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A pre-experimental study to assess the effectiveness of video teaching programme on knowledge regarding dental fluorosis and it's management among mothers of under five children at selected Anganwadi centres in District Kangra Himachal Pradesh

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Abstract
A-experimental was study conducted regarding dental fluorosis and it's management among mothers of under five children at selected Anganwadi centres in district Kangra, Himachal Pradesh which shown that, (35.0%) mothers belongs to 26-30 years, 100% were belongs to urban area, 43.3% were matriculation, 90.0% were housewife, 41.7% had > 30,001rs income per month, 58.3% mothers had two child, 100.0% had habit of brushing teeth daily, 100.0% mothers was thought it is important to clean your teeth, 98.3% mothers was used tap water, 100.0% mothers was used bottled water for drinking in home, 75.0% mothers were used bottled water in less than 5 years, 93.3% mothers were having no previous knowledge regarding dental fluorosis and it's management. The mean post-test knowledge score i.e. 18.98 was higher than mean pre-test knowledge score 9.58 at $p<0.001$ level of significance which shows the significant difference between mean pre-test and post-test knowledge scores regarding dental fluorosis and it's management. It shows that video teaching programme was effective in improving knowledge of mothers of under five children regarding dental fluorosis and it's management.
Conclusion: Video teaching programme was an effective strategy for improving the knowledge regarding dental fluorosis and it's management. As mothers of under five children were very possessive and caring for their children, that's why mothers of under five children showed interest in video teaching programme.

Keywords: Dental fluorosis and it's management, video teaching programme

Introduction
Dental fluorosis is a condition that causes changes in the appearance of tooth enamel. It may result when children regularly consume fluoride during the teeth-forming years, age under five children. Exposure to a high amount of fluoride leads to porous, pitted and discoloured enamel, which makes the enamel more susceptible to fracture, tooth wear and dental caries.

Mottled enamel, brownish darkening of teeth, pitted enamel, and bilateral, widespread, thin, horizontal white striations with stained plaque are all signs of dental fluorosis. In addition to enamel, permanent teeth may also have fluorosis of the dentin, which is histopathologically characterized by enhanced interglobular dentin development and accentuation of incremental lines of von Ebner. Clinically, permanent mandibular incisors and first permanent molars have the least amount of dental fluorosis, whereas premolars and second permanent molars have the most.

In order to prevent dental fluorosis, the World Health Organization (WHO) has established the maximum amount of fluoride that can be found in drinking water at 1.5 mg/L. In 17 Indian states and 1,50,000 Indian villages, dental fluorosis is prevalent. It has fluoride levels ranging from 2 to 20 mg/L. Compared to surface water, ground water has higher fluoride. Dental fluorosis is a disorder of dental enamel formation brought on by repeated exposure to excessive fluoride concentrations during tooth development. The result is enamel that is more porous and has less mineral content.

The mother is the main source of infection for her children, and dental diseases are contagious. Even at preschools and nurseries, children under five often spend the majority of their time with their parents and guardians, particularly mothers. Increased caries prevalence is linked to parents' negative attitudes on their newborns' and young children's dental health.

The disorder known as dental fluorosis alters the way tooth enamel looks. Regular fluoride consumption by youngsters aged 8 and under, when their teeth are still growing, may cause it. The majority of dental fluorosis in the United States is extremely moderate to mild, manifesting as often imperceptible white patches on the tooth surface that have no effect on dental function. More extensive enamel alterations are caused by the far less common moderate and

severe types of dental fluorosis. The teeth may develop pits in the uncommon, severe variant. Communities with water fluoride levels below two milligrams per liter are rarely affected by the severe type.

It has been shown that oral health is just as vital as overall wellness. Furthermore, it has been shown that awareness of dental health has a significant role in determining general health. It has an impact on a person's social, psychological, and physical health. Chronic conditions with shared risk factors, such diabetes, obesity, and tooth caries, are becoming more prevalent in developing nations, which has a negative impact on both general health and oral health. Like many other food and health-related conditions, dental disorders are expensive to treat.

