

## Original Research Article

# A pre-experimental study to assess the effectiveness of planned teaching program on early childhood caries in terms of knowledge, attitude and practice among mothers of children between 1 to 6 years of age group admitted in paediatric unit in selected hospital of Delhi

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## ABSTRACT

**Background:** Children under the age of six have early childhood caries (ECC) in their teeth. In 2017, the Global Burden of Disease Study found that over 530 million children worldwide suffer from primary tooth caries. The condition impacts overall health and quality of life throughout the life course and affects both primary and permanent teeth (World Health Organization, 2020). Research on this topic is scarce, this study examines the effectiveness of planned teaching program on early childhood caries in terms of knowledge, attitude and practice among mothers of children between 1 to 6 years of age.

**Methods:** Quantitative Research Approach and one group pre-test and post-test research design was adopted. 30 mothers of children between 1 to 6 years of age in selected hospital were selected using purposive sampling technique.

**Result:** The pre-test mean knowledge score was 6.8214 and the post-test knowledge score was 12.3667 with the standard deviation 2.0398 and 2.3265 respectively. The pre-test mean attitude score was 10.3666 and the post-test attitude score was 17.9 with the standard deviation 4.9022 and 1.4910 respectively. The pre-test mean practice score was 3.7 and the post-test practice score was 7.6333 with the standard deviation 1.5947 and 1.4940 respectively. The post-test knowledge score, attitude score and practice score of the mothers were found significantly higher than the mean pre-test scores.

**Conclusion:** Planned teaching program was found to be an effective in enhancing the knowledge, attitude and practice.

**Keywords:** Assess, Effectiveness, Knowledge, Attitude, Practice, Early childhood caries

## INTRODUCTION

Children have a right “to the enjoyment of the highest attainable standard of health, and to facilities for the treatment of illness and rehabilitation of health.” United Nations Convention on the Right of the Child, Article 24

Children under the age of six have ECC in their teeth. In 2017, the Global Burden of Disease Study found that over 530 million children worldwide suffer from primary tooth caries. ECC has a big impact on people, families, and communities. The condition impacts overall health and quality of life throughout the life course and affects both

primary and permanent teeth (World Health Organization, 2020).<sup>1</sup>

A serious oral health issue that mostly affects socially disadvantaged groups is ECC. Worldwide, ECC has an impact on newborns and preschoolers. Depending on the group being studied, the prevalence of ECC varies; for underprivileged groups, it has been estimated to reach 85%.

ECC occurs when a kid is 7 months of age or younger and has one or more decaying, missing, or filled tooth surfaces in any primary tooth. According to Fung et al. (2013), ECC is the most prevalent chronic illness among children and adolescents. White-spot lesions in the upper primary incisors along the gingival edge are the first signs of it. Caries can worsen if the illness persists, eventually destroying the crown. Environmental, nutritional, and microbiological risk factors are the three primary categories of risk factors that contribute to the development of ECC. Despite being mostly preventable, ECC is still one of the most prevalent paediatric illnesses. Inappropriate dietary habits, family socioeconomic status, parental education gaps, and limited access to dental care are the main causes of the high frequency of ECC. Children's oral health is crucial for maintaining their oral functions, which are necessary for feeding, speech development, and having a healthy self-image (Anil & Anand, 2017).(2b)

### **Objectives**

To assess the level of knowledge, attitude & practice regarding early childhood caries among mothers of children between 1 to 6 years of age. To evaluate the effectiveness of Planned Teaching Program on level of knowledge, attitude and practice regarding early childhood caries among mothers of children between 1 to 6 years of age. To determine the association between post-test level of knowledge, attitude and expressed practice scores Early Childhood Caries among mothers of children between 1 to 6 years of age with selected demographic variables.

## **METHODS**

Pre experimental one group pre-test post-test design was adopted for the study. The conceptual framework for the study was derived from Wiedenbach's prescriptive theory model 1990.

### **Setting**

The present study was conducted in Dr. Baba Saheb Ambedkar Hospital, sector-6, Rohini, New Delhi The hospital was selected for the study on the basis of geographical proximity, feasibility of study and availability of samples.

