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Effectiveness of planned teaching programme on knowledge regarding dental fluorosis

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Abstract

Dental fluorosis remains one of the commonest disorders affecting the teeth, starting right from the early age. Hence, the importance of preventing dental fluorosis is at the school age level. To a certain extent (as per WHO; 0.6 ppm) fluoride ingestion is useful for bone and teeth development, but excessive ingestion causes a disease known as Fluorosis. The severity of dental fluorosis depends on the amount of fluoride exposure, the age of the child, individual response, and weight, the degree of physical activity, nutrition, and bone growth. **Aim:** The study aimed at assessing the pre-test level of knowledge among parents of primary school children regarding dental fluorosis, to assess the effectiveness of planned teaching programme on dental fluorosis among parents, to associate pre-test & post-test knowledge scores parents of primary school children with their socio-demographic variables such as age, gender, occupation, qualification of parents.
Method: A one group pre-test post-test pre-experimental approach was adopted. The study was conducted among 60 parents of primary school children conveniently selected from the village of Vadodara district. **Result:** It was found that the impact of the health awareness programme in terms of increase in knowledge score of parents of primary school children was 5.78% whereas an increase in skill of was found to be 14.18%. **Conclusion:** There is a need for a re-education and knowledge about dental fluorosis for the parents of primary school children.

Keywords: Polarity, Polarity management, Polarity map, Training program.

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1. Introduction

Today's children are tomorrow's leaders. They form 38%-40% of the general population.[1] Dental fluorosis is a developmental disturbance of dental enamel caused by excessive exposure to high concentrations of fluoride during tooth development. The risk of fluoride overexposure occurs between the ages of 3 months and 8 years. fluorosis often appears as unnoticeable, tiny white streaks or specks in the enamel of the tooth. In its most severe form, tooth appearance is marred by discoloration or brown markings. The enamel may be pitted, rough and hard to clean. The spots and stains left by fluorosis are permanent and may darken over time. [2] The critical period of exposure is between 1 and 4 years old, and the child is no longer at risk after 8 years of age. The severity of dental fluorosis depends on the amount of fluoride exposure, the age of the child, individual response, and weight, the degree of physical activity, nutrition, and bone growth.

Fluorosis has now turned up to be a serious health hazard. It seriously affects bones and problems like joint pain, muscular pains etc are its well-known manifestations. It not only affects the body of a person but also renders them socially and culturally crippled. In spite of the progressive spread of disease so far no established data exists to determine the extent of disease, no specialized water testing facilities are available and even the doctors do not have a specific orientation to correlate the disease with specific symptoms. In these areas, the response of the people is reactive rather than pro-active. [3]

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Background of study

Dental fluorosis is a common childhood disease in India. Over 40% of the children in India are found to be affiliated with dental fluorosis and a large percentage of children reside in rural areas and most of them are in the need of dental care. There are about 20 other developed and developing nations which have come under the threat of fluorosis.[4]

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Statement of the problem

A study to evaluate the effectiveness of planned teaching programme on knowledge regarding dental fluorosis among parents of primary school children at the selected rural area of Vadodara district

Objective of the study

1) Assess the pre-test level of knowledge among parents of primary school children regarding dental fluorosis.

2) Assess the effectiveness of planned teaching programme on dental fluorosis among parents of primary school Children.

3) Associate pre-test & post-test knowledge scores parents of primary school children with their socio-demographic variables such as age, gender, occupation, qualification of parents.

Hypothesis

1) The post-test knowledge scores of parents of primary school children regarding Dental fluorosis will be significantly higher than the pretest knowledge scores.

2) There will be a significant association between pre-test knowledge scores of parents of primary school children regarding dental fluorosis with their selected variables.

2. Materials and methods

Research Approach: Pre experimental approach was used.

Research Design: A one group pre-test post-test design was adopted

The setting of the Study: The study was conducted in selected families of Piparia and Amoder village at Vadodara District.

Target Population: In the study, the target population is all the parents of primary school children.

Sample: The sample selected for the present study comprised of parents of primary school children at Vadodara district with a sample size of total 60 primary school parents.

Sampling technique: In the present study, parents of primary school children of the selected rural area are selected by non-randomized convenient sampling technique by the investigator.

Development of a tool for data collection: The final data collection instrument had three sections which included-

Section A -Demographic Variable
Section B - Knowledge Questionnaire
Section C - Structured Observational Checklist

The validity of instrument: The content validity of the tools was obtained from dental, nursing, research and statistics experts.

