"A study to assess the effectiveness of role play as a method of learning in improving oral health of primary school children residing at selected communities of south Gujarat."

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ABSTRACT

Introduction: Dental diseases are a significant public health menace having substantial impact on the quality of life which in turn affects the daily performance and general life satisfaction. There is a vast difference in health status including the oral health between urban and rural population of India and in other developing countries. The existing situation demands the formulation and implementation of National Oral Health Policy in India in order to expand the oral health care to make it more affordable, and reachable[1]. **Objectives of the study:** are to To assess the status of oral health among primary school children before and after role play. ,To assess the knowledge of primary school children regarding oral health before and after role play, To compare oral health status and knowledge with mean pre and post test score., To find out the correlation between age and prevalence of poor health., To find out the association between knowledge regarding oral health among primary school children with their selected demographic variable. **Method;** In this study the quantitative research approach was adopted. Pre experimental one group pre test post test research design was used. After understanding the research background and review of similar studies, oral health risk assessment tool was developed. a blue print for structured knowledge questionnaire was prepared and based on the blue print, the content for role play was made and then questionnaire were developed. 3 tool were prepared tool 1 screening

tool to identify poor oral health which consists part 1: xi screening tool to identify poor oral health, part 2: category wise score explanation, part 3: score interpretation. Tool 2 structured knowledge questionnaire which consists two sections. And tool 3 was role play. The oral health risk assessment tool(screening tool), structured knowledge questionnaire and role play were validated by the 11 experts from Dentist, child health nursing, medical surgical nursing, community health nursing department. The agreement of socio demographic item was 97%, knowledge questionnaire was 98%, role play was 98%. Non probability purposive sampling technique was used for the selection of samples. Total sample size was 73. The setting of the study was vaki primary school. Ethical considerations was taken from the college to conduct the study. The data was collected between by the tool which consist demographic variable along with structured knowledge questionnaire. The data analysis was done using descriptive and inferential stastics. **Results;**In this study total 213 childrens were screened by the researcher with the use of the oral health risk assessment tool. From all of them 73 childrens were found with the poor oral health. The findings of the study depicted that the pre test analysis for knowledge before presenting role play revealed that overall mean percentage was 10.86. whereas in posttest after presenting role play revealed that overall mean percentage was 25.64. the calculated paired "t" value of t= 24.45 Was found stastically significant at p<0.001 level. The findings of the study depicted that correlation between age and prevalence of oral health. Moderately positive correlation was found. The findings of the study depicted that there was a significant association found in the information among childrens with poor oral health with selected demographic variables from post test knowledge score. There was no significant association found in the gender of the childrens with poor oral health. The result of the study successfully found the effectiveness of role play.

MATERIAL AND METHODS:

Research approach: quantitative research approach

Research design: pre experimental one group pre test post test research design.

Population: primary school children residing at specific communities.

Sample: children with poor oral hygiene

Date gathering process: 213 students from Vaki village were screened by oral health risk assessment tool from all of them 73 students are suffering from poor oral health Pre test- Administration of structured knowledge questionnaire to 73 students. Intervention- role play presented in front of 73 students Post test- Administration of structured knowledge questionnaire to 73 students.

RESULT:

SECTION 1

This section deals with description of findings related to screening of oral health status among primary school children.

First section of study consisted of screening of primary school children for their oral health. In this section total 213 primary school children were screened for their oral health. The children's age and their level of severity of oral hygiene was tabulated and findings are presented below-

TABLE 1

Frequency and percentage distribution of Screened participants according to their ag

N=213

SAMPLES CHARACTERISTICS	Frequency F	Percentage %
1. Age		
a. 6-7 yrs	93	43.7
b. 8-9 yrs	88	41.3
c. 10 and above yrs	32	15

AGE OF SCREENED PARTICIPANTS:

The data presented in the Table 1 and figure 3 shows that, the age of screened samples of varied from 6-10 years. Majority 93(43.7%) of samples were belonged to 6-7 years, 88(41.3%) of samples were belonged to 8-9 years of age and remaining 32(15%) of were belonged to 10 and more years of age.
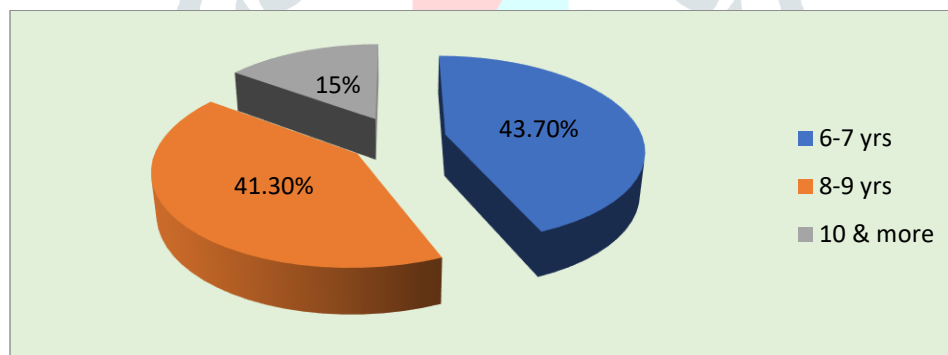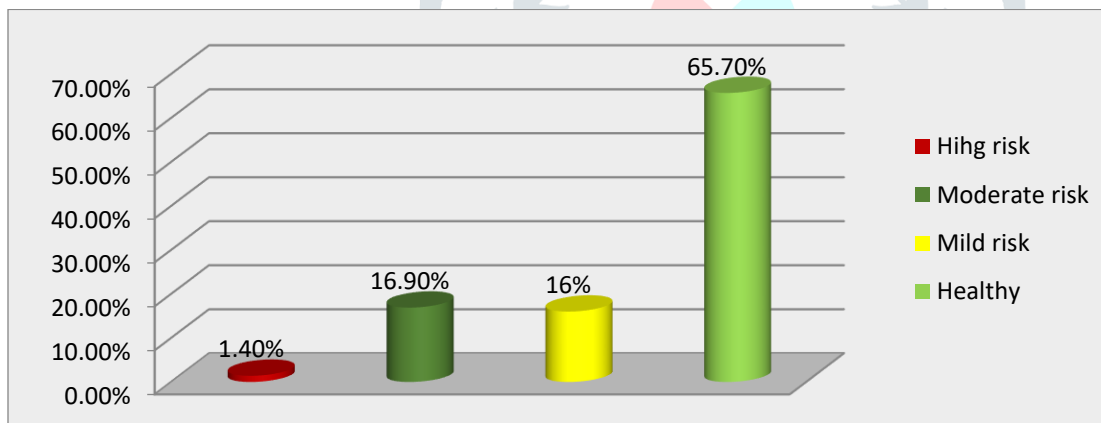