### **Sample size**

30 mothers of children between 1 to 6 years of age present at Dr. Baba Saheb Ambedkar Hospital, sector-6, Rohini, New Delhi.

### **Population and sample**

The population for the present study comprised of mother of children 1 to 6 years age admitted in pediatric unit of selected hospital of New Delhi during the period of data collection.

In the present study samples were mother of children 1 to 6 years age admitted in pediatric unit of selected hospital of New Delhi.

### **Inclusion criteria**

Those who are willing to participate in the study, mothers who have children between 1 to 6 years of age group, mothers who are available at the time of data collection.

### **Exclusion criteria**

Mother who is not having children between 1 to 6 years of age, mothers who are not willing to participate in the study, mothers who were not available for the study.

### **Pilot study**

A pilot study was conducted on 10 sample after obtaining permission from the Medical Superintendent of Brahm Shakti Hospital, Kanjhawala road, Budh Vihar, New Delhi from 7th February 2022 to 14th February 2022.

### **Description of data collection tool**

An extensive review of research and non-research literature, peer group discussion and taking the experts opinion. Tool consists of four parts.

### **Demographic profile**

It consists of 10 items of demographic profile data of the mothers of children 1 to 6 years age for obtaining personal information with regard to Age, area of living, religion, education, occupation, family income, number of children, previous knowledge, source of information, any child with spot on teeth.

### **Structured knowledge questionnaire**

This section comprised of 20 multiple choice questions related to assess level of Knowledge regarding early childhood caries among mothers of children 1 to 6 years of age. Each correct question has a score of one, the maximum scores of the structured knowledge

Questionnaire are 20, and Minimum score is 0 as shown in appendix VIII.

### Structured likert scale

This section comprised of 10 items related to assess level of Attitude of mothers regarding ECC. For statements scoring can be given 'disagree' 1 point, 'neither agree nor disagree' 2 points, 'agree' 3 points. The maximum score of the structured Likert scale was 30 and the minimum score was 10 as shown in appendix VIII.

The total score is calculated by finding the sum of all items. There was only positive statement that was scored, and scaling was summed. The participants must mark against the most appropriate response selected by them.

### Structured checklist

This section comprised of 10 items related to assess level of Practice among mothers regarding ECC. Each right answer/step (yes) will carry "ONE" mark and each wrong answer/step (no) will carry "ZERO". The maximum score of the structured checklist was 10 and the minimum score was 0 as shown in appendix VIII.

### Final data collection procedure

Formal administrative approval was taken from Dr. Baba Saheb Ambedkar Hospital, New Delhi to conduct study from 21 March 2022 to 05 April 2022. The investigator personally met the mothers and self-introduction was given. Introduction to the nature of study was given to obtain free and frank response. Purposive sampling technique was used to select the samples and 30 mothers

were selected. All the mothers were explained about the purpose of the study and their expected participation. Confidentiality of their responses was assured and written consent was taken. No problem was faced during the data collection. On the day 1 prevalence of ECC was assessed and mothers were selected on 21st March 2022.

On the same day Pre-test was conducted to assess knowledge, attitude and practice regarding early childhood caries by using structured knowledge questionnaire, structured Likert scale and practice checklist in English on 21st March 2022. On day 2 Planned teaching program was intervened 22nd March 2022 to 23rd March 2022. On the day 8 post-test was administered on 30th March 2022 with the same tool to evaluate the impact of planned teaching program. The collected data was analysed by using descriptive and inferential statistics. Mean, median, standard deviation, mean difference, paired 't'-test, Chi Square Test was used to calculate global score, significant difference between pre and post-test and association with selected demographic variable mothers.

## RESULTS

### Major findings of the study

Table 6 depicts that frequency and percentage distribution of obese adolescent's by of age, religion, area of living, education, occupation, family income, number of children, have you ever heard about early childhood caries, source of information regarding early childhood caries, does your child have any white/yellow spot or plaque on the teeth.