According to the 2019 Global Burden of illness Study, caries of the permanent teeth is the most prevalent oral illness, affecting about 3.5 billion people globally. It is estimated that 520 million children worldwide suffer from primary tooth caries, while 2 billion adults worldwide suffer from permanent tooth caries. As living conditions alter and urbanization increases, oral illnesses are becoming more common in the majority of low- and middle-income nations. The availability and affordability of foods rich in sugar, insufficient exposure to fluoride (found in the water supply and toothpaste), and limited access to oral health care services in the community are the main causes of this.

"A clean tooth never decays" has been supported by good oral hygiene, which also helps to avoid oral illnesses such dental caries and periodontal problems. One of the main contributing factors to periodontal illnesses is poor dental hygiene habits. Furthermore, one of the key etiological causes for the development of dental caries is the inability to remove plaque and debris, which is equivalent to not practicing excellent oral hygiene. Therefore, it is clear how important oral hygiene is in preventing conditions like tooth caries and periodontal disorders.

Operational Definition
- **Assess:** Assess refers to measure the knowledge score regarding dental fluorosis and it's management among the mothers of under five children.
- **Knowledge:** In present study knowledge refers to the facts and information regarding dental fluorosis and it's management among under five children.
- **Video Assisted Teaching Programme:** In present study video assisted teaching programme refers to the audio-visual teaching material by projector to create awareness.
- **Children:** In this present study children is a human being between the stages of birth and puberty or between the developmental period of infancy and puberty.

Materials and methods
- **Research Approach**: A quantitative research approach was used to assess the effectiveness of video teaching programme on knowledge regarding dental fluorosis and it's management among mothers of under five children at selected Anganwadi centres in District Kangra Himachal Pradesh.
- **Research Design:** A pre experimental one group pre and post- test design was used to accomplish the

objectives of the study.
- **Research Settings:** The study was conducted in Selected Anganwadi centres of District Kangra, H.P.
- **Population:** The population of the present study was all mothers of under five children at selected Anganwadi centres in District Kangra Himachal Pradesh
- **Target population:** The target populations were the mothers of under five children at selected Anganwadi centres in District Kangra Himachal Pradesh.
- **Accessible Population:** The accessible populations were mothers of under five children who are interested in my study and who full fill the selection criteria.

Sample and Sampling Technique
- **Sample:** In this study the sample size has decided to be 60 Mothers of under five children at selected Anganwadi centres in District Kangra Himachal Pradesh.
- **Sampling technique:** Non probability Convenient sampling technique was used to select 60 Mothers of under five children attending Selected Anganwadi center of District Kangra.

Criteria for Sample Collection
Inclusion criteria: The study include mothers of under five children who will be:
- Willing to participate in the present study.
- Present at the time of data collection.
- Able to read and write Hindi and English languages.

Exclusion Criteria: This study excludes mothers of under five year children who will:
- Not willing to participate in the study.
- Be sick at the time of data collection.

Research Variables
- **Independent Variable:** In present study independent variable is video teaching programme.
- **Dependent Variable:** In this study dependent variable is knowledge of mothers.
- **Demographic Variable:** It is the characteristics, attributes, of the study object.

Selection and Development of the Tool
The tool was selected and developed according to the objectives of the study, previous review of literature like, books, journals, unpublished research studies, mass media and by discuss with guide and co-guide.

Description of Tool
Accomplish the objectives of the study, Self-Structured knowledge questionnaire was used to assess the effectiveness of video teaching programme on knowledge among mothers of under five children. It consisted of two parts

Part -1: Socio-Demographic Variables
The first part of tool consist of some items for obtaining an information about the selected background factor such age (in years), residence, education status of mother, occupation of mother, monthly family income (in rupees), number of

children, habit of brushing teeth, if yes you think that it is important to clean your teeth, source of water, you used bottled water, if yes, how long you used bottled water, previous knowledge if yes, then source of knowledge, provide knowledge to under five mothers attended any education prgramme regarding dental fluorosis and it's management.