Fig 3: Frequency and percentage distribution of screened participants according to their age

Risk of Oral health:

TABLE 2

Frequency and percentage distribution of Screened participants according to their risk of oral health

N=213

LEVELS OF ORAL HEATLH	Frequency F	Percentage %
High risk (1-5)	3	1.4
Moderate risk (6-10)	36	16.9
Mild risk (11-15)	34	16
Healthy (16-20)	140	65.7

RISK OF ORAL HEALTH:

The data presented in the Table 2 and figure 4 shows that, the risk of oral health of screened participants, it reveals that, majority 140(65.7%) of participants were had healthy oral health, 36(16.9%) of participants were had moderate risk of oral health, 34(16%) of participants were had mild risk for oral health and remaining 3(1.4%) of participants were had high risk for oral health.

Fig 4: Frequency and percentage distribution of screened participants according to their risk for oral health

SECTION 2

This section deals with description of selected personal variables

In the second part of the study 73 primary students were selected based on their risk for oral health for the assessing their knowledge regarding oral health. The frequency and percentage of participants according to their demographic variables were tabulated and findings are presented in following table and figures-

TABLE 3

Frequency and percentage distribution participants according to their social demographic variables

N=73

SAMPLES CHARACTERISTICS	Frequency F	Percentage %
1. Age		
a. 6-7 yrs	36	49.3
b. 8-9 yrs	27	37
c. 10 and above yrs	10	13.7
2. Gender of the child		
a. Male	42	57.5
b. Female	31	42.5
3. Type of family		
a. Nuclear	25	34.2
b. Joint	47	64.4
c. Extended	1	1.4
4. Type of diet		
a. Vegetarian	55	75.3
b. Non vegetarian	00	00
c. Mixed	18	24.7

Cont…….P/2

SAMPLES CHARACTERISTICS	Frequency f	Percentage %
5. Source of drinking water	3	4.1
oa. Municipality	53	72.6
b. Well water	17	23.3
c. River water	00	00
d. Filter water		

6. Education of father		
a. Illiterate	3	4.1
b. Primary education	50	68.5
c. Higher secondary education	18	24.7
d. Graduation	2	2.7
7. Education of mother		
a. Illiterate	6	8.2
b. Primary education	53	72.6
c. Higher secondary education	14	19.2
d. Graduation	00	00
8. Number of siblings		
a. None	3	4.1
b. 1	27	37
c. 2	37	50.7
d. 3	6	8.2
9. Source of information		
a. News paper	1	1.4
b. Parents	28	38.4
c. Siblings	10	13.7
d. Television	34	46.6

AGE:

The data presented in the Table 3 and figure 5 shows that, the age of sample varied from below 6-10 years. Majority 36(49.3%) of samples were belonged to 6-7 years, 27(37%) of samples were belonged to 8-9 years of age and remaining 10(13.7%) of samples were belonged to 10 and above years of age.
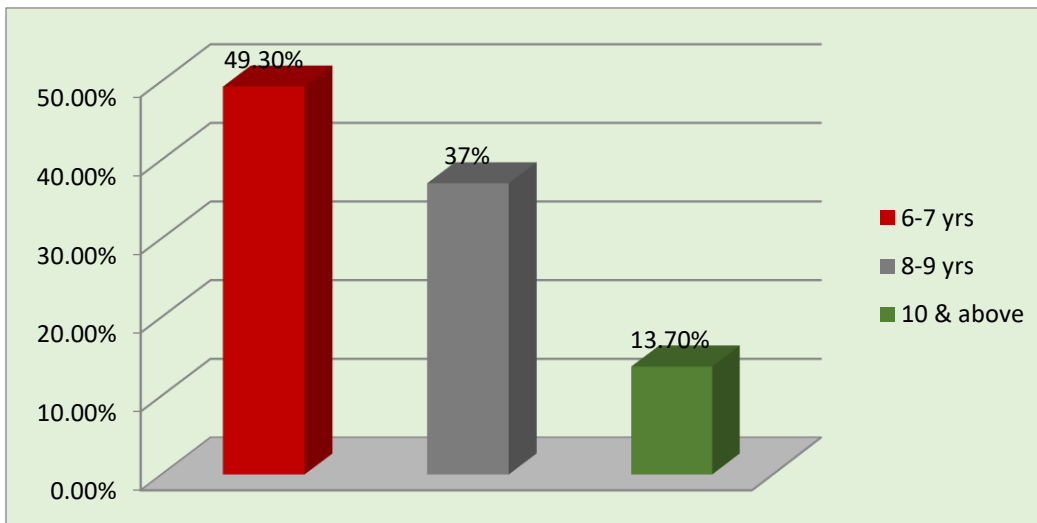
Figure 5. **Frequency and percentage distribution of respondents according to their age**

