children from the third, fourth and fifth classes were selected. Then pretest of whole children were taken. After pretest, intervention was given to the selected students about hand washing after that, posttest was taken, and allowed the selected students to teach the other students about hand washing. Socio demographic data sheet and tool, structured knowledge interview performa and observational checklist were prepared to assess the effectiveness of child to child

approach on knowledge and practices regarding hand washing. The study revealed that interventions i.e. child to child approach were helpful in improving hand washing knowledge and practices among primary school children, post test mean score of knowledge was 15.2 respectively which was significant at ($p < 0.001$) value.

Mayuri A. Mane (2017), Conducted a descriptive study to assess the effectiveness of hand hygiene technique demonstration on hand hygiene practices of primary school going children at Rotary Shikshan Santha Malkapur Karad, Maharashtra, India. One group pre-test, post-test design was chosen. 60 primary school going children aged six and seven yrs were selected by simple random sampling technique. On the first day, pre demonstration test was conducted by using modified observational checklist and demonstration of hand hygiene technique was administered. After seven days post-demonstration test was conducted. Descriptive and inferential statistics were used for data analysis. The result showed that the mean pre-demonstration value was 5.383 and mean post-demonstration value was 9.033. The paired t' test value was 23.744, showing a significant gain in the improvement of hand hygiene practice of primary school going children. Chi-square test shows that there was a significant association of pre demonstration practice score of primary school going children with mothers' education ($\chi^2 = 16.436$, $p < 0.001$) father's education ($\chi^2 = 23.016$, $p < 0.001$). The study was concluded that the demonstration of hand hygiene technique regarding hand hygiene was effective in improving the practices of hand hygiene of primary school going children and thus administration of steps of hand hygiene technique was easy to understand.

3.1 Population and Sample

According to Polit and Hungler (1999) A population is the entire aggregation of cases in which the researcher is interested. In this study population is school age children.

Target population: In this study target population refers to school children who are studying IV and V standard.

Accessible population: In this study accessible population refers to school children who were studying IV or V standard at selected school.

Sample: In this study the sample comprised of IV and V standard school children who fulfilled the inclusion criteria at Selected matriculation higher secondary school.

Sampling technique: A stratified random sampling technique was selected.

Sample size: A sample of 40 School children who were studying IV or V standard at Selected matriculation higher secondary school.

3.2 Data and Sources of Data

Description of the tool :The tool for this study consists of three parts.

Section-A: It consist of demographic variables consisted of eleven items which included age of the children, gender, domicile, educational status of father, educational status of mother, occupational status of the father, occupational status of the mother, family income per month, type of family, number of siblings and previous source of knowledge.

Section-B: The structured questionnaire consist of 20 multiple choice questions, used to assess the levels of knowledge regarding hand washing among school children in pre and post test.

Section-C: The observational checklist to assess the practice of hand washing. Ten items were included in the check list, based on the steps of hand washing.

Score Interpretation

Section-A: It consists of Age of the children, gender, domicile, educational status of father, educational status of mother, occupational status of the father, occupational status of the mother, family income per month, type of family, number of siblings and previous source of knowledge.

Section-B: It consisted of structured multiple choice questions. The maximum possible score is 20 for 20 questions. A score of '1' mark was given for every correct answer and a score of '0' was given to every wrong answer.

For the purpose of study the total score was classified as follows,

Category	Level of knowledge
Upto 50%	Inadequate knowledge
51 – 75%	Moderately adequate knowledge
>75%	Adequate knowledge

Section-C: It consisted of observational check list which contains ten items and it has a minimum score of '1' and maximum of '20'. A score were interpreted as follows;

16-20 (>75%) : Excellent practice

11 -15 (55 – 75%): Good practice.

1-10 (<55%) : Poor practice.

Content Validity: The validity of the tool was got from nursing, medical experts from child health department and from statistician. Based on the suggestions from various experts the tool was modified.

Reliability of the Tool: The test retest method was used to assess the reliability of structured questionnaire and observation checklist. By using the karlspearson's correlation coefficient formula the "r" value was calculated, the "r" value is 0.84, which indicated that the tool is highly reliable.

3.3 Theoretical framework

The conceptual framework used for the present study is modified Dorothy Johnson's (1980) open system theory.

According to the general system theory a system consists of a set of interacting components that are regulated by biological, psychological and sociological factors. An individual composed of open and interactive subsystem. An open system consists of input, throughput and output.