Part - 2: Consist of Section A and B
Section -A (Self-structured knowledge questionnaire)
It consists of self - structured knowledge questionnaire which seeks facts and information regarding dental fluorosis and it's management. It consists of 30 items of multiple-choice questions where total score is 30.

Section-B: (Video assisted teaching programme)
It consists of formulated video assisted teaching programme designed to provide awareness regarding dental fluorosis and it's management.

Scoring Pattern
The self - structured knowledge questionnaire consisted of 30 questions. In which right answer was documented as correct one mark and wrong were documented were as zero marks. The complete range was 0-30.

Knowledge score	Percentage	Range
Poor	≤ 33	0-10
Average	34-66	11-20
Good	≥ 67	21-30

Content Validity Tool
Content validity tool will be established with expert opinion of various medical and nursing field. To ensure content validity of the tool regarding relevance of item, the tool was submitted to 10 experts of different field of nursing. Experts are requested to judge items of tool for clarity, relevance, appropriateness, relatedness, and meaningfulness for the purpose of the study and give their opinion and suggestions on the content, it's coverage, organization. However there were few suggestions to modifying some of the socio demographic variables and statements, and they were incorporated in final draft.

- **Language Validity:** The developed tool was given to an English and Hindi language expert for the correction in the language of tool. As per the suggestions, the modification was implemented.
- **Pilot Study:** After obtaining the administrative approval, pre testing of structured questionnaire was done by administering it to 6 mothers of under five children at Anganwadi centre. The subject chosen were similar in the characteristics to those of the population under study to check the items for clarity, relevance of items and nature of response. It was found that participants took 30 minutes to complete the structured questionnaire.
- **Reliability of The Tool:** Reliability of tool was computed by applying Split-half method with

Karlpearson's Correlation coefficient formula. The reliability of the self- structured knowledge questionnaires was 0.74 so the tool was reliable.

Data Collection: After obtaining permission from concerned authorities, the investigators develop rapport and take consent from mothers of under five children. Total 60 sample were selected by non- probability convenient sampling technique. After getting consent from the sample who met the inclusion criteria.
- **Pre-test:** On 1st day pre-test was administered to the mothers of under five children in the form of self-structured knowledge questionnaires.
- Provided video teaching programme to the study sample.
- **Post-test:** post-test was conducted on the 7th day of pre-test with the same set of self- structured knowledge questionnaire.

The data were compiled and analysis was done by using descriptive and inferential statistics.

Data Analysis: The analysis was made based on the objectives and hypothesis. Both descriptive and inferential statistics were used for the data analysis such as:

Descriptive statistics: the statistical analysis includes frequency, percentage, mean, median and standard deviation.

Inferential statistics
- Paired t-test will be used to find out the significant difference between pre- test and post- post.
- Chi square test will be used to find out the association of post-test knowledge scores of mothers of under five children with their selected socio demographic variables.

Probability p-value of less than 0.05 was considered as statistically significant. SPSS (Statistical Package for Social System) version-18 software was used for analysis of data.