GENDER OF THE CHILD:

Table 3 and Figure 6 shows that, majority 42(57.5%) of participants were males and remaining 31(42.5%) of participants were females.
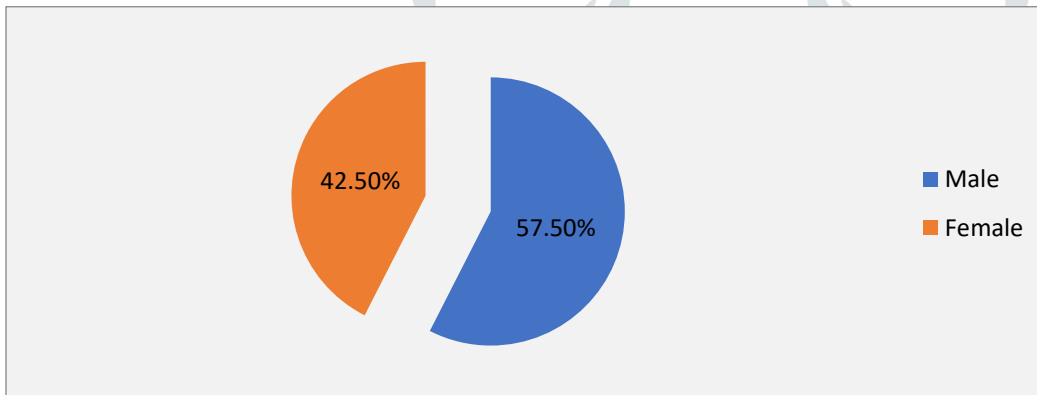

Figure 6. **Frequency and percentage distribution of respondents according to their gender**

TYPE OF FAMILY:

The data presented in the table 3 and figure 7 shows that, majority 47(64.4%) of participants were belonged to joint family, 25(34.2%) of participants were belonged to nuclear family and remaining 1(1.4%) of participants belonged to extended family.
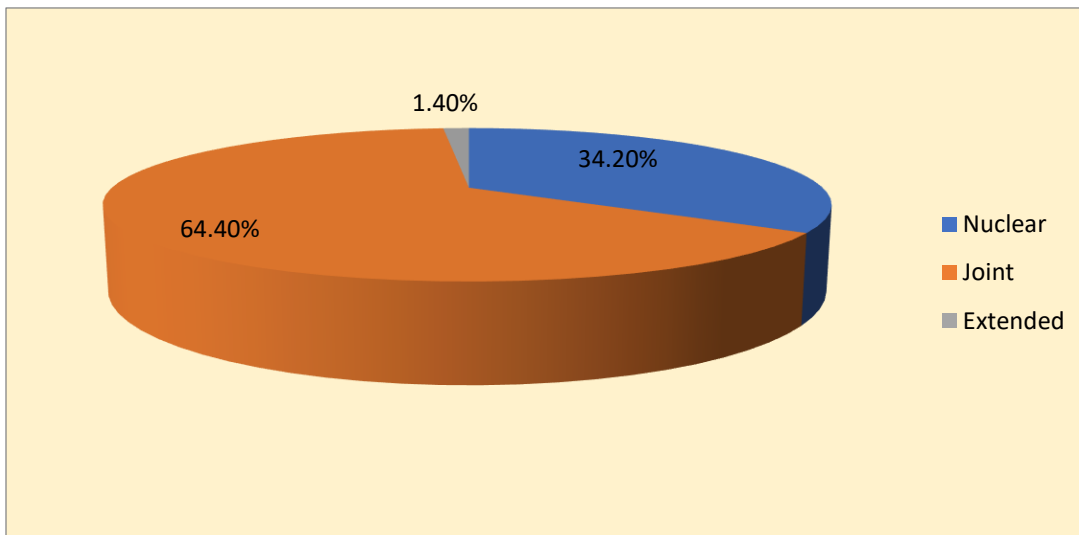
Figure 7. Frequency and percentage distribution of respondents according to their type of family

TYPE OF DIET

The data presented in the table 3 and figure 8 shows that, majority 55(75.3%) of participants were vegetarians and remaining 18(24.7%) of participants were having mixed diet.

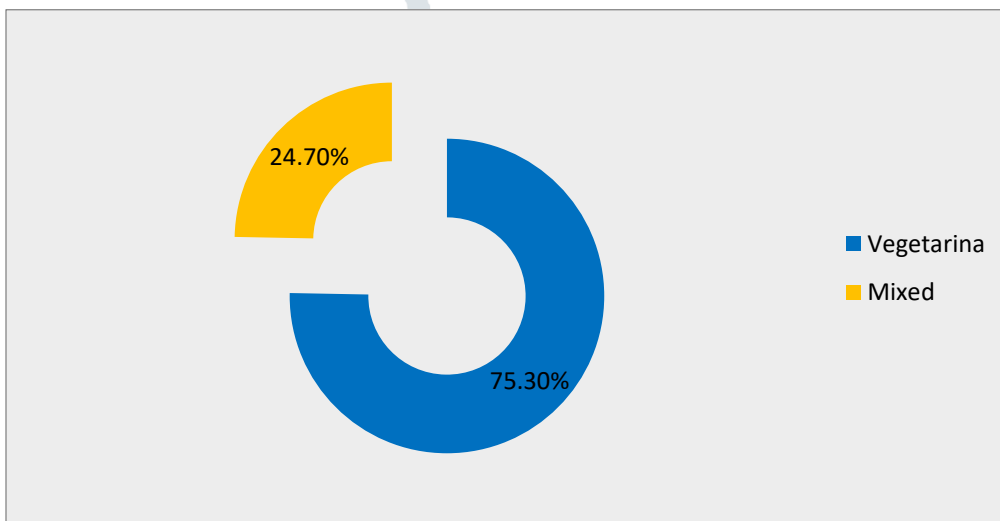**Figure 8. Frequency and percentage distribution of respondents according to their type of diet**

