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"A SURVEY TO ASSESS THE KNOWLEDGE REGARDING DENTAL FLUROSIS AND ITS MANAGEMENT AMONG THE MOTHERS OF LESS THAN EIGHT YEARS CHILDREN AT SELECTED RURAL AREA OF VADODARA DISTRICT."

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ABSTRACT

BACKGROUND OF THE STUDY

Fluoride has emerged as an anomalous arch-criminal, a double-edged sword revolving around oral hygiene and prevention. While its stint in the impediment of dental caries is in-grained, dental fluorosis, a well-known developmental enamel defect due to excessive fluoride ingestion during enamel formation, which is generally from chronic, long-term exposure to elevated levels of fluoride as a repercussion, is much unaccounted.

OBJECTIVE OF THE STUDY:

- Assess the knowledge regarding dental fluorosis and its management among the mothers of less than eight years children at selected rural area of vadodara district.
- To find the association between knowledge with their selected demographic variable.

METHODOLOGY

The evaluative research approach, non experimental survey research design was used for the study. The group consisted 360 samples that were selected on the basis of the sampling criteria and non-probability purposive sampling techniques set for the study. The study will be conducted at Rural area of Vadodara district (Latipura, Bhanpur, Vanachara Village). The accessible population is mothers of less than eight years children. The tools used for the study is demographic variables and structure knowledge questionnaire.

RESULT:

Out of 360 samples overall the highest percentage in the demographic data including the age group 48.88% (21-25), religion 61.94% (Hindu), education status 45.00% (secondary), occupation status 57.77% (other), family income 54.16% (5001-10000), types of family 80.27% (nuclear), dietary pattern 60.27% (vegetarian), number of children 45.83 (one), source of water used to drink 57.50% (municipal supply water). Data related to knowledge score in that poor knowledge is 40.55%, adequate is 50.27% and good is 9.16%. Chi-square test to associate the level of knowledge and selected demographic variable.

CONCLUSION:

the finding of the study revealed that mother of eight year children have lack of knowledge regarding dental flurosis and management.

KEY WORDS:

Assess, knowledge, dental flurosis, management, mother, children, rural area.

INTRODUCTION

Protecting and improving the health of children is of fundamental importance. Over the past several decades, we have seen dramatic progress in improving the health and reducing the mortality rate of young children. Among other encouraging statistics, the number of children dying before the age of 5 was halved from 2000 to 2017 and more mothers and children are surviving today than ever before.[1]

However, a great deal of work remains to further improve the health outcomes for children. The world is facing a double mandate. More than half of child deaths are due to conditions that could be easily prevented or treated given access to health care and improvements to their quality of life.

At the same time, children must also be given a stable environment in which to thrive, including good health and nutrition, protection from threats and access to opportunities to learn and grow. Investing in children is one of the most important things a society can do to build a better future.

Fluoride has emerged as an anomalous arch-criminal, a double-edged sword revolving around oral hygiene and prevention. While its stint in the impediment of dental caries is in-grained, dental fluorosis, a well-known developmental enamel defect due to excessive fluoride ingestion during enamel formation, which is generally from chronic, long-term exposure to elevated levels of fluoride as a repercussion, is much unaccounted. Dental fluorosis reflects tooth development; therefore, excessive fluoride ingestion during early maturation and the secretary stage of enamel formation alters protein metabolism, producing a disorganized crystal structure and hypo-

mineralization. Primary dentition's fluorosis is "rare" or "less severe" when compared to permanent dentition's fluorosis. This is attributed to the placental tissue acting as a controlling factor on the concentration of fluoride in the fetal blood and the consumption of mother's breast milk in which fluoride concentration is approximately 0.02 parts per million. Fluorosis of the primary dentition is considered to be of little consequence due to the temporary status of this dentition.[2]

