

## Effect of Educational Health Program on Mothers' Knowledge and Practices Towards their Preschool Children's Oral Health

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### Abstract

**Background:** Mothers play a basic role in the oral health of children. They decide whether their children need oral treatment or not. **The aim of this study** was to evaluate the effect of educational health program on mothers' knowledge and practices toward their preschool children's oral health. **Research design:** A quasi-experimental design was used in this study. **Setting:** The study was conducted at dental outpatient clinic of Benha University Hospital. **The sample:** A convenient sample was used in this study, the total number of mothers of preschool children in the above mentioned setting were 60. **Tools:** A structured interviewing questionnaire sheet: it consisted of 4 parts used to assess: 1) the socio-demographic characteristics of mothers, 2) the dental history of the children, 3) knowledge of mothers regarding child's oral health, 4) practices of mothers regarding their children oral health. **Results** of this study showed; 43.3% of the mothers aged from 20 to less than 30 years old. 55 % of them were living in rural area, and 28.3% had secondary education. As regard total knowledge of mothers regarding their preschool children oral health; before the program implementation; 47 % of them had good total knowledge scores, while after the program implementation increased to 77 % of them. Concerning to total practices of mothers regarding their preschool children oral health; 43.3 % of them were satisfactory before the program implementation and increased to 80 % after the program implementation. **This study concluded that:** Educational health program has showed a highly statistically significant effect on knowledge and practices of the mothers post program and improving their knowledge and practices regarding their preschool children oral health. **The study recommended that:** Well-designed educational health program are needed in dental outpatient clinics at large sample and further research is needed for the maintaining children oral health.

**Key words:** Preschool children, oral health, and educational health program.

### Introduction:

Oral health is an integral component of preschool children's health and well-being. Unfortunately, many children suffer from dental caries at an early age, even before they become 12 months of age. Those affected often have a reduced oral health-related quality of life as compared to their caries-free counterparts. Children with early childhood caries may also develop associated problems such as local

infections, oral pain that also manifests as difficulty in eating and sleeping, reduced growth, psychosocial problems and increased risk of caries in permanent dentition. The primary dentition affected by dental caries at such a young age mostly has to be treated under sedation or general anesthesia, which carry its own risks<sup>3</sup>

A number of risk factors have been cited in literature for early

childhood oral health problems that include; prolonged or at-will breast feeding, prolonged/frequent/nocturnal bottle feeding, family size or the child's birth order, oral hygiene practices, dietary habits, and timing/reason for child's first dental visit. Preschool children's oral health maintenance and outcomes are influenced by their mothers' knowledge and beliefs, which affect oral hygiene and healthy eating habits. Mothers' knowledge and practices toward good dental care are very important in the preventive cycle <sup>1</sup>

Preschool children form an innocent and compassionate segment of the society and their oral health care is given due priority as it determines the oral health status of the future generations. Children under the age of 5 years generally spend most of their time with parents and guardians, especially mothers, even when they attend preschools or nurseries. These early years involve "primary socialization" during which the earliest childhood routines and habits are acquired. These include dietary habits and healthy behaviors established as norms in the home. These are dependent on the knowledge and behavior of parents and elder siblings <sup>2</sup>.

Young children's oral health maintenance and outcomes are influenced by their mothers' knowledge and beliefs, which affect oral hygiene and healthy eating habits. Mothers' knowledge and positive attitude toward good dental care are very important in the preventive cycle. It has been found that the more positive is the mothers' attitudes toward dentistry; the better will be the dental health of their children <sup>1</sup>

Child oral health (COH) is the foundation upon, which preventive education and dental care must be built to enhance the opportunity for life-time freedom from preventable oral diseases. Parents are the decision

makers in matters of health-care for children; thus, they play an important role in achieving the best oral health outcomes for their young children. It is therefore expected that preventive oral health behavior of parents for children would influence their children's behavior in adapting preventive oral health practices as they grow along <sup>4</sup>

### Significant of the study

<sup>5</sup> World Health Organization, 2012; reported that; Worldwide, 60–90% of preschool children have dental cavities.

Oral health is essential to general health and well-being at every stage of life. A healthy mouth enables not only nutrition of the physical body, but also enhances social interaction and promotes self-esteem and feelings of well-being. The mouth serves as a "window" to the rest of the body, providing signals of general health disorders. Oral conditions have an impact on overall health and disease. Bacteria from the mouth can cause infection in other parts of the body when the immune system has been compromised by disease or medical treatments (e.g., infective endocarditis). Systemic conditions and their treatment are also known to impact on oral health (e.g., reduced saliva flow, altered balance of oral microorganisms).