Analysis and Interpretation of Data
Analysis and interpretation of data were based on objective of study and hypothesis. The objective of the study were to assess the effectiveness of video teaching programme on knowledge regarding dental fluorosis and it's management among mothers of under five children at selected Anganwadi centres in District Kangra Himachal Pradesh. Aanalysis of data have been organized and presented under following sections
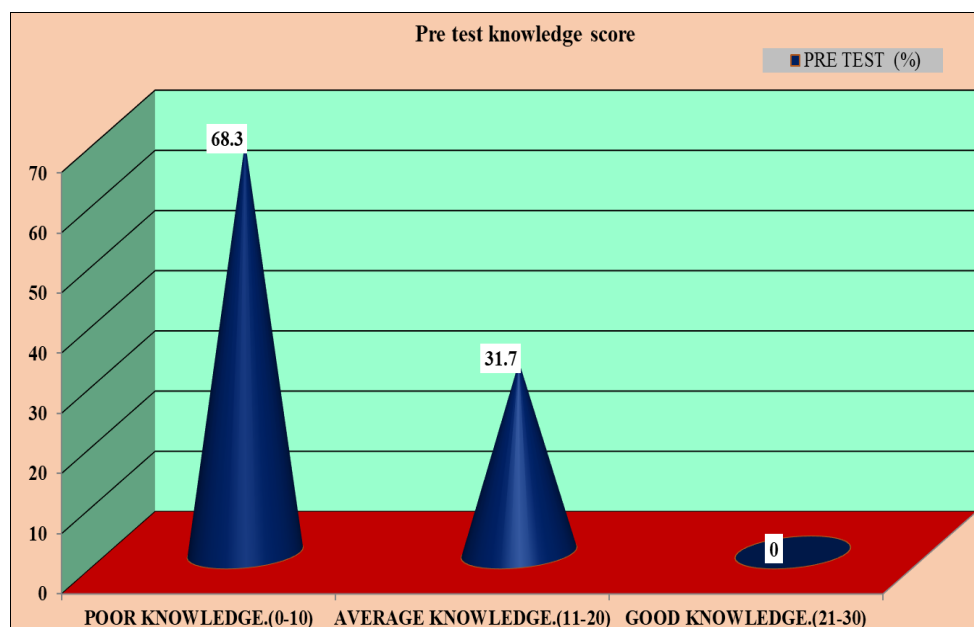
Section-I: Description of socio demographic variables on mothers of under five children.
Frequency and percentage distribution on mothers of under five children regarding dental fluorosis and it's management.

| Variable	Option	f	%
Age (in years)	18-25 years	14	23.3%
	26-30 years	21	35.0%
	31-35 years	15	25.0%
	36-40 years	10	16.7%
Residence	Rural	00	0.0%
	Urban	60	100.0%
Education status of mother	Non literate	02	3.3%
	Matriculation	26	43.3%
	Graduation	23	38.3%
	Post-graduation and above	09	15.0%
Occupation of Mother	Self employed	00	0.0%
	Private sector	04	6.7%
	Government sector	02	3.3%
	Housewife	54	90.0%
Monthly Family Income (in rupees)	< 10,000	00	0.0%
	10,001-20,000	14	23.3%
	20,001-30,000	21	35.0%
	>30,001	25	41.7%
Number of Children	One	16	26.7%
	Two	35	58.3%
	Three	09	15.0%
	Four	00	0.0%
Habit of Brushing Teeth	Yes	60	100.0%
	No	00	0.0%
According to you that it is Important to Clean Your Teeth	Yes	60	100.0%
	No	00	0.0%
Then Source of Water For Domestic Use	Well water	01	1.7%
	Tap water	58	98.3%
	Handpump	01	1.7%
	Other	00	0.0%
You Used Bottled Water For Drinking in Your Home	Yes	60	100.0%
	No	00	0.0%
How Long You Used Bottled Water in Your Home	Less than 5 years More	45	75.0%
	than 5 years	15	25.0%
Previous Knowledge	Yes	04	6.7%
	No	56	93.3%
Then Source of Knowledge	Peer group	00	0.0%
	Mass media	00	0.0%
	Medical professionals	00	0.0%
	Social media	60	100.0%