However, dental fluorosis when affecting the primary dentition had a prevalence of 29 percent in the optimal-fluoride area and 14 percent in the low-fluoride area, with a greater propensity to involve the succedaneum dentition by 1.86 times. This concludes that primary dentition is equally if not more prone to dental fluorosis than permanent teeth. Proper diagnosis of dental fluorosis in the primary dentition avoids damage to the permanent successors both aesthetically and functionally. Deciduous teeth act as alarms for dental fluorosis, providing a basis for intervention. The past 40 years have led to an array of sources of ingested fluoride, encompassing intentional sources such as foods, beverages, and dietary supplements, and unintentional sources of fluoride such as ingestion from fluoride dentifrices, mouth rinses, and other topical fluoride products. These factors coupled with malnutrition and childhood infections can substantially escalate the prevalence of dental fluorosis in preschool children. High-fluoride-level (1000 ppm or more) toothpastes administered to children less than 3 to 5 years of age are linked with an increased risk of dental fluorosis. Approximately 0.1 mg of fluoride is usually consumed during use of toothpastes and mouth rinses, whereas 20 mg or more is ingested during professional fluoride gels applications. The major source of dietary fluoride is fluoridated water. A wide array of other sources of fluoride encompasses foods, beverages, and dietary supplements. Levy et al. reported that total fluoride intake, mostly from water, between the ages of 6 and 9 months were associated with fluorosis in the primary second molars.[3]

Clinical measures used to quantify oral diseases include the decayed, missing, and filled index for detection of caries or the Dean's index for fluorosis. The severity of clinical conditions such as caries and fluorosis influences children quality of life. The diversity in the influence of dental fluorosis on the quality of life of children is associated with different aesthetics perceptions as affected by the intensity of enamel mottling. As well as causing discomfort in a significant population of children, dental caries interferes with body growth, negatively affecting body weight and height. As parents are responsible for their children health, assessing parents' perceptions about their children quality of life is crucial. The Early Childhood Oral Health Impact Scale (ECOHIS) is used to assess the oral-health-related quality of life in children.[4]

Fluorosis is an uprising public health problem for some residential zones such as the Indian subcontinent since it lies in the geographical fluoride belt that extends from Turkey to China and Japan through Iraq, Iran, and Afghanistan. According to the U.S. Center for Disease Control and Prevention (CDC), when the fluoride level of drinking water exceeds 1.5–2.0 ppm, the risk of developing fluorosis is enhanced, especially in children aged less than 8 years old. Sixty-two million people in India are affected by dental, skeletal, and non-skeletal fluorosis, out of which six million are children aged below 14 years old. In Karnataka, several residential districts were noted with a range of fluoride concentration varying from 0.2 to 18.0 mg/L. The permissible optimum fluoride level in

groundwater was reported to be less than 1.5 mg/L by the Central Ground Water Board Government of India, Ministry of Water Resources. Even with the presence of such optimum fluoride levels in residential zones, the pervasiveness of dental fluorosis was evident.[5]

Dental fluorosis is a developmental disturbance of enamel that results from ingestion of high amounts of fluoride during tooth mineralization. The marginal threshold of fluoride during the critical tooth development period for development of dental fluorosis has been documented at 0.03-0.1mg F/Kg body weight. Consumption of higher than the documented levels of fluoride leads to disruption of secretory ameloblasts, resulting in increased porosity of the subsurface enamel. In milder forms, porosity is limited to the subsurface enamel, although in severe forms the porosity affects the surface enamel causing excessive pitting, chipping and subsequently, tooth decay. The beneficial effects of consuming water with moderate levels of fluoride. The optimum dose of fluoride necessary for the prevention of dental caries has been determined to be in the range of 0.05-0.07mg F/Kg body weight.[6]

In countries in Eastern Africa and parts of Asia including India, naturally occurring fluoride in water presents challenges with affected populations suffering severe forms of dental fluorosis. Sampled water from underground sources in India and found 50% of the water from boreholes to contain more than 1.5mg fluoride per liter. Other sources of fluoride that are considered risk factors for dental fluorosis include consumption of fluoride-rich in foods and beverages. Weaning practices including the use of fluoridated water for infant formula preparation has also been identified as a risk factor for dental fluorosis. Children who have an early introduction to tooth brushing using fluoridated dentifrice risk developing fluorosis if parental supervision on the amount of paste dispensed is not appropriately done.[7]