According to the theorist view the information, matter and energy that the system receives from the environment are called as input for the system. The system uses, organizes transforms the input in a process called as throughput and releases information, matter and energy as output into the environment. Output that returns to the system as input is called as feedback.

In this study IV and V standard school children are the persons, has an open and interactive subsystems.

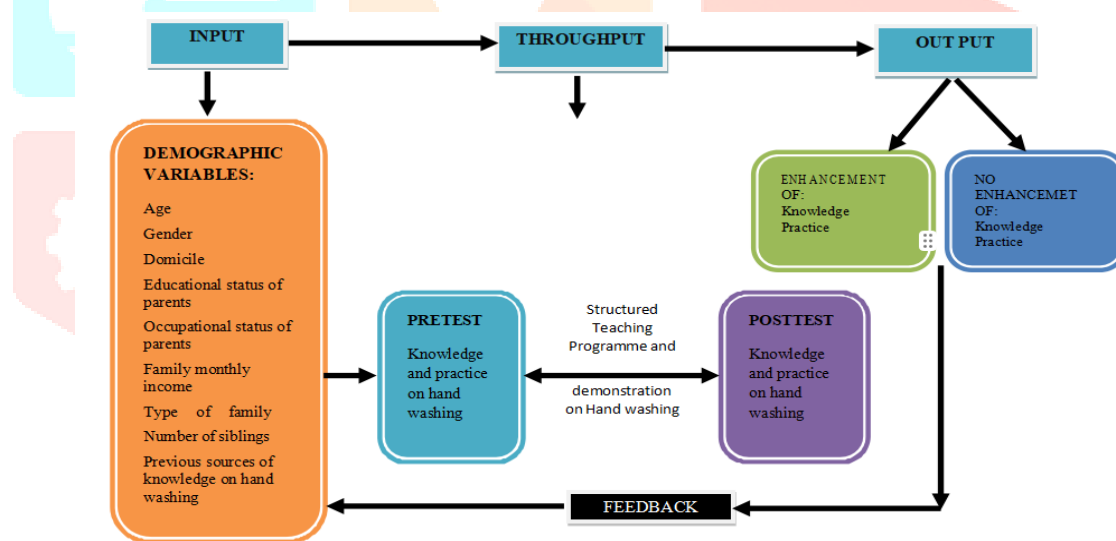


Figure No : 1 Conceptual frame work on modified Dorothy Johnson's open system theory (1980)

I. RESEARCH METHODOLOGY

A quantitative research approach was used. A pre experimental one group pre and post-test research design was chosen.

Group	Pre test	Intervention	Post test
Experiment	O1	X	O2

Keys

O1 = Assessment of knowledge and practice regarding hand washing (pretest).

X = Structured teaching programme and Demonstration on hand washing among school children (Intervention).

O2 = Assessment of knowledge and practice regarding hand washing (posttest).

3.1 Population and Sample

In this study population is school age children. In this study target population refers to school children who are studying IV and V standard. Boys and girls who met the inclusion criteria from IV and V standard were selected for this study. All the students from IV and V standard were divided into the stratum by using the height and the sample was selected by using random sampling technique. Each member of the stratum is assigned as unique number. Each number is placed in box and mixed thoroughly. Equal number of samples were selected from each stratum by lottery method

3.2 Data and Sources of Data

Structured teaching programme and demonstration on hand washing was independent variable. Levels of knowledge and practice on hand washing among IV and V standard school children was dependent variable. Age of the children, gender, domicile, educational status of father and mother, occupational status of the father and mother, family income per month, type of family, number of siblings and previous source of knowledge were demographic variables. The written permission was obtained from the authority of Shanthinikethan matriculation higher secondary school, Bangalore. The main study was conducted from (03-02-2023 – 15-03-2023). The participants for main study were selected by stratified random sampling technique among school children in Selected matriculation higher secondary school, By using lottery method totally 40 school children were selected who fulfilled the inclusive criteria. They were divided into batches and each batch consisted of 10 children. For every batch pretest were conducted and next day structured teaching programme was done to every batch and next day hand washing technique was demonstrated to every batches. From the day of intervention the investigator took five days on an average to conduct post test which was done by using same tool to assess the levels of knowledge and practice regarding hand washing among school children.