### Aim of the study:

The study aimed to evaluate the effect of the educational health program on mothers' knowledge and practices toward their preschool children's oral health at Benha City through: assess mothers' knowledge regarding child's oral health, assess mothers' practices regarding their child's oral health and develop educational program regarding children oral health.

### **Research hypotheses:**

To fulfill the aim of this study the following research hypotheses formulated: 1-The educational health program will improve knowledge and practices of mothers toward their preschool children's oral health.

2- There is relationship between the mothers' socio-demographic data and their knowledge & practices toward their preschool children's oral health.

### **Subjects and methods:**

#### **Research design:**

A quasi experimental design was utilized to carry out this study.

#### **Study setting:**

This study was conducted at dental outpatient clinic of Benha University Hospital.

#### **Study subjects:**

A convenient sample was used in this study, the total number of mothers of preschool children in the above mentioned setting were 60 followed by home visits.

#### **Tools of data collection:**

**A structured interviewing questionnaire:** It consisted of the following four parts:

**Part one:** Socio-demographic characteristics of the pre- school children' mothers included five items as age, residence, education, occupation marital status and the number of family members.

**Part two:** Concerned with the dental history of child.

**Part three:** Designed to assess mothers' knowledge regarding child's oral health which included (87) items divided into: 19 items about teeth and its importance, 52 items about dental problems, and 16 items about proper nutrition toward oral health. **Scoring system;** for each question was given as follows: 3 if good knowledge, 2 if average knowledge, and 1if poor

knowledge. The total knowledge scores were considered good if the score of the total knowledge  $\geq 75\%$  ( $\geq 65$ ), considered average if it equals 50- < 75% (43- < 65), and considered poor if it is less than 50% (< 43).

**Part four:** It consisted of two session:

**The first session:** designed to assess mother's practices regarding their preschool child teeth cleaning; which included 10 items as clean the child's teeth twice a day, choose the form of the brush which the child prefers, choose flavor toothpaste favored child, use the brush and tooth paste, learn child holding brush and use tooth paste, use dental floss, clean the tongue, teach child how to rinse the mouth and spit out the remaining tooth paste, change the toothbrush every 3 months, and follow-up with the dentist every 6 months. **Scoring system;** each item was assigned a score of zero if not done and 1 if done.

**The second session:** Designed to assess mother's practices regarding tooth brushing technique of their preschool child which included 5 items as place the tooth brush at a 45°angle against the gum line and sweep or roll the brush away from the gum line, gently brush the outside, inside and chewing surface of each tooth using short back-and-forth strokes, brush the chewing surface (top) of each tooth, use tip of brush to brush behind each tooth — front and back, top and bottom and up and down strokes, and gently brush the tongue to remove bacteria and freshen breath.

The total practices were considered satisfactory if the score of total practices equals  $\geq 65\%$  ( $\geq 10$ ), and considered unsatisfactory if it is < 65% (< 10).

**Content validity:**

The tools were revised for content validity by 3 juries who were experts in the Community Health Nursing Specialties, for clarity, relevance, comprehensiveness, and applicability. According to their suggestions, the modifications were applied.

#### **Content reliability:**

Reliability of the tools was applied by the researcher for testing the internal consistency of the tool, by administration of the same tools to the same subjects under similar condition on one or more occasion. Answers from repeated testing were compared (test-re-test reliability).

#### **Operational Design:**

##### **Preparatory phase**

Preparation of study design and data collection tools based on reviewing current, past, local, and international related literature about various aspects of oral health of children by using journals, periodicals books and internet search to construct the tools and prepare the health educational program.

##### **Ethical considerations**

Personal communication was done with older adults to explain the purpose of the study, assure their best possible cooperation and ensuring confidentiality of the data. The researchers emphasized to older adults that the study was voluntary and anonymous. Mothers had the full right to refuse to participate in the study or to withdraw at any time without giving any reason.

##### **Administrative design**

Official permission was obtained by submission of an official letter from the Faculties of Nursing to the responsible authorities of the study settings to obtain the permission for data collection.

#### **Pilot study**

After the development of the tools, a pilot study was carried out on 10% of the sample (6 mothers) to ascertain the clarity, applicability, feasibility of the tool, to estimate the exact time needed to fill in the questionnaire, and to detect any problems that might face the researcher and interfere with data collection. After conducting the pilot study, minor necessary changes were done, the tool was then finalized. The pilot sample was not included in the main study sample.