Dental fluorosis affects children when their permanent teeth develop with morbidity being permanent without increasing the risk of mortality. The gradation of dental fluorosis will further help in the assessment of the chronicity of the problem and thereby decide the priority areas for intervention program. Dental fluorosis causes the teeth to be chalky white and also may have white, yellow, brown, or black spots or streaks on the enamel surface. Discoloration is away from the gums and bilaterally symmetrical. Skeletal fluorosis affects the bones and major joints of the body such as neck, back bone, shoulder, hip, and knee joints with severe pain, rigidity or stiffness in joints. In severe forms, it results in marked disability. Non-skeletal fluorosis is an earlier manifestation of fluorosis and presents as gastrointestinal complaints.[8]

The most common types of fluorosis are dental, skeletal, and non-skeletal. Dental fluorosis is a common, slowly developing condition that has no known cure and for which there is limited access to healthcare in remote areas.

The presence of tooth abnormalities is one of the most common criteria used in the early stages of diagnosing human dental fluorosis. People exposed to fluoride for an extended period often experience symptoms such as weight loss, anorexia, anemia and cachexia. Excessive fluoride intake has been connected to many health issues, including paralysis, respiratory issues and low blood pressure. Fluorosis of the tooth enamel is a common

condition that may arise during tooth development, affecting mineralization and the structure that ultimately forms. Depending on the severity of an injury it can cause a range of cosmetic and practical problems. There is a possibility that dental and skeletal fluorosis would affect more than 200 million individuals across more than 25 countries.[9]

It is important caregivers are informed about the etiology of dental fluorosis and how to avoid it, as dental fluorosis only has the potential to develop during amelogenesis. Such prevention measures include the supervised tooth brushing of children, encouraging children not to ingest dentifrices and limiting the use of additional fluoride supplements in areas served by fluoridated water. Patients should also be informed of potentially less publicized sources of fluoride, including tea, artificially fluoridated milk and fluoridated salt.[10]

The control of fluoride levels within drinking water is vital. This may involve defluoridation techniques where water fluoride levels are excessive. It is equally important to highlight the benefits of fluoridated water and toothpaste in the prevention of dental caries while calling attention to the difference between systemic fluoride administrations, which involves ingestion, from topical fluoride administration, which occurs primarily through the use of dentifrices. Fluoride water concentrations of 0.7-1 ppm are optimal in terms of balancing the beneficial anti-cariogenic properties of fluoride while avoiding complications associated with its excessive ingestion.[11]

OBJECTIVE OF THE STUDY:

- Assess the knowledge regarding dental fluorosis and its management among the mothers of less than eight years children at selected rural area of vadodara district.
- To find the association between knowledge with their selected demographic variable.

METHODOLOGY

The evaluative research approach, non experimental survey research design was used for the study. The group consisted 360 samples that were selected on the basis of the sampling criteria and non-probability purposive sampling techniques set for the study. The study will be conducted at Rural area of Vadodara district (Latipura, Bhanpur, Vanachara Village). The accessible population is mothers of less than eight years children. The tools used for the study is demographic variables and structure knowledge questionnaire.

RESULT

SECTION-A :-Analysis and interpretation of the demographical data of the samples.

Frequency and percentage wise distribution of samples by their demographic The study samples comprised 360 mother. The selected demographic variable which were included in this study were age, religion, type of family, education, occupation, family income, water used to drink, dietary pattern and source of information etc.