SOURCE OF DRINKING WATER:

With regard to source of drinking water of participants, majority 53(72.6%) of participants were used well water, 17(23.3%) of participants were used river water and remaining 3(4.1%) of participants were used of municipality water as source of drinking water (Table 3 and figure 9)
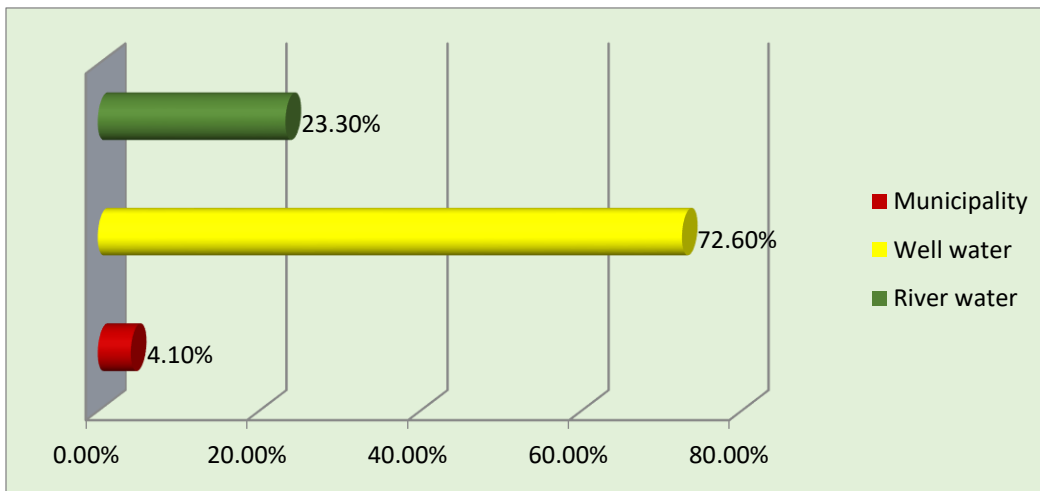
Figure 9. Frequency and percentage distribution of respondents according to their source of drinking water

EDUCATION OF FATHER:

The data presented in table 3 and figure 10 depict that, majority 50(68.5%) of participants fathers were had primary education, 18(24.7%) of participants were had higher secondary education, 3(4.1%) of participants fathers were illiterates and remaining 2(2.7%) of participants fathers were had graduation education.
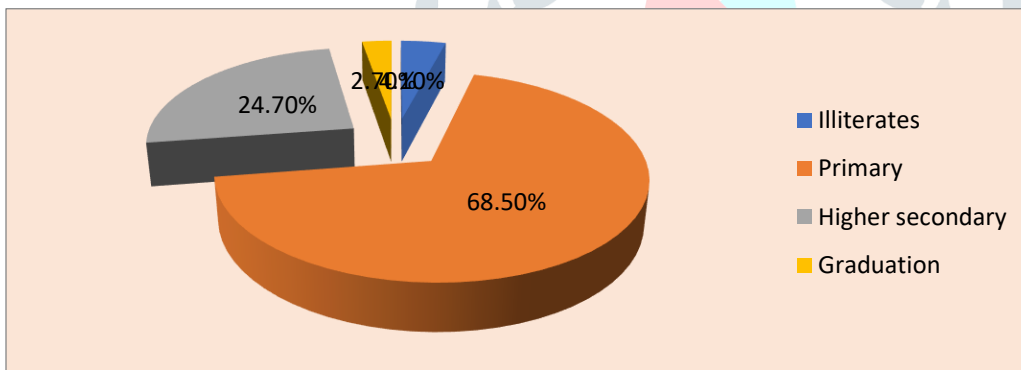

Figure 10. Frequency and percentage distribution of respondents according to their father's education

EDUCATION OF MOTHER:

The data presented in table 3 and figure 11 depict that, majority 53(72.6%) of participants mothers were had primary education, 14(19.2%) of participants were had higher secondary education and remaining 6(8.2%) of participants mothers were illiterates.
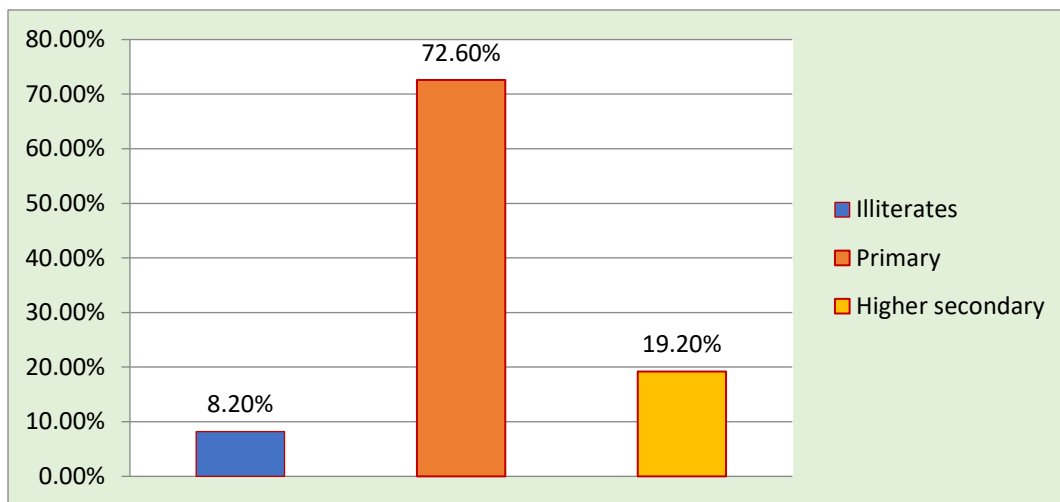
Figure 11. Frequency and percentage distribution of respondents according to their mother's education

NUMBER OF SIBLINGS:

The data presented in table 3 and figure 12 depict that, majority 37(50.7%) of participants were had 2 siblings, 27(37%) of participants were had 1 sibling, 6(8.2%) of participants were had 3 siblings and remaining 3(4.1%) of participants were not had siblings.
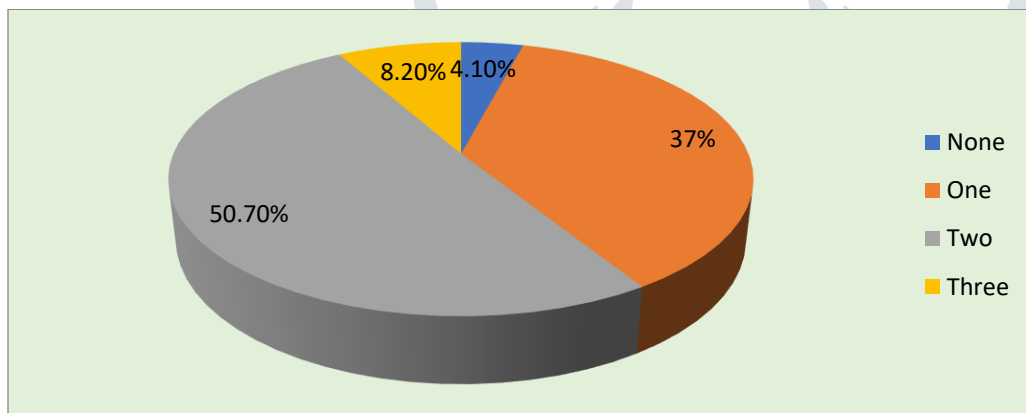
Figure 12. Frequency and percentage distribution of respondents according to their number of sibling

SOURCE OF INFORMATION:

The data presented in table 3 and figure 13 depict that, majority 34(46.6%) of participants source of information was television, 28(38.4%) of participants source of information was parents, 10(13.7%) of participants sources of information was siblings and remaining 1(1.4%) of participant were had news paper as source of information.
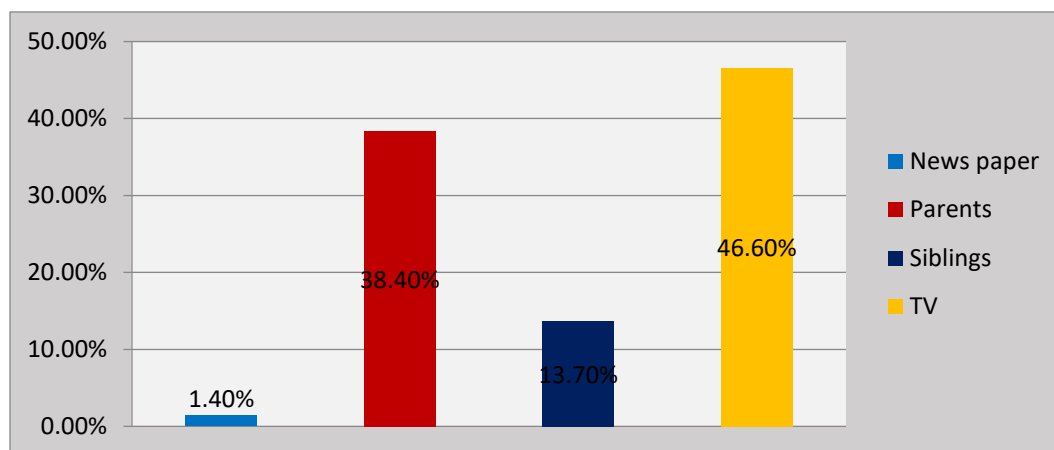
Figure 13. **Frequency and percentage distribution of respondents according to their source of information**

SECTION 3

This section deals with description of knowledge scores of participants regarding oral health

a. Description of item wise knowledge scores of participants regarding oral health

The domain wise and item wise correct response given by the participants for the items on knowledge scale during pretest and post test was tabulated to a master sheet and the findings were presented in the following tables.

TABLE 4

Pre test and post test domain wise and item wise knowledge scores of participants in the domain of general aspect of oral health

N: 73

The data presented in the table 4 shows that, the domain of general aspect of oral health consists of 10 items, during pre test highest 52(71.23%) correct response is given to item number 1 and lowest none response is give to items number 3, where as in post test highest 72(98.63%) response is given to items 2 and lowest 38(52.05%) response was given to item number 3.