Reliability: Knowledge questions were tested by the split-half method, using Karl Pearson's coefficient of correlation and the reliability computed was 0.93. This showed that the tool was reliable.

A pilot study was conducted with six parents of primary school children to refine the methodology and find the feasibility of the study.

Development of health awareness programme: The following steps were adopted to develop to the health awareness programme.

- Preparation of the health awareness programme
- Plan for teaching
- Plan for the implementation of the health awareness programme

Data collection procedure:

Objectives of the study were discussed and consent for participation in the study was taken from the selected group. The investigator assured the subjects about the confidentiality of the data. The investigator himself administered the self-planned questionnaire for the pre-test. The duration of data collection for each sample was 15 to 20 minutes. The planned teaching programme was disseminated to the experimental group after the pre-test and a brief introduction.

The instruction about post-test was given to the participants of the experimental group. The post-test was conducted on 8th day respectively after supplementing them with teaching. Time taken for post-test by each sample was 15 minutes approximately.

1. Plan for data analysis:

The statistical analysis was made on the basis of objectives and hypothesis. The data analysis was planned to include descriptive and inferential statistics. The following plan was developed for data analysis on the basis of the opinion of experts.

Descriptive statistics:

1- Frequency and percentages of knowledge, the score will be used to analyze the demographic data.

2- Mean, median and standard deviation of pre-test and post-test knowledge scores; will be used to assess the level of knowledge.

Inferential statistics:

1- Paired't' test to assess the effectiveness of planned teaching programme on knowledge regarding dental fluorosis among parents of primary school children.

2- "Chi-square" to determine the association between pre-test knowledge and selected demographic variables.

3. Results

The finding discussed under the following headings based on objectives of the study.

Section I: - Deals with the analysis of the demographic data of the sample.

Section II: - Deals with the analysis of the knowledge score of the sample before and after administration of planned teaching program on knowledge regarding dental fluorosis.

Section III: - Deals with pre-test level of knowledge parents of primary school children regarding dental fluorosis.

Section IV: - Deals with the find an association between pre and post test knowledge scores of parents of primary school children with their socio-demographic variables.

Section I: Deals with the analysis of the demographic data of the sample.

- Age wise distribution of sample reveals that majority (41.7) percent respondents belongs to the age group of 25-30 years of age while in the age group of 20-25 years of age 35.0% participants respondents, in the age group of 30-35 year of age 23.3% of participants are respondents and in the age group of above 35 years none participant respondents in particular study.

- Gender wise distribution of sample reveals that the majority (75.0%) of the respondents was male and (25.0%) of the respondents were female.

- The percentage distribution of educational status of father shows that about (68.3%) of the respondents are a primary school, (25.0%) of the mother is middle school, (6.7%) mothers are senior secondary school and none of the mothers in a study not educated graduation and above.

- The percentage distribution of educational status of mother shows that about (45.0%) of the respondents are a primary school, (40.0%) of the father is middle school, (15.0%) fathers are senior secondary school and none of the fathers in the study not educated graduation and above.

- The percentage distribution of age of their children that shows about (36.7%) parentages of children is 5-6 years age group and same percentage is 6-7 years age group, children. In the study (23.3%) 7-8 years age group and (3.3%) children are above 9 years age group.

- The percentage distributions of the occupation of father show that (36.7%) of the respondents are daily wages, (26.7%) are self-employed, (20.0%) are govt. /private employee and last (16.7%) are other workers.

- The percentage distributions of the occupation of mother show that (26.7%) of the respondents are daily wages, (3.3%) are self-employed, (0.0%) are govt. /private employee and last (70.0%) are other workers.

- The percentage distributions of the source of health information of the parents are mainly in two ways out of four ways that's (51.7%) are health personnel and (48.3) are other sources of health information.

- The percentage distributions of the source of water supply in the home of the parents are highly by (56.7%) are hand pump and (43.3%) are supply by the tap water and the other sources of water supply and well water are (0.0%) percentage in the study.

- The percentage distributions of the history of hospitalization due to dental fluorosis mostly (65.0%) are never, (33.3%) are single time, (1.7%) are two time and none of the percentages of hospitalization due to dental fluorosis in the study.

Section II: Deals with the analysis of the knowledge score of the sample before and after administration of planned teaching program on knowledge regarding dental fluorosis.