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3.4 Statistical tools and econometric models

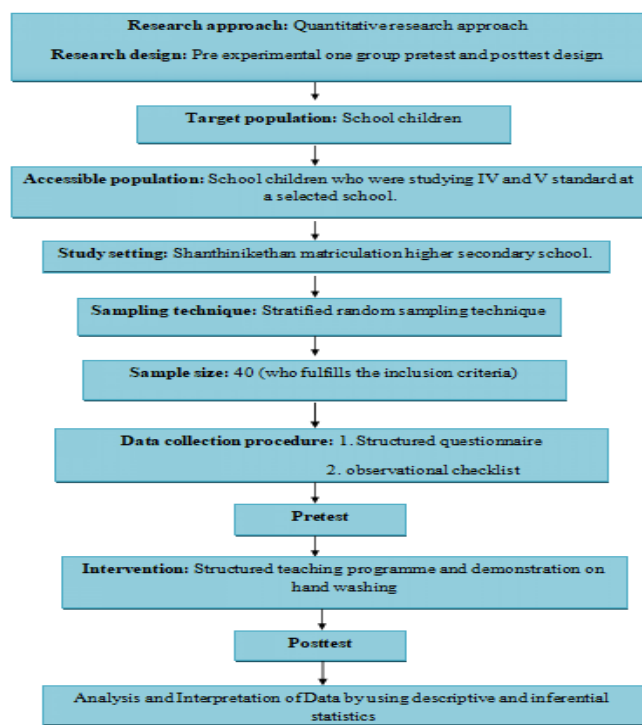
The validity of the tool was got from nursing, medical experts from child health department and from statistician. Based on the suggestions from various experts the tool was modified.

The test retest method was used to assess the reliability of structured questionnaire and observation checklist. By using the karlspearson's correlation coefficient formula the "r" value was calculated, the "r" value is 0.84, which indicated that the tool is highly reliable.

The demographic variables were analyzed by using descriptive statistics (frequency and percentage). The knowledge and practice were assessed by using mean and standard deviation. The effectiveness of structured teaching programme and demonstration was assessed by using paired 't' test.

Correlation between knowledge and practice was assessed by using correlation coefficient. Association between knowledge and practice of school children with their selected demographic variables were analyzed by using inferential statistics (chi- square).

3.4.1 Descriptive Statistics



IV. RESULTS AND DISCUSSION

4.1 Distribution of demographic variables of school aged children.

Table 4.1: Frequency and percentage distribution of school aged children

S.NO	CHARACTERISTICS	FREQUENCY (n)	PERCENTAGE %
1.	AGE (years)		
	9 – 10	20	50
	10 – 11	20	50
2.	GENDER		
	Male	20	50
	Female	20	50
3.	DOMICILE		
	Urban	9	22.5
	Rural	31	77.5
4.	EDUCATIONAL STATUS OF FATHER		
	No formal education	-	-
	Primary education	-	-
	High school education	17	42.5
	Higher secondary school education	23	57.5
5.	EDUCATIONAL STATUS OF MOTHER		
	No formal education	-	-
	Primary education	6	15
	High school education	22	55
	Higher secondary school education	12	30
	Graduate		

6.	OCCUPATIONAL STATUS OF FATHER		
	Professional	3	7.5
	Semi professional	2	5
	Skilled worker	34	85
	Semi skilled worker	1	2.5
	Unskilled worker	-	-
	Unemployment	-	-
7.	OCCUPATIONAL STATUS OF MOTHER		
	Professional	-	-
	Semi professional	7	17.5
	Skilled worker	-	-
	Semi skilled worker	-	-
	Unskilled worker	-	-
	Home maker	33	82.5
8.	FAMILY INCOME PER MONTH IN RUPEES		
	Below 5000	-	-
	5001 – 10000	3	7.5
	10001 – 15000	32	80
	15001 and above	5	12.5
9.	TYPE OF FAMILY		
	Nuclear	38	95
	Joint	2	5
	Extended	-	-
10.	NUMBER OF SIBLINGS		
	One	34	85
	Two	6	15
	More than two	-	-
11.	PREVIOUS SOURCES OF KNOWLEDGE ON HAND WASHING		
	Family	3	7.5
	Teacher	-	-
	Mass media	9	22.5
	Health professional	-	-
	Any other	-	-
	None	28	70

Table 4.1 Above table shows that in regard to age out of 40 samples, 20 (50%) school aged children were in the age group of nine - 10 years and 20 (50%) school aged children were in the age group of 10 - 11 years.

With relation to the gender out of 40 samples, 20 (50%) school aged children were male and 20 (50%) were female.

With relation to domicile out of 40 samples, nine (22.5%) school aged children were living in urban and 31 (77.5%) were in rural area.