**Table 1: Symbolic representation of research design.**

Group	On day 1	On day 2 Pre-test	On day 3 Intervention	On day 11 Post-test
<b>30 mothers of age group 1 to 6 years present in hospital, Delhi</b>	Assess the level of knowledge regarding early childhood caries.	Assessment of knowledge ( $k_1$ ), attitude ( $a_1$ ) and practice ( $p_1$ ) before the administration of planned teaching program.	Administration of planned teaching program.	Assessment of knowledge ( $k_2$ ), attitude ( $a_2$ ) and practice ( $p_2$ ) after the planned teaching program.

**Table 2: Scoring of knowledge.**

Grading of level of knowledge	Grading of scores
<b>Excellent</b>	16-20
<b>Good</b>	11-15
<b>Average</b>	6-10
<b>Poor</b>	1-5

Majority 12 (40%) of mothers of children belong to the age group above 26 and below 30 years, 10 (33.33%) were above 31 and below 35 years and Majority 18 (60%) of mothers were Hindu, 06 (20%) were Muslim, 1 (03.33%) were Christian and 5 (16.66%) were from other

religion. Majority 10 (33.33%) of mothers were from semi-rural area of living, 9 (30%) were from rural, 6 (20%) were from urban area and 5 (16.66%) were from semi urban areas of living. Majority 12(40%) of mothers were having secondary education, 8 (26.66%) were having primary education, graduate and above and 2 (6.66%) were having no formal education.

Majority 22 (73.33%) mothers are housewife, 7 (23.33%) of mothers are indulge in private job and 1 (3.33%) of mothers are indulge in part time job. Majority 21(70%) mothers having family income of Rs. 16000-30000 per month, 6 (20%) were having Rs. 31000-50000, 3(10%) were having Rs.0-15000 per month of family income.

**Table 4: Scoring of level of attitude.**

Grading of level of attitude	Grading of scores
<b>Favourable</b>	24-30
<b>Uncertain</b>	17-23
<b>Unfavourable</b>	10-16

**Table 5: Scoring of level of practice.**

Grading of level of practice	Grading of scores
<b>Adequate practice</b>	7-10
<b>Moderate practice</b>	4-6
<b>Poor practice</b>	1-3

Majority 18 (60%) of mothers having 2 children, 6 (20%) were having 1 child, 5 (16.66%) were having 3 children and 1 (3.33%) were having more than 3 children. Majority 26 (86.66%) of mothers didn't hear about early childhood caries and 4 (13.33%) of mothers were heard about early childhood caries.

Majority 26 (86.66%) of mothers were told health workers as the source of information regarding early childhood caries, 4 (13.33%) of mothers were told television as the source of information regarding early childhood caries. Majority 18 (60%) of mothers said that their child is having white/yellow spot or plaque on the teeth and 12 (40%) of mothers said that their child was not having white/yellow spot or plaque on the teeth.

**Table 6: Frequency and percentage distribution of demographic data.**

S. no.	Demographic data	Frequency	%
1.	<b>Age (in years)</b>		
	20-25	8	26.66
	26-30	12	40.00
	31-3	10	33.33
	36-40	0	00.00
2.	<b>Religion</b>		
	Hindu	18	60.00
	Muslim	6	20.00
	Christian	1	03.33
	Others	5	16.66
3.	<b>Area of living</b>		
	Rural	9	30.00
	Urban	6	20.00
	Semi-urban	5	16.66
	Semi-rural	10	33.33
4.	<b>Education</b>		
	Primary	8	26.66
	Secondary	12	40.00
	Graduate and above	8	26.66
	No formal education	2	06.66
5.	<b>Occupation</b>		
	Government job	0	00.00
	Private job	7	23.33
	Housewife	22	73.33
	Part-time job	1	03.33
6.	<b>Family income/month</b>		
	Rs. 0 -15000/	3	10.00
	Rs. 16000-30000	21	70.00
	Rs. 31000-50000	6	20.00
	Rs.51000-70000	0	00.00
7.	<b>No. of children</b>		
	1	6	20.00
	2	18	60.00
	3	5	16.66
	>3	1	03.33
8.	<b>Have you ever heard about early childhood caries?</b>		
	Yes	4	13.33
	No	26	86.66

Continued.