Section-II
Assess the pre-test knowledge score of mothers of under five children regarding dental fluorosis and it's management.
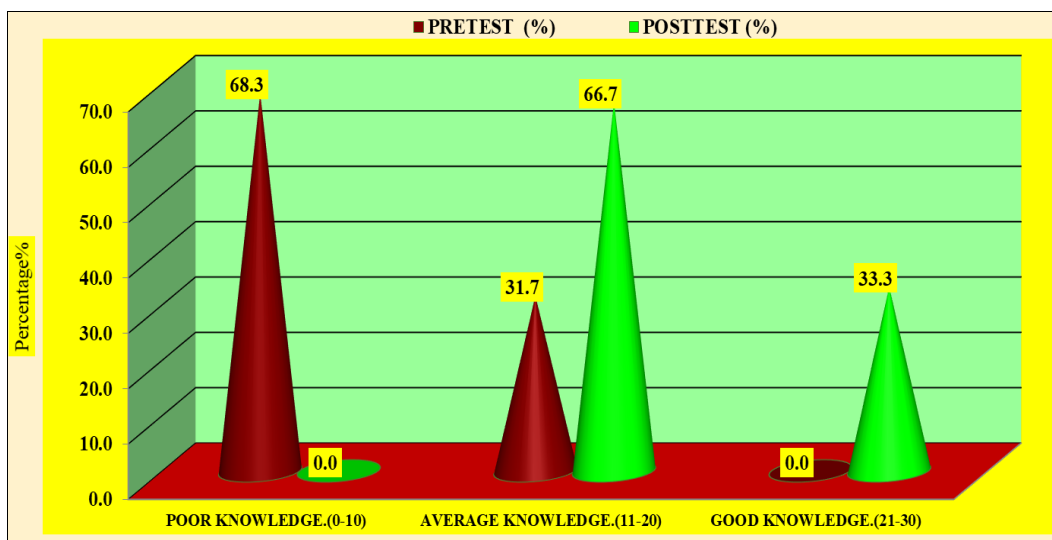
Section -III
Assess the post-test knowledge score of mothers of under five children regarding dental fluorosis and it's management.
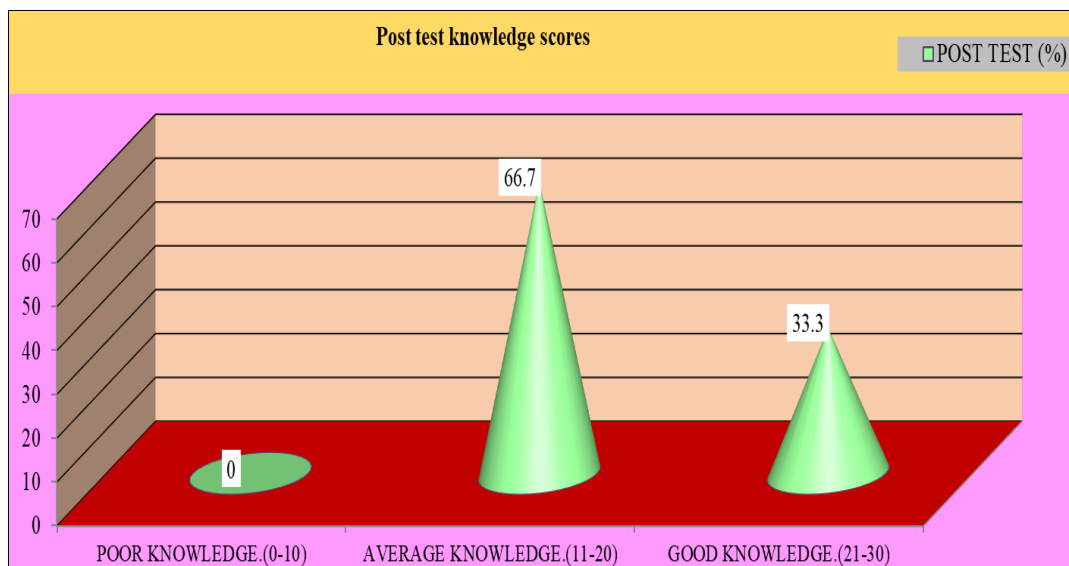
Section-IV: Comparison between pre-test and post-test knowledge scores of mothers of under five children regarding dental fluorosis and it's management.

Section-V
Association of post-test knowledge scores of mothers of under five children with their selected socio-demographic variables.