Table 01: Distribution of individual pretest and posttest score of sample according to their response

Sample code number	Pre-test scoring			Post-test scoring		
	Score	Percentage	Interpretation	Score	Percentage	Interpretation
1	8	32	Average	15	60	Good
2	7	28	Average	12	48	Average
3	4	16	Poor	10	40	Average
4	5	20	Poor	13	52	Average
5	5	20	Poor	15	60	Good
6	6	24	Poor	14	56	Good
7	3	12	Poor	12	48	Average
8	8	32	Average	14	56	Good
9	4	16	Average	10	40	Average
10	6	24	Poor	12	48	Average
11	4	16	Poor	11	44	Average
12	7	28	Average	13	52	Good
13	6	24	Poor	14	56	Good
14	5	20	Poor	13	52	Good
15	4	16	Poor	11	44	Average
16	5	20	Poor	12	48	Average
17	4	16	Poor	11	44	Average
18	8	32	Average	17	68	Good
19	9	36	Average	18	72	Good
20	5	20	Poor	12	48	Average
21	8	32	Average	13	52	Good
22	8	32	Average	15	60	Good
23	3	12	Poor	10	40	Average
24	6	24	Poor	15	60	Good

25	7	28	Average	16	64	Good
26	5	20	Poor	14	56	Good
27	9	36	Average	16	64	Good
28	4	16	Poor	12	48	Average
29	10	40	Average	18	72	Good
30	3	12	Poor	10	40	Average
31	8	32	Average	14	56	Good
32	4	16	Poor	13	52	Good
33	2	8	Poor	11	44	Average
34	5	20	Poor	14	56	Good
35	6	24	Poor	16	64	Good
36	4	16	Poor	13	52	Good
37	8	32	Average	15	60	Good
38	4	16	Poor	13	52	Good
39	7	28	Average	18	72	Good
40	6	24	Poor	15	60	Good
41	6	24	Poor	17	68	Good
42	6	24	Poor	14	56	Good
43	6	24	Poor	16	64	Good
44	7	28	Average	19	76	Excellence
45	5	20	Poor	14	56	Good
46	4	16	Poor	13	52	Good
47	6	24	Poor	19	76	Excellence
48	7	28	Average	18	72	Good
49	5	20	Poor	14	56	Good
50	7	28	Average	16	64	Good
51	6	24	Poor	16	64	Good
52	7	28	Average	16	64	Good
53	7	28	Average	15	60	Good
54	8	32	Poor	19	76	Excellence

55	7	28	Average	17	68	Good
56	4	16	Poor	11	44	Average
57	6	24	Poor	15	60	Good
58	7	28	Average	19	76	Excellence
59	3	12	Poor	12	48	Average
60	3	12	Poor	11	44	Average

Section III: - Deals with pre-test level of knowledge parents of primary school children regarding dental fluorosis.

Table 02: Comparison of pre-test and post-test individual knowledge score of respondents

Pre-test scoring interpretation					Post-test scoring interpretation		
Interpretation		Frequency	Percent	Cumulative Percent	Frequency	percent	Cumulative Percent
Valid	Excellence	0	0	0	4	66.6	37.7
	Good	0	0	0	38	62.3	100.0
	Average	22	36.7	36.7	18	29.5	31.1
	Poor	38	63.3	100.0	0	0	100.0
	Total	60	100.0	100.0	60	100.0	100.0

Table 03: Section wise distribution of mean, sd and mean percentage of the participants in pretest and post test

Descriptive Statistics	N	Mean	Std. Deviation	t	P value (two tail)	Significant level
Pretest	60	14.18	2.534	-43.348	.000	Significant
Post test	60	56.73	10.138			

Section IV: - Deals with the find an association between pre and post test knowledge scores of parents of primary school children with their socio-demographic variables.

To find out an association of pre-test and post-test knowledge score of parents of primary school children with their socio-demographic variable the mean, SD, "p" value, "t" value are calculated and result of study reveals that there is no any significant association of age group, gender, and economic condition with pre and post-test knowledge of respondents but there is significant association between place of residence and source of previous knowledge of respondents with their pre and post-test knowledge score.

4. Discussion

The present study was conducted to determine the effectiveness of planned teaching program on knowledge regarding dental fluorosis among parents of primary school children at selected rural area of Vadodara district. The outcome of section wise distribution of the pretest and posttest knowledge score of the parents of primary school children on dental fluorosis in selected village at Vadodara

district of Gujarat state reveal that in the pretest and posttest scoring interpretation of the respondents it proves that there are highest 38 respondents (63.3 %) percentage of participants are belongs to the poor categories, 22 respondents (43.3%) percentage of respondents are average and belongs to excellence categories and no any participants belong to good group which increase in post-test level up to 4 respondents (71.7%) excellence, 38 respondents (62.3%) are good and 18 participants belongs to the average (29.5%) or (00.0%) poor categories. So it indicates that there is increased the level of knowledge of parents in post-test compare to the pre-test after administration of the planned teaching program so it proves that my planned teaching program is effective for respondents. Hence, it is observed that structure teaching program is very effective tool in improving the knowledge of students.