S. no.	Demographic data	Frequency	%
9.	<b>Source of information regarding early childhood caries</b>		
	Social media	0	00.00
	Newspaper	0	00.00
	Television	4	13.33
	Health worker	26	86.66
10.	<b>Does your child have any white/yellow spot or plaque on the teeth?</b>		
	Yes	18	60.00
	No	12	40.00

**Table 7: Frequency and percentage distribution of samples according to their pre-test and post-test level of knowledge regarding ECC.**

Grading level of knowledge	Grading of scores	Pre-test		Post test	
		f	%	f	%
<b>Excellent</b>	16-20	0	0	2	6.66
<b>Good</b>	11-15	0	0	24	80
<b>Average</b>	6-10	5	16.66	4	13.33
<b>Poor</b>	1-5	25	83.33	0	0

**Table 8: T value table for pre test and post score.**

S. no.	Mean	Median	Mean difference	SD	t value
<b>Pre-test</b>	6.8214	3	5.5453	2.0398	18.80*
<b>Post test</b>	12.3667	12		2.3265	

\*df(29) = 2.045 at 0.05 level of significance

**Table 9: Frequency and percentage distribution of pre-test and post-test level of attitude score regarding early childhood caries among mothers of children between 1-6 years of age.**

Grading of level of attitude	Grading of scores	Pre-test		Post test	
		N	%	N	%
<b>Favourable</b>	24-30	0	0	25	83
<b>Uncertain</b>	17-23	4	13	5	17
<b>Unfavourable</b>	10-16	26	87	0	0

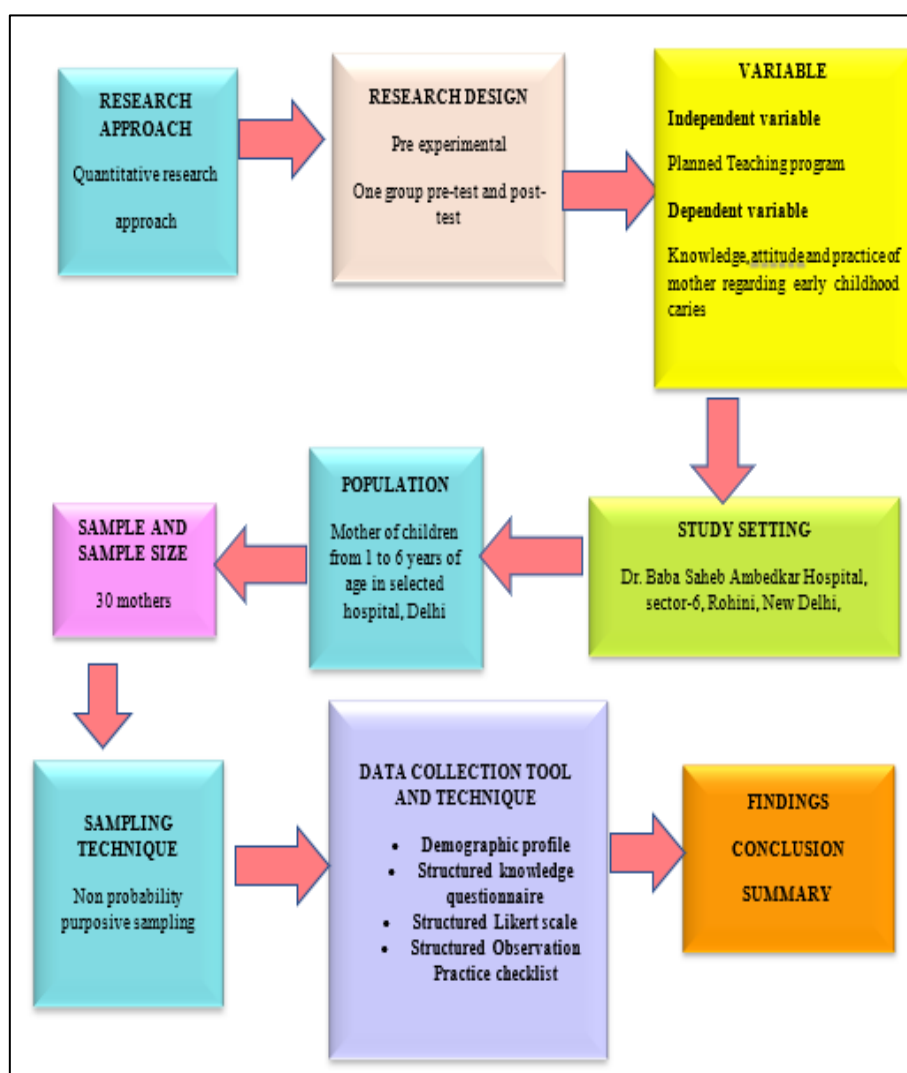
#### **Findings related to level of knowledge among mothers of children between 1- 6 years of age before and after administration of planned teaching program**