TABLE 5

Pre test and post test domain wise and item wise knowledge scores of participants in the domain of issues on oral health

N: 73

Knowledge domain: Issues on oral health						
No. of items	Item No	Item	Pre test		Post test	
			f	%	f	%
6	11	What are the factors that can damage our teeth ?	43	58.90	72	98.63
	12	Dental carries developed due to…	18	24.65	66	90.41

13	Untreated cavities can lead to…	20	27.39	60	82.19
14	Bleeding from gums can occur due to…	23	31.50	68	93.15
15	What do you mean by tooth decay?	29	39.72	70	95.89
16	Teeth decay is caused due to…	13	17.80	70	95.89

The data presented in the table 5 shows that, the domain of issues on oral health consists of 6 items, during pre test highest 43(58.90%) correct response is given to item number 11 and lowest 13(17.80%) response is give to items number 16, where as in post test highest 72(98.63%) response is given to items 11 and lowest 60(90.41%) response was given to item number 13.

TABLE 6

Pre test and post test domain wise and item wise knowledge scores of participants in the domain of good habits for oral health

N: 73

Knowledge domain: Good habits for oral health						
No. of items	Item No	Item	Pre test		Post test	
			f	%	f	%
14	17	What do you mean by oral hygiene?	4	5.4	66	90.41
	18	How many time Brushing of teeth is good habit…	44	60.27	71	97.26
	19	What is the minimum duration for brushing?	12	16.43	52	71.23
	20	How often do we need to change our toothbrush?	20	27.39	50	68.49
	21	How often should we go to the Dentist ?	10	13.69	60	82.19
	22	How do we clean our tongue ?	24	32.87	63	86.30
	23	Which type of brush should be selected for brushing?	35	47.94	60	82.19
	24	Which of the following food are rich in calcium ?	25	34.24	70	95.89

	25	A regular use of milk, fruits & vegetables helps in…	20	27.39	69	94.52
	26	What can cause harm to the organ in the mouth ?	22	30.13	63	86.30
		Continue page...				

Knowledge domain: Good habits for oral health

No. of items	Item No	Item	Pre test			Post test
			f	%	f	%
	27	Which occasion is good for brushing?	51	69.86	73	100
	28	After a meal rinsing the mouth will help in….	18	24.65	60	82.19
	29	Gargling with_____is good for oral health?	47	64.38	61	83.56
	30	Which of the following are a good habits to keep mouth clean?	25	34.24	53	72.60

The data presented in the table 6 shows that, the domain of good habits for oral health consists of 14 items, during pre test highest 51(69.86%) correct response is given to item number 17 and lowest 4(5.4%) response is give to items number 16, where as in post test highest 73(100%) response is given to items 27 and lowest 50(68.49%) response was given to item number 20.

b. **Description of mean, median, mode, standard deviation and range pre test and post test knowledge scores of participants regarding oral health**

Table 7

Mean, median, mode, standard deviation and range of pre test and post test knowledge scores of Respondents regarding oral health

n = 73

Area of Knowledge	Mean	Median	Mode	Standard deviation	Range
Pre test	10.86	11	11	4.10	3-21
Post test	25.64	26	26	2.91	17-30

Table 7 reveals pre test and post test knowledge score of respondents regarding oral health -

During pretest knowledge score, respondents mean was 10.86, median was 11, mode was 11 with standard deviation 4.10 and score range was 3-21.

During post test knowledge score, respondents mean was 25.64, median was 26, mode was 26 with standard deviation 2.91 and score range was 17-30.

c. **Description of findings related to level of knowledge during pretest and post test**

The level of knowledge of participants regarding oral health during pretest and post test was calculated and data is presented in table 8

Table 8

Frequency and Percentage distribution of respondents according to level of Knowledge regarding oral health

n=73

Level of knowledge	Pre test		Post test	
	F	%	f	%
Poor ((1 - 25%)	17	23.3	00	00
Average (26 - 50%)	46	63	00	00
Good (51 - 75%)	10	13.7	19	26
Very Good (76 - 100%)	00	00	54	74

The data presented in the **Table 8** depicts the respondent's level of knowledge during pretest and post test regarding oral health;

Pre test level of knowledge shows that, maximum 46(63%) respondents were having average knowledge, 17(23.3%) of respondents were having poor knowledge and remaining 10(13.7%) respondents were having good knowledge.