According to their educational status of father out of 40 samples, 17 (42.5%) were completed higher secondary school education and 23 (57.5%) father were graduate.

According to their educational status of mother out of 40 samples, six (15%) were completed high school education, 22(55%) mother were completed higher secondary school education and 12 (30%) mother were graduate.

With relation to occupational status of father out of 40 samples, three (7.5%) father were professional, two (5%) father were semi professional, 34 (85%) father were skilled worker, one (2.5%) father were semi skilled worker.

With relation to occupational status of mother out of 40 samples, seven (17.5%) mother were semi professional, 33 (82.5%) mother were semi professional.

According to their family income per month shows that out of 40 samples, three (7.5%) school aged children were in 5,001-10,001, 32 (80%) school aged children were in 10,001-15000 and five (12.5%) school aged children were in 15,001 and above.

According to their type of family out of 40 samples, shows that the highest percentage 38 (95%) school aged children were in nuclear family, two (5%) school aged children were in joint family.

With relation to number of siblings out of 40 samples, 34 (85%) school aged children have one sibling and six (15%) school aged children have two siblings.

According to previous sources of knowledge on hand washing out of 40 samples, three (7.5%) school aged children had knowledge through their family, nine (22.5%) school aged children had knowledge through mass media and 28 (70%) had no previous knowledge on hand washing.

Figures and Tables

4.2. Pre and post test levels of knowledge among school aged children.

Table 4.2: Frequency and percentage distribution of levels of knowledge among school aged children.

S.NO	LEVELS OF KNOWLEDGE	PRETEST		POSTTEST	
		n	%	n	%
1.	Inadequate knowledge.	38	95	-	-
2.	Moderately adequate knowledge.	2	5	12	30
3.	Adequate knowledge.	-	-	28	70
	Total	40	100	40	100

Fig No: 1 Pre And Posttest Percentage Distribution Of Levels Of Knowledge On Hand Washing Among School Aged Children

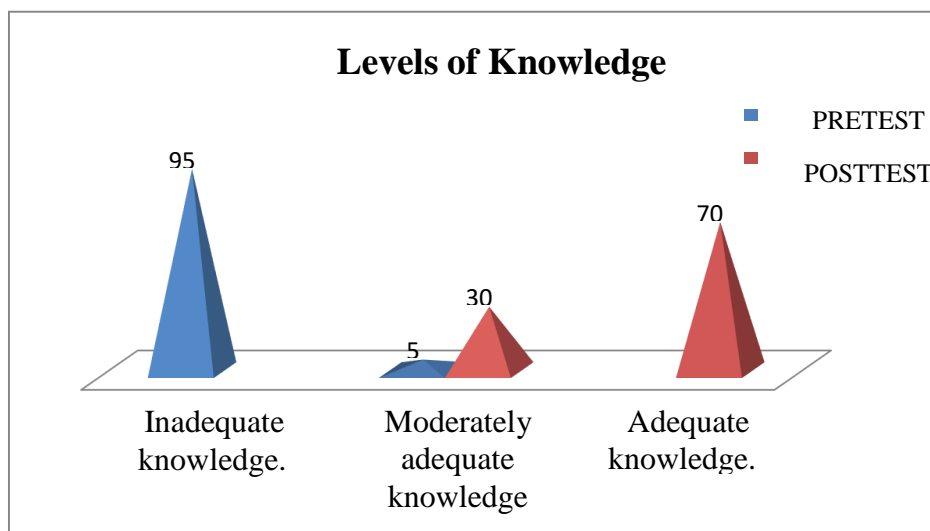


Table 2 shows that out of 40 school aged children 38 (95%) of school aged children had inadequate knowledge, two (5%) had moderately adequate knowledge and none of them had adequate

knowledge in the pre test, whereas in the post test 28 (70%) of school aged children had adequate knowledge, 12 (30%) had moderately adequate knowledge and none of them had inadequate knowledge.

4.3 Pretest and posttest levels of practice among school aged children.

Table-4.3 Frequency and percentage distribution of levels of practice among school aged children.