This section describes the analysis, description and interpretation of data collected to evaluate the effectiveness of planned teaching program regarding early childhood caries among mothers of children 1-6 years of age. The pre-test and post-test scores obtained through the structured knowledge questionnaire schedule on early childhood caries were described and analyzed using descriptive and inferential statistics. Data presented in the Table 8 shows that the knowledge score of mothers in pre- test was assessed which revealed 25 (83.33%) of population had poor knowledge and 5 (16.66%) had average knowledge regarding early childhood caries. The knowledge score of mothers in post-test was assessed and table reveals that 24 (80%) of population had good knowledge, 2 (6.66%) had excellent knowledge and 4 (13.33%) had average knowledge regarding early childhood caries.

#### **H<sub>01</sub>**

There will be no significant difference between knowledge score of mothers regarding early childhood caries before & after administration of planned teaching program as measured by structured knowledge questionnaire at 0.05 level of significance.

The data represented in Table 9 indicates that the pre-test mean knowledge score of the sample was 6.8214 and the post-test knowledge score of samples was 12.3667 with the standard deviation 2.0398 and 2.3265 respectively. The mean difference was found to be 5.5453. the obtained mean difference was found to be statistically significant as evident from the “t” value 18.80 which is greater than table value 2.045 for df (29) at 0.05 level of significance. Hence the null hypothesis was rejected and research hypothesis was accepted. Thus, it was evident that planned teaching program was effective in improving the knowledge regarding early childhood caries among mothers of children between 1-6 years of age.



**Figure 1: Schematic representation of research design.**

***Findings related to level of attitude among mothers of children between 1-6 years of age before and after administration of planned teaching program***

This section describes the analysis, description and interpretation of data collected to evaluate the effectiveness of planned teaching program regarding early childhood caries among mothers of children between 1-6 years of age. The pre-test and post-test scores obtained through the structured Likert Scale schedule on early childhood caries were described and analyzed using descriptive and inferential statistics.

Data presented in the Table 9 shows that the attitude score of mothers in pre- test was assessed which revealed 26 (87%) of population had unfavorable attitude and 4 (13%) of population had uncertain attitude regarding early childhood caries. The attitude score of mothers in post-test was assessed and table reveals that 25 (83%) of population had favorable attitude and 5 (17%) had uncertain attitude regarding lifestyle modification. Mean, median, mean difference, standard deviation and ‘t’ test

for evaluating the effectiveness of planned teaching program on attitude score regarding early childhood caries among mothers of children between 1-6 years of age.

***H<sub>02</sub>***

There will be no significant difference between Attitude score of mothers regarding early childhood caries before & after administration of planned teaching program as measured by structured likert scale at 0.05 level of significance.

The data indicates that the pre-test mean attitude score of the sample was 10.3666 and the post-test attitude score of samples was 17.9 with the standard deviation 4.9022 and 1.4910 respectively. The mean difference was found to be 7.5334. The obtained mean difference was found to be statistically significant as evident from the “t” value 8.6404 which is greater than table value 2.045 for df (29) at 0.05 level of significance. Hence the null hypothesis was rejected, and research hypothesis was accepted.