Table 1 -: Frequency and percentage distribution of sample by their demographic

Sr. no.	Demographic variable		Frequency	Percentage (%)
1	Age group (years)	21-25	176	48.88%
		26-30	158	43.88%
		31-40	26	7.22%
		Above 40	0	00.00%
2	Religion	Hindu	223	61.94%
		Muslim	104	28.88%
		Christen	33	9.16%
		Other	0	00.00
3	Education status	Primary	116	32.22%
		Secondary	162	45.00%
		Higher Secondary	68	18.88%
		Graduate and above	14	3.88%
4	Occupation status	Self employee	13	3.61%
		Private employee	133	36.94%
		Government employee	6	1.66%
		Other	208	57.77%
5	Family income (in rupees)	Below 5000	49	13.61%
		5001- 10000	195	54.16%
		10001- 15000	98	27.22%
		Above 15001	18	5.00%
6	Types of family	Nuclear	289	80.27%
		Joint	64	17.77%
		Extended	7	1.94%
7	Dietary pattern	Vegetarian	217	60.27%
		Non vegetarian	76	21.11%
		Mixed	67	18.61%
8	Number of children	One	165	45.83%
		Two	151	41.94%
		Three	40	11.11%

		Four or more	4	1.11%
9	**Source of water used to drink?**	Tube well	99	27.50%
		Municipal supply water	207	57.50%
		R.O. water	54	15.00%
		Other	00	00.00%

SECTION B: Analysis and interpretation of knowledge of the samples regarding dental flurosis and its management.

Table 2. Frequency and percentage distribution of knowledge score

Level of knowledge	Frequency	Percentage
Poor	146	40.55%
Adequate	181	50.27%
Good	33	9.16%