Socio-demographic variables	Good	Average	Poor	df	Chi -test	P value
Age (in years)						
18-25 years	4	10	0	3	4.007[NS]	0.261
26-30 years	8	13	0			
31-35 years	7	8	0			
36-40 years	1	9	0			
Residence						NA
Rural	0	0	0			
Urban	20	40	0			
Educational Status of Mother				3	6.141[NS]	0.105
Non literate	0	2	0			
Matriculation	13	13	0			
Graduation	5	18	0			
Post-graduation and above	2	7	0			
Occupation of Mother				2	2.333[NS]	0.269
Self employed	0	0	0			

Private sector	0	4	0			
Government sector	1	1	0			
Housewife	19	35	0			
Monthly Family income (in rupees)				2	2.627NS	0.500
<Rs10,000	0	0	0			
Rs10,001-20,000	7	7	0			
Rs20,001- 30,000	5	16	0			
>Rs30,001	8	17	0			
Number of children				2	0.046NS	0.977
One	5	11	0			
Two	12	23	0			
Three	3	6	0			
Four	0	0	0			
Habit of Brushing Teeth				1		NA
Yes	20	40	0			
No	0	0	0			
According to you it is Important to Clean Your Teeth						NA
Yes	20	40	0			
No	0	0	0			
Then Source of Water For Domestic Use				1	0.508NS	0.476
Well	0	1	0			
Tap water	20	39	0			
Hand pump	0	0	0			
Other	0	0	0			
You Used Bottled Water For Drinking in Your Home				1	0.508NS	0.476
Yes	20	39	0			
No	0	1	0			
How Long You Used Bottled Water in Your Home				1	0.000NS	1.000
Less than 5 years	15	30	0			
More than five years	5	10	0			
Previous Knowledge				1	0.134NS	0.714
Yes	1	3	0			
No	19	37	0			
Then Source of Knowledge						NA
Peer group	0	0	0			
Mass media	0	0	0			
Medical professionals	0	0	0			
Social media	1	2	0			

*= Significant, NS= Not significant

In analysis and interpretation study shows the effectiveness of video teaching programme regarding dental fluorosis and it's management among mothers of under five children. The mean post-test knowledge score (18.98) was higher than mean pre-test knowledge score (9.58) and obtained 't' value has been found statistically very highly significant (28.306) at $p<0.001$ level of significance which shows the significant difference between mean pre-test and post-test knowledge scores among mothers of under five children, Hence, the research hypothesis H_1 was accepted and null hypothesis H_{02} was rejected.

Conclusion
The result from this study reveals the implication of video teaching programme on knowledge regarding dental fluorosis and it's management among mothers of under five children was adequate. As mothers of under five children were easily attracted and shows interest towards video teaching programme. Chi-square value had no significant association between knowledge score regarding dental fluorosis and it's management among mothers of under five children with their selected socio demographic variables so it is concluded that selected socio-demographic variables had no effect on knowledge on mothers of under five

children because video teaching was found to be effective in improving the knowledge, more effective in learning of mothers of under five children and it is easy to deliver also grab viewer attention and increase learner engagement.

Limitation
The study was limited to
- The sample size was only 60.
- The data collection period was limited to one month.
- They study was conducted only on selected mothers of under five children.
- Questionnaire that is used is closed ended.

Recommendation
Keeping in view of the present research study findings, the following recommendations have been made:
- A similar study can be replicated on a large- scale basis.
- A pre-experimental study can be conducted to assess the effectiveness of video teaching programme on knowledge regarding dental fluorosis and it's management among mothers of under five children.
- A longitudinal study can be conducted to assess the vulnerability of knowledge regarding dental fluorosis and it's management among mothers of under five

children.
- A longitudinal study can be conducted to identify and prevent dental fluorosis.

Aim of the study
To improve the knowledge regarding dental fluorosis and it's management among mothers of under five children at selected Anganwadi center District Kangra, Himachal Pradesh.

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