Thus, it was evident that Planned Teaching Program was effective in improving the attitude regarding Early Childhood Caries among mothers of children between 1-6 years of age.

***Findings related to level of practice among mothers of children between 1-6 years of age before and after administration of planned teaching program***

This section describes the analysis, description and interpretation of data collected to evaluate the effectiveness of planned teaching program regarding early childhood caries among mothers of children between 1-6 years of age. The pre-test and post-test scores obtained through the structured practice checklist schedule on early childhood caries were described and analyzed using descriptive and inferential statistics.

Data presented shows that the practice score of mothers in pre- test was assessed which revealed 18 (60%) of population had moderate practice and 12 (40%) of population had poor practice towards early childhood caries. The practice score of mothers in post-test was assessed and table reveals that 22 (73.34%) of population had adequate practice and 8 (26.66%) of population had moderate practice towards early childhood caries.

Mean, median, mean difference, standard deviation and 't' test for evaluating the effectiveness of planned teaching program on practice score regarding early childhood caries Among mothers of children between 1-6 years of age.

***H<sub>03</sub>***

There will be no significant difference between Practice score of mothers regarding early childhood caries before & after administration of Planned Teaching Program as measured by structured practice checklist at 0.05 level of significance. The data indicates that the pre-test mean practice score of the sample was 3.7 and the post-test practice score of samples was 7.6333 with the standard deviation 1.5947 and 1.4940 respectively. The mean difference was found to be 3.9333. The obtained mean difference was found to be statistically significant as evident from the "t" value 3.9333 which is greater than table value 2.045 for df (29) at 0.05 level of significance. Hence the null hypothesis was rejected and research hypothesis was accepted. Thus, it was evident that Planned Teaching Program was effective in improving the practice regarding Early Childhood Caries among mothers.

***Findings related to association between post-test knowledge score of the mothers of children between 1-6 years of age with their selected demographic variables***

This section describes the findings related to association of post-test knowledge score with selected demographic variable: age, religion, area of living, education,

occupation, family income, number of children, have you ever heard about early childhood caries, source of information regarding early childhood caries, does your child have any white/yellow spot or plaque on the teeth.

In order to find out the significance of relationship between post-test knowledge scores regarding Early Childhood Caries among mothers of children between 1-6 years of age, the fisher test correlation was computed.

**DISCUSSION**

The pre-test mean knowledge score of the sample was 6.8214 and the post-test knowledge score of samples was 12.3667 with the standard deviation 2.0398 and 2.3265 respectively. The mean difference was found to be 5.5453. the obtained mean difference was found to be statistically significant as evident from the "t" value 18.80 which is greater than table value 2.045 for df (29) at 0.05 level of significance. Hence the null hypothesis was rejected and research hypothesis was accepted. Thus, it was evident that Planned Teaching Program was effective in improving the knowledge regarding Early Childhood Caries among mothers of children between 1-6 years of age.

The pre-test mean attitude score of the sample was 10.3666 and the post-test attitude score of samples was 17.9 with the standard deviation 4.9022 and 1.4910 respectively. The mean difference was found to be 7.5334. The obtained mean difference was found to be statistically significant as evident from the "t" value 8.6404 which is greater than table value 2.045 for df (29) at 0.05 level of significance. Hence the null hypothesis was rejected, and research hypothesis was accepted. Thus, it was evident that planned teaching program was effective in improving the attitude regarding early childhood caries among mothers of children between 1-6 years of age. The practice score of mothers in pre- test was assessed which revealed 18 (60%) of population had moderate practice and 12 (40%) of population had poor practice towards early childhood caries. The practice score of mothers in post-test was assessed and table reveals that 22 (73.34%) of population had adequate practice and 8 (26.66%) of population had moderate practice towards early childhood caries.

The pre-test mean practice score of the sample was 3.7 and the post-test practice score of samples was 7.6333 with the standard deviation 1.5947 and 1.4940 respectively. The mean difference was found to be 3.9333. The obtained mean difference was found to be statistically significant as evident from the "t" value 3.9333 which is greater than table value 2.045 for df (29) at 0.05 level of significance. Hence the null hypothesis was rejected, and research hypothesis was accepted. Thus, it was evident that Planned Teaching Program was effective in improving the practice regarding Early Childhood Caries among mothers.