Same study done by S.S Jolly et.al on epidemiological, clinical, and biochemical study of endemic dental and skeletal fluorosis in Punjab (1968) where 46000 children (belonging to 358 villages) aged 5-17 years was examined for dental fluorosis. In 210 villages (maximum fluoride concentration - 1.4 ppm) incidence of dental mottling was 0-10%. In 96 villages (maximum fluoride concentration - 2.3 ppm) incidence of dental mottling was 10-30%. In 52 villages (max fluoride concentration > 2.3 ppm) incidence of mottling was >30%. In 10 villages, in-depth study of skeletal fluorosis was done where children and adults were examined. They showed the incidence of skeletal fluorosis as practically nil at mean fluoride concentration of 1.4ppm but rises with the increase of fluoride concentration. Villages with practically same fluoride concentration showed different incidence of fluorosis, thus showing that the concentration of fluoride alone is not responsible for the incidence of skeletal fluorosis.[6]

A study was conducted by Hartono SW, et.al. conducted / carried out a cross sectional survey among 100 primary school teacher using questionnaire technique to assess the effectiveness of primary school based health education drawn from 10 randomly selected primary school. The result revealed that majority of them have a poor attitude to oral health issues. A few of them who have attended a dental clinic mostly had extractions done. It was also found that there is a need for improved knowledge of oral health disease and their prevention among the teachers for an effective school based oral health education programme. The study suggests ways in which this can be achieved.[7]

A study was conducted by Chandrashekar J, et.al. To assess the prevalence and severity of dental fluorosis and its relationship with fluoride levels in drinking water in rural areas of Davangere district, Karnataka (2004). The fluoride concentration in drinking water was estimated by the Ion Selective Electrode Method. Dean's Index was used to assess the dental fluorosis. Karl-Pearson coefficient for correlation and simple regression analysis were used to evaluate the association between the water fluoride levels and the community fluorosis index (CFI). The study group consisted of school children aged between 12-15 years. The fluoride levels in drinking water of selected villages were in the range of 0.22-3.41ppm. A stepwise increase in the prevalence of dental fluorosis with corresponding increase in water fluoride content, (13.2% at 0.22ppm F to 100% at 3.41 ppm F). There was a significant positive linear correlation (r=0.99) between CFI and water fluoride level. Dental fluorosis is a major dental public health problem among children in Davangere district and is related to drinking water with 0.74ppm fluoride or above.[8]

A study was conducted by Saravanan S et.al to assess the pattern of prevalence of dental fluorosis in Pondicherry (2005) in urban area of primary school among 5 years old children and taken sample consisted of 527 boys and 482 girls. It was found that the dental fluorosis was prevalent among 44.9% of the study population, being higher in the boys.[9]

A study was conducted by Pushpa Bharati et.al on Clinical symptoms of dental and skeletal fluorosis in gadag and bagalkot district of Karnataka in 2005 among the 832 subjects (532 and 300 from Mundargi and Hungund Taluks respectively).They surveyed 328 (61.65%) and 194 (64.67%) patients exhibited the symptoms of either dental or skeletal or both types of fluorosis. Browning of teeth was the most common symptom of dental fluorosis observed among subjects of Mundargi Taluk (64.29%) followed by pain and pus in teeth (58.79%) whereas, lack of luster was the most common symptom of dental fluorosis in Hungund Taluk (77.42%) followed by browning of teeth (54.84%). The skeletal symptoms including tingling and numbing of extremities, pain in back and bent stature were high among females of both the talukas whereas shoulder pain and neck pain were also observed to a higher extent among females of Mundargi Taluk.[10]

Conclusion

The findings of the present study showed that analysis of the knowledge score of sample before and after administration of planned teaching program on dental fluorosis.

The outcome of final distribution of the pre-test and post-test knowledge score of the parents of primary school children on dental fluorosis in selected villages at Vadodara district of Gujarat state reveal that the mean percentage of pre-test knowledge score 5.78 % which increase in post-test up to 14.18 % so the effectiveness is 8.39 %.

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