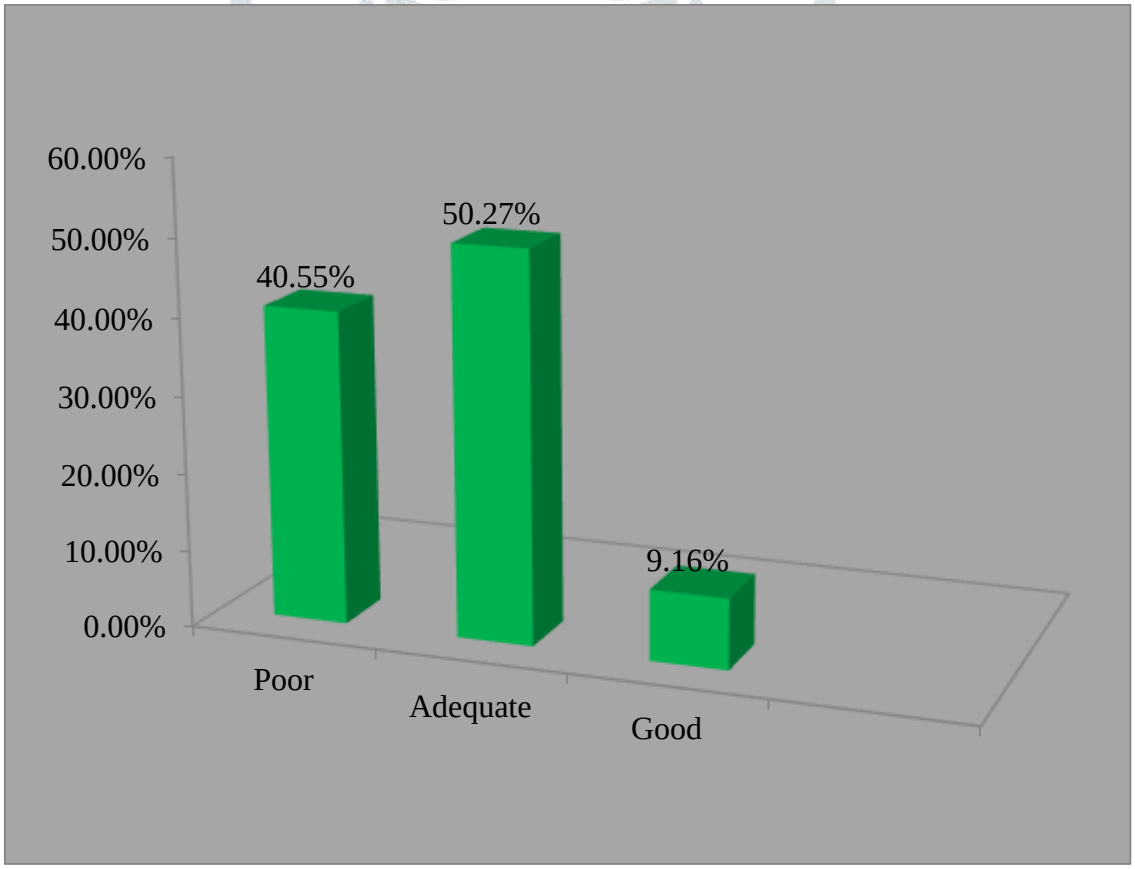

Figure 1. Bar diagram representing percentage wise distribution of the sample according to level of knowledge.

The table showing that the knowledge score and percentage of samples. In that poor knowledge is 40.55%, adequate is 50.27% and good is 9.16%.

SECTION C: Analysis for association of selected demographic data with knowledge of samples regarding dental flurosis and its management.

Table no. 3. -: Chi-square value for association of knowledge with their selected demographic variables.

Sr. No.	Demographic Variables	F	Knowledge			Chi Square		DF	Association
			P	A	G	C.V.	T.V.		
1	**Age group (years)**					12.22	12.59	6	Not significant
	21-25	176	83	79	14				
	26-30	158	55	90	13				
	31-40	26	8	12	6				
	Above 40	0	0	0	0				
2	**Religion**					4.52	12.59	6	Not significant
	Hindu	223	94	112	17				
	Muslim	104	41	49	14				
	Christian	33	11	20	2				
	Other	0	0	0	0				
3	**Education status**					11.00	12.59	6	Not significant
	Primary	116	54	49	13				
	Secondary	162	56	94	12				
	Higher Secondary	68	32	31	5				
	Graduate and above	14	4	7	3				
4	**Occupation status**					16.67	12.59	6	Significant
	Self employee	13	4	8	1				
	Private employee	133	72	51	10				
	Government employee	6	2	3	1				
	Other	208	68	119	21				
5	**Family income**					10.93	12.59	6	Not significant
	Below 5000	49	13	31	5				
	5001-10000	195	88	94	13				
	10001-15000	98	38	49	11				
	Above 15001	18	7	7	4				

6	**Type of family**					20.00	9.48	4	Significant
	Nuclear	289	121	151	17				
	Joint	64	23	26	15				
	Extended	7	2	4	1				
7	**Dietary pattern**					8.86	9.48	4	Significant
	Vegetarian	217	81	119	17				
	Non vegetarian	76	36	35	5				
	Mixed	67	29	27	11				
8	**Number of children**					12.17	12.59	6	Not significant
	One	165	54	95	16				
	Two	151	76	62	13				
	Three	40	15	22	3				
	Four or more	4	1	2	1				
9	**Source of water used to drink**					5.95	12.59	6	Not significant
	Tube well	99	43	50	3				
	Municipal supply water	207	81	102	24				
	R.O. water	54	22	29	6				
	Other	00	0	0	0				

Association between the level of knowledge and socio demographic variable is show in table no.3. Based on the Third objective use to chi-square test to associate the level of knowledge and selected demographic variable.

SUMMARY

This chapter has deal with the analysis and interpretation of the data collected from the 360 samples. Inferential statistics were used to analyze the data. The analysis has been organized under various sections like description of demographic variable, description of knowledge score and association between the knowledge score and selected demographic variable.

DISCUSSION

The present study aims to evaluate the knowledge regarding dental flurosis and its management among the mothers of less than eight years children. The study conducted by using evaluative research approach, non experimental survey research design. The 360 samples were selected on the basis of the sampling criteria and nonprobability purposive sampling techniques set for the study. The tool used for the study is self structured knowledge questionnaire. The response was analyzed through descriptive and inferential statistics The findings were computed based on the objective of the study.

CONCLUSION

The conclusions drawn from the finding of the study are as follows:

Out of 360 samples poor knowledge is 40.55%, adequate is 50.27% and good is 9.16%. In chi square test majority of demographic variables are not significant except occupation status and family income.

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