It is evident that there was no significant association between the post-test knowledge scores of mothers regarding early childhood caries with the demographic variables as calculated value is less than the table value at 0.05 level of significance. Hence, null hypothesis is accepted and research hypothesis is rejected. It is evident that there was no significant association between the post-test attitude scores of mothers regarding early childhood caries with the demographic variables as calculated value is less than the table value at 0.05 level of significance. Hence, null hypothesis is accepted and research hypothesis is rejected. It is evident that there was no significant association between the post-test practice scores of mothers regarding early childhood caries with the demographic variables as calculated value is less than the table value at 0.05 level of significance. Hence, null hypothesis is accepted and research hypothesis is rejected.

### **Implications and contribution**

#### *Nursing practice*

The health nurse has great responsibility to promote, prevent, and protect the oral and dental health of children and families. Nurse play an important role in motivating the parents to have effective knowledge regarding prevention of dental problem in their children. Nurses can organize teaching sessions for the mothers and children to improve their awareness regarding dental care. There must be separate health education department for nurses to develop health education material for the mothers having children with dental problems.

#### *Nursing education*

Nursing curriculum should include different methods of techniques and other therapy to sensitize the student nurse to give multisensory instruction techniques as an effective technique to improve knowledge of mothers and children regarding dental health. Add on program like planned teaching program to train nurse specialists in child health nursing and dental health. Nursing students can be encouraged to impart the knowledge of dental health to other. Findings of the study will help the nursing students to understand the importance of planned teaching program to improve awareness among mothers regarding dental problems of their children.

#### *Nursing administration*

Nurse administrator should organize educational program for the nursing students and nursing staff to update the knowledge related to dental health. The nursing administrator should encourage nursing students and staff to participate in dental health screening. Nursing administrator should conduct education program for improving the awareness in terms of dental hygiene knowledge among parents of children with dental problems. The administrator must see that every nurse has

adequate knowledge and skills in giving planned teaching program among children and families.

#### *Nursing research*

More nursing research should be conducted as research studies conducted by Indian nurses in this area are few regarding improvement of awareness among mothers regarding early childhood caries. A research study can be done with larger sample using different methods of techniques regarding improvement of knowledge of mothers regarding early childhood caries. Nurses can conduct project and research in the community and schools which helps to find out the prevalence of early childhood caries and to improve knowledge among children and families.

#### *Limitations*

The samples of the study were mothers of only 1 to 6 years of children. It was limited to mother's present at that time in that hospital. Duration of the study was only 2 weeks.

### **CONCLUSION**

The present study was to assess the effectiveness of a planned teaching program on early childhood caries in terms of knowledge, attitude, and practice among mothers of children between 1 to 6 years of age group admitted in pediatric unit in selected hospital of Delhi. After giving planned teaching, knowledge, attitude, and practice level among mothers become increased as evident by pre-test and post-test score. All 30 samples were showing improved in knowledge, attitude, and practice regarding early childhood caries. There was no significant association between post-test knowledge, attitude, and practice score of mothers with the demographic variables at 0.05 level of significance. This indicates that the demographic variables and post-test knowledge, attitude, and practice score of mothers did not have significant association and is independent of each other. Further research can be conducted among parents to enhance their awareness regarding early childhood caries.

#### *Recommendations*

This study can be replicated on the large samples of mothers with small children in different setting, so that the findings can be generalized to larger population. A pre-experimental study can be conducted to assess the effectiveness of planned teaching program with other methods of teaching to improve the awareness among mothers at large scale. Mass awareness program should be developed by government to raise the level of knowledge, attitude and practice related to dental health of children. Similar studies can also be conducted at different settings. Study can be conducted regarding management aspects of early childhood caries. Study can be done on prevention of early childhood caries using



other techniques. Longer duration of the study can be conducted for generalized findings.

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