International Journal of Advance Research in Community Health Nursing

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Effectiveness of planned teaching programme on knowledge regarding dental fluorosis

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Abstract

Introduction: 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 greatest concern in dental fluorosis is aesthetic changes in the permanent dentition (the adult teeth). These changes are prone to occur in children who are excessively exposed to fluoride between 20 and 30 months of age. 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, degree of physical activity, nutrition, and bone growth.

Objective: 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. The content validity of the tool and teaching plan was established. Reliability of the tool was tested by split half technique using Karl Pearson's co-efficient of correlation and interrater reliability.

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 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: Knowledge planned teaching programme, dental fluorosis, parents, and primary school children

1. Introduction

Fluorine, a member of the halogen family, it is an element believed to be essential for normal growth, development and maintenance of human health. Fluoride has cariostatic potential. However, excessive intake of fluoride leads to dental and skeletal fluorosis. Apart from teeth and bone it also affects other systems of the body leading to an entity called non-skeletal fluorosis. 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. In its mild forms (which are its most common), 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, degree of physical activity, nutrition, and bone growth.

Fluorosis continues to be an endemic problem. More and more areas are being discovered regularly that are affected by fluorosis in different parts of the country. Children in the age group are most prone to fluorosis as their body tissues are in formative / growth stage during

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this period. Expectant mothers are also to be protected, as there is growing concern about effects of fluoride on fetus. Fluorosis, which was considered to be a problem related to teeth, 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 specific orientation to correlate the disease with specific symptoms. In these areas the response of the people is reactive rather than pro-active [3].

2. 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 selected rural area of Vadodara district"

3. 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.

4. Hypothesis
1. The post-test knowledge scores of parents of primary school children regarding Dental fluorosis will be significantly higher than the pre-test knowledge scores.
2. There will be significant association between pre-test knowledge scores of parents of primary school children regarding dental fluorosis with their selected variables.

5. Materials and Methods
5.1. Research Approach: Pre experimental approach was used.
5.1.1 Research Design: A one group pre-test post-test design was adopted
5.1.2 Setting of the Study: The study was conducted in selected families of Piparia and Amoder village at Vadodara District.
5.1.3 Target Population: In the study the target population is all the parents of primary school children.

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

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

5.4 Development of 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

5.5 Validity of instrument: The content validity of the tools was obtained from various experts of concerned field like dental, nursing, research and statistics.

5.6 Reliability: Knowledge questions were tested by split half method, using Karl Pearson's co-efficient 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.

5.7 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

6. 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 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.

7. 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.

8. Descriptive statistics
1. Frequency and percentages of knowledge, score will be used to analyse 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.

9. 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.

10. 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 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 majority (75.0%) of the respondents was male and (25.0%) of the respondents was female.
- The percentage distribution of educational status of father shows that about (68.3%) of the respondents are primary school, (25.0%) of mother are middle school, (6.7%) mother are senior secondary school and none of the mother in study not educated graduation and above.
- The percentage distribution of educational status of mother shows that about (45.0%) of the respondents are primary school, (40.0%) of father are middle school, (15.0%) father are senior secondary school and none of the fathers in study not educated graduation and above.

- The percentage distribution of age of their children that shows about (36.7%) parentages of children are 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 shows 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 shows 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 personal and (48.3) are other sources of health information.
- The percentage distributions of the source of water supply in home of the parents is 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 percentage of hospitalization due to dental fluorosis in the study.

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

Table 1: Distribution of Individual pre-test and post-test 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 2: 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 3: Section Wise Distribution of Mean, Sd And Mean Percentage of The Participants in Pre-test And Post Test

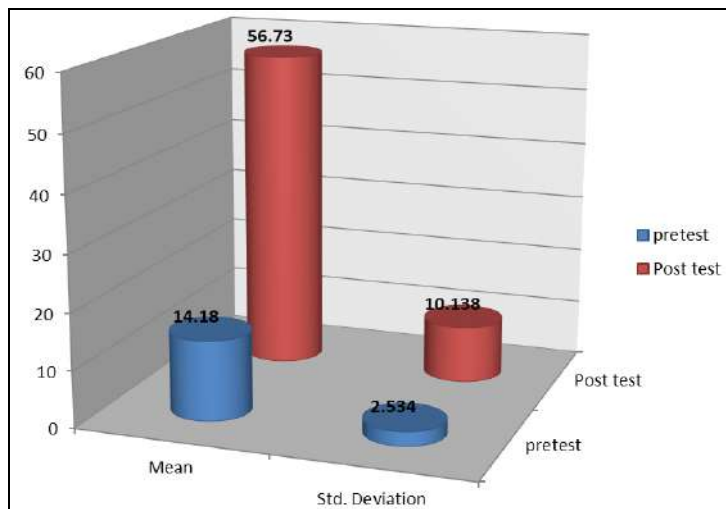| Descriptive Statistics	N	Mean	Std. Deviation	t	P value(two tail)	Significant level
Pre-test	60	14.18	2.534	-43.348	.000	Significant
Post test	60	56.73	10.138			

Fig 1: Compare of mean and sd of pre and post test

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.

11. 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.

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 pre-test and post-test 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 (36.7%) percentage of respondents are average and no any participants belong to excellent and good group which increase in post-test level up to 4 respondents (6.7%) excellence, 38 respondents (62.3%) are good, 18 respondents (29.5%) and no participants belongs to the 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. Evaluate effectiveness of the planned teaching programme 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%.

13. Recommendations
Based on the findings of the present study recommendations offered for the future study are:
1. Similar study can be conducted on a larger sample to generalize finding.
2. A comparative study can be conducted with control group.
3. The comparative study may be conducted to find out the effectiveness between SIM and STP regarding the same topic.
4. A similar study can be conduct on the nursing degree course students, staff nurse, community people and dental patients.
5. A descriptive study can be conducted to assess the knowledge on dental fluorosis among parents of primary school children.
6. A longitudinal study can be done using post-test after one month, six months and one year to see the retention of knowledge.

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