During post test maximum 54(74%) of respondents were having very good knowledge and remaining 19(26%) of respondents were having good knowledge regarding oral health.
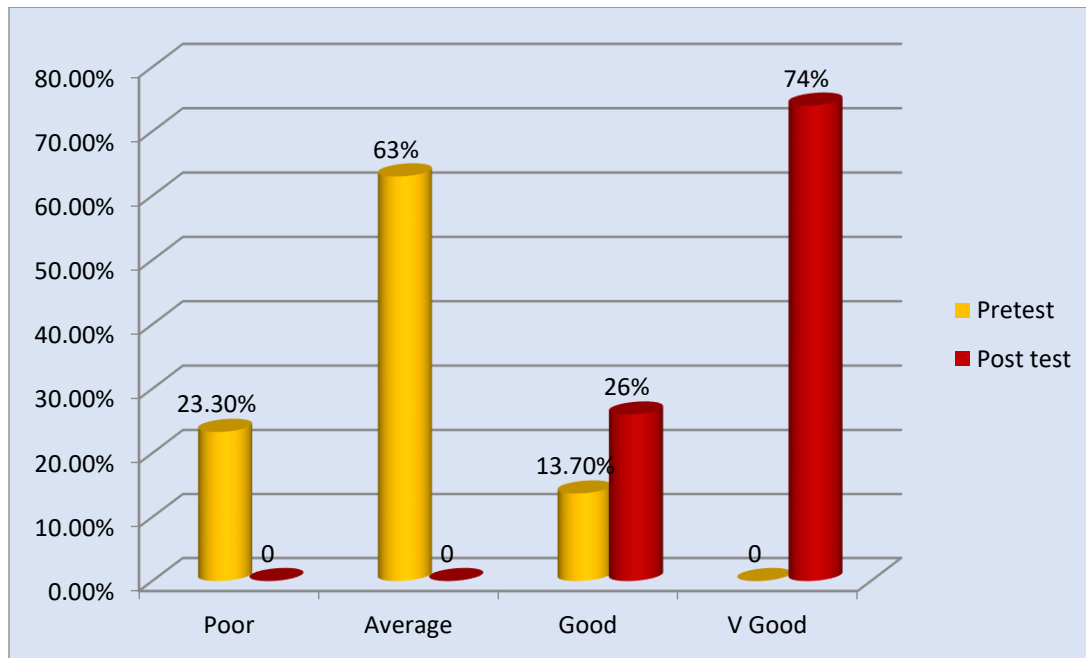
Figure 14. Frequency and percentage distribution of respondents according to their level of knowledge in pretest and post test

d. Description of mean difference of knowledge scores as per socio demographic variables

In order to find out the differences of knowledge scores as per socio demographic variables among mothers mean difference was calculated according to socio demographic variables. The data are presented in the Table 9.

TABLE 9

Mean scores during pretest and post test and mean difference of knowledge scores as per socio demographic variables

N=73

Socio Demographic Variables	Pre Test mean $\overline{x}$	Post test mean $\overline{x}$	Mean difference
1. Age			
a. 6-7 yrs	8.30	25.11	16.81
b. 8-9 yrs	13.66	26.22	12.56
c. 10 and above yrs	12.50	26	13.50
2. Gender of the child			
a. Male	10.21	25.73	15.52
b. Female	11.74	25.51	13.77
3. Type of family			
a. Nuclear	11.20	24.68	13.48
b. Joint	10.53	26.21	15.68
c. Extended	18	23	5
4. Type of diet			
a. Vegetarian	10.72	25.65	14.93
b. Non vegetarian	00	00	00
c. Mixed	11.27	25.61	14.93
5. Source of drinking water			
a. Municipality	6	26.33	20.33
b. Well water	11.03	25.56	14.53
c. River water	11.17	25.76	14.59
			Continue page....
Socio Demographic Variables	Pre Test mean $\overline{x}$	Post test mean $\overline{x}$	Mean difference

6. Education of father			
a. Illiterate	9.33	27.66	18.33
b. Primary education	9.90	25.46	15.56
c. Higher secondary education	13.44	25.83	12.39
d. Graduation	14	26.50	12.50
7. Education of mother			
a. Illiterate	9.50	25.66	16.16
b. Primary education	10.18	25.47	15.29
c. Higher secondary education	14	26.28	12.28
8. Number of siblings			
a. None	12.66	23.33	10.67
b. 1	11.85	25.70	13.85
c. 2	0.56	25.75	25.19
d. 3	7.33	25.83	18.50
9. Source of information			
a. News paper	12	30	18
b. Parents	11.03	24.85	13.82
c. Siblings	11.80	25.30	13.50
d. Television	10.41	26.26	15.85

The data presented in Table 9 shows pre test mean, post test mean and mean differences of knowledge scores of ICU staff nurses regarding prevention of ventilator associated pneumonia.

With respect to age of highest mean difference 16.81 was found for 6-7 years of age and lowest mean difference 12.56 was found for below 8-9 years of age.

With respect to gender highest mean difference 15.52 was found among males and lowest mean difference 13.77 was found for females.

With respect to type of family highest mean difference 15.68 was found among participants of joint family and lowest mean difference 5 was found among participants of extended family.

With respect to type of diet same mean difference 14.93 was found among participants of vegetarian and mixed diet.

With respect to source of drinking water highest mean difference 20.33 was found among municipality source of water participants and lowest mean difference 14.53 was found among well water drinking participants.

With respect to education of father highest mean difference 18.33 was found among participants fathers with no education and lowest mean difference 12.39 was found among participants father with higher secondary education.

With respect to education of mother highest mean difference 16.16 was found among participants mother with no education and lowest mean difference 12.28 was found among participants mother with higher secondary education.

With respect to number of siblings highest mean difference 25.19 was found among participants with 2 siblings and lowest mean difference 13.85 was found among participants with one sibling.

With respect to source of information highest mean difference 18 was found among participants with news paper as source of information and lowest mean difference 13.50 was found among participants with siblings as source of information.

SECTION 4

this section deals with description of findings related to effectiveness role play in relation to knowledge of participants regarding oral health

a. Significance of difference between pretest and posttest knowledge scores.

In order to find out the significance of difference between means of pretest and posttest knowledge scores, paired't' value was computed. The data are presented in Table 10. To test statistical significance following null hypothesis was stated:

H_{01}: There will be no significant difference between mean knowledge scores of primary school children on oral health before and after role play at 0.05 level of significance.