S.NO	LEVELS OF PRACTICE	PRETEST		POSTTEST	
		n	%	n	%
1.	Excellent practice	-	-	36	90
2.	Good practice	-	-	3	7.5
3.	Poor practice	40	100	1	2.5
Total		40	100	40	100

Fig No:2 Pre and Post test percentage distribution of levels of Practice on hand washing among school aged children

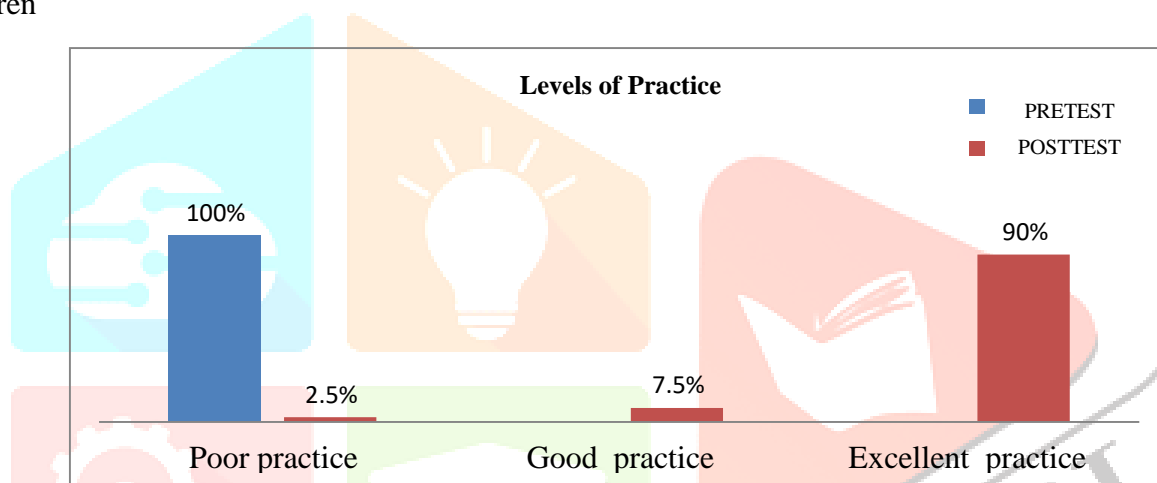


Table 4.3 shows that out of 40 school aged children 40 (100%) of school aged children had poor practice and none of them had good and excellent practice in the pre test whereas in the post test 36 (90%) of school aged children had excellent practice, three (7.5%) had good practice and only one (2.5%) had poor practice.

4.4 Effectiveness of structured teaching programme and demonstration on levels of knowledge and practice among school aged children.

Table 4.4: Comparison of pre and post test mean levels of knowledge among school aged children.

KNOWLEDGE				
TEST	MEAN	STANDARD DEVIATION	MEAN DIFFERENCE	PAIRED 't' TEST
Pretest	7.4	1.68	9	22.3* Table value: (2.07)
Posttest	16.4	2.27		

(P<0.05)*

Above table shows that in pretest mean score is 7.4 and SD is 1.68, whereas after structured teaching program the score was increases, mean score is 16.4 and SD is 2.27. The mean difference is nine and the obtained 't' value is 22.3 which is greater than that of table value 22 (2.07) was highly significant at (p<0.05) level. There was improvement in levels of knowledge among school aged children after structured teaching programme which shows that the teaching was effective. Hence the H1 was accepted.

Table 4.5 Comparison of pre and post test mean levels of practice among school aged children.**PRACTICE**

TEST	MEAN	STANDARD DEVIATION	MEAN DIFFERENCE	PAIRED 't' TEST
Pre test	6.5	1.11	11.4	35.7* Table value: (2.02)
Post test	17.9	1.71		

(p<0.05)*

Above table shows that in pretest mean score is 6.5 and SD is 1.11, whereas after demonstration the score was increased, mean score is 17.9 and SD is 1.71. The mean difference is 11.4 and the obtained 't' value is 35.7 is greater than that of table value 36 (2.02) was highly significant at (p<0.05) level. There was improvement in levels of practices among school aged children after demonstration. Hence the H1 was accepted.

The Study shows that there was no association between the socio demographic variables (age, gender, domicile, educational status of father, educational status of mother, occupational status of father, occupational status of mother, family income per month in rupees, type of family, number of siblings, previous sources of knowledge on hand washing) and levels of knowledge regarding hand washing among school aged children. Hence H2 was rejected in knowledge.

The study shows that the occupational status of father, family income per month in rupees are statistical significant at (p<0.05) whereas, age, gender, domicile, educational status of father, educational status of mother, occupational status of mother, type of family, number of siblings, previous sources of knowledge on hand washing are not significant. Hence the H2 was accepted in practice.

V. ACKNOWLEDGMENT

“Appreciation is the highest form of prayer, for it acknowledges the presence of good wherever you shine the light of your thankful thoughts”

- Alan Cohen.

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