TABLE 10

Mean, mean difference, SD difference, SEMD, and paired't' test of pretest and posttest knowledge scores of participants regarding oral health

n= 73

Knowledge Score	Mean	Mean difference	SD difference	SEMD	Paired 't' Test	Level of significance
Pretest **Post test**	10.86 25.64	14.78	1.19	0.60	24.45	S (p<0.05)

't' (72) = 2.00   p=0.05

The data presented in Table 10 shows that, the mean difference between the pretest and posttest knowledge mean scores is 14.78. This indicates an increase in knowledge scores after undergoing role play. To find significance of the gain in knowledge paired 't' test value was computed and the obtained value of' t' (72) = 24.45 is found to be significant at 0.05 level of significance.

Hence, the null hypothesis H_{01} is rejected and research hypothesis is supported. This indicates that the gain in knowledge is not by chance and the participants who have undergone the role play on oral health, significantly gained knowledge.

SECTION 5

This section deals with description of finding related to association between post test knowledge scores of participants and their socio demographic variables.

To find out the association between the Post test levels of knowledge and selected personal variables, Chi square was computed and the following null hypothesis is stated

H_{02}: There will be no significant association between the pre-test knowledge scores of participants with their selected socio-demographic variables at 0.05 level of significance

TABLE 11

Chi square value between level of post test knowledge scores of participants and their selected socio demographic variables

N=50

demographic variable	Level of knowledge			Df	Chi square value	Level of significance
	Poor	Average	Good			
1. Age						
a. 6-7 yrs	14	22	0			
b. 8-9 yrs	1	20	6	4	21.05	Significant
c. 10 and above yrs	2	4	4			
2. Gender						
a. Male	12	27	3	2	4.31	Not
b. Female	5	19	7			Significant
3. Type of family						
a. Nuclear	4	17	4		7.78	Not
b. Joint	13	29	5	4		Significant
c. Extended	0	0	1			
4. Type of diet						

| a. Vegetarian | 12 | 37 | 6 | 2 | 2.11 | Not |
| c. Mixed | 5 | 9 | 4 | | | Significant |

Continue page….

Socio-demographic variable	Level of knowledge			df	Chi square value	Level of significance
	Poor	Average	Good			
5. Source of drinking water						
a. Municipality	2	1	0	4	3.77	Not
b. Well water	12	33	8			Significant
c. River water	3	12	2			
6. Education of father						
a. Illiterate	1	2	0			
b. Primary education	16	30	4	6	12.91	Significant
c. Higher secondary education	0	13	5			
d. Graduation	0	1	1			
7. Education of mother						
a. Illiterate	1	6	0	4	11.39	Significant
b. Primary education	16	32	5			
c. Higher secondary education	0	9	5			
8. Number of siblings	0	2	1			
a. None	5	16	6	6	11.01	Not
b. 1	8	26	3			Significant
c. 2	4	2	0			
d. 3						
9. Source of information						
a. News paper	0	1	0	6	3.71	Not
b. Parents	6	19	3			Significant
c. Siblings	1	8	1			
d. Television	10	18	6			

χ^2 :$_{(1)}$=3.84, $_{(2)}$ =5.99, $_{(3)}$ = 7.81, $_{(4)}$ = 9.48 (p>0.05)

Data presented in **table 11** shows that the computed Chi-square value for association between pre test levels of knowledge of participants oral health is found significant for age, education of father and education of mother and is not found significant for other socio demographic variables. Therefore, the findings partially support the null hypothesis H_{02} and the research hypothesis, inferring that, there will be significant association between the pre test levels of knowledge scores with age, education of father and education of mothers.

SUMMARY

A pre experimental study was undertaken at vaki primary school, Surat, Gujarat. The 213 childrens were screened under the assessment tool then 73 students were became the samples of the study. Data was collected from 73 childrens by using pre experimental one group pre test post test research design to assess the effectiveness of role play as a method of learning in improving oral health of primary school children by using structured interview method. The collected data were analyzed by using Descriptive and Inferential statistics.

Dental diseases are a significant public health menace having substantial impact on the quality of life which in turn affects the daily performance and general life satisfaction. There is a vast difference in health status including the oral health between urban and rural population of India and in other developing countries. The existing situation demands the formulation and implementation of National Oral Health Policy in India in order to expand the oral health care to make it more affordable, and reachable. Oral diseases affects the quality of life of children and account for pain, impaired aesthetics, recurrent infections, eating troubles, sleeping difficulties, emergency visits to dentists and hospitals, poor ability to learn, insufficient nutrition, and improper growth and development. Dental caries affects the children socially as well as psychologically. Furthermore, treating dental caries in children is expensive not only due to the direct costs of treatment but also the indirect costs such as the time taken off by the parents to take the child to a dentist.

It is important to brush properly and regularly to help remove plaque which can cause tooth decay. Plaque is a sticky, colorless film of bacteria and sugars that constantly forms on our teeth. It is the main cause of cavities and gum disease, and can harden into tartar if not removed daily.

National health survey conducted by dental council of India (DCI) stated that carries prevalence was 85%. In Gujarat the prevalence of dental carries in primary teeth and permanent dentition was 64.2% and 26.6%.

CONCLUSION:

The aim of the "study focuses on the assessment of effectiveness of role play as a method of learning in improving oral health of primary school children residing at selected communities of south Gujarat."

The study assessed the knowledge of childrens regarding oral health. The study concluded saying that there was significant improvement in knowledge and practice in the post- test after presentation of the role play. The results revealed that role play was found very effective in improving the level of knowledge regarding oral health at $P<0.05$ level. From the findings of the study, the investigator concluded that role play has an important role in increasing the level of knowledge regarding oral health. The role play was an effective method which increased knowledge of childrens to the expected level.

CONFLICT OF INTEREST:

The author have no conflicts of interest regarding this investigation.

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