#### **Field work**

- Preparation of data collection tools was carried out over a period of six months from the beginning of January 2016 to end of July 2016, including experts' opinions, validity, and reliability test.

- Official permissions were obtained from the deans of the Faculty of Nursing- Benha University, also from administrator of Benha University Hospital.

- A pilot study was carried out to test clarity and simplicity of questions.

#### **Program construction:**

The current study was carried out on four phases, preparatory phase, development phase, implementation phase and evaluation phase.

**1. Program assessment phase:** The program was designed after extensive review of related literature, by the researchers. Based on results obtained from pre-assessment tools, it was revised and modified.

**2. Program development phase:** The program was developed based on the actual results that were obtained from pre-program assessment using a structured interviewing questionnaire sheet, literature review which aimed to enhance the mothers' knowledge, and

practices toward their preschool children's oral health

**An objective of the program** was to improve mothers' knowledge and practices toward their preschool children's oral health.

**Contents of program:** The content of the program was designed to meet mothers needs toward their children' oral health and to fit into their interest and level of understanding. Its contents were:

- Teeth and its importance:
  - Important of teeth.
  - Important of primary teeth.
  - Types of teeth.
  - The common dental problems in children
  - The role of fluoride in the tooth paste.
    - Dental problems e.g., discoloration of teeth, tooth decay, gingivitis, dental injuries, and missing of teeth or extraction.
- Proper nutrition toward oral health: included the importance of proper food, the needed nutrients to maintain oral health, and the foods that harm oral health.
- Practices regarding child' teeth cleaning.
- Tooth brush technique.

### **3. Program implementation phase:**

The program was implemented in a period of six months, from the beginning of January 2016 to the end of July 2016. Implementation of the program was carried out at Benha university hospital followed by home visits. The subject material used has been sequenced through the 6 sessions (4 sessions for theory and 2 sessions for practices). The duration of each session ranged from 30 to 45 minutes including times for discussion according to mothers' achievement, progress and feedback. The sessions contained knowledge about teeth and its importance, dental problems, and proper nutrition toward oral health, also

practices about teeth cleaning and tooth brushing technique.

Mothers were divided into small groups; each group included about 6 mothers. The six sessions were implemented for each group separately for 2 weeks (2 days/week), in addition to one week for pre and posttest. Sometimes the researcher worked with two groups in the same day. At the beginning of the first session, an orientation to the program and its purpose took place. After each session, a feedback about the previous session was done as well as the objectives of the new topics were mentioned. Methods of teaching included lectures, group discussions, demonstrations, re-demonstration and role play. An instructional media was used including an illustrated booklet and purchase.

4. Program evaluation phase: After the implementation of the program, the post-test was done to mothers to assess knowledge, and practices by the same format of the pre-test to evaluate the effectiveness of the implemented program. This was done immediately after the intervention of program implementation.

### **Statistical Design**

**The collected data were** verified prior to computerized entry; statistical analysis was done by using the Statistical Package for Social Science (SPSS) version 20. Data were presented in tables by using mean, standard deviation, number, percentage distribution, and Chi-Square. Statistical significance was considered at: P- Value > 0.05 insignificant, P- Value < 0.05 significant, P- Value < 0.001 highly significant.

### **Results:**

**Table (1)** shows that, 43.3% of mothers aged from 20 to < 30 years old, 55 % of them were living in rural

area, 28.3% had secondary education, 58.3% of were housewife, 88.3% of them married. As regard the number of family member 51.7% had 3-4 members

**Table (2)** Elaborated that; 71.7% of the children were suffering from oral and teeth problem. As regard the children's oral problem; 60% of them had tooth decay, 35.0% had abscess in teeth, while only 6.7% of them had discolored teeth. On the other hand 50 % of children had injury in teeth, 35% of these injury occurred at nursery.

**Table (3)** Explains that;the mothers' total knowledge about oral health (teeth and its importance, dental problems, and proper nutrition) improved significantly after the implementation of the program ( $P < 0.001$ ).

**Figure (1)** illustrates that, before the program implementation; 47% of the mothers had good total knowledge scores regarding their children oral health, while after the program implementation; total knowledge scores increased to 77%.

**Table (4)** shows that, the variable "use the brush and tooth paste" was 65 % before the program implementation and increased to 96.3 % after the program. While the variable "clean the child's teeth twice a day" was 48 % before the program implementation and increased to 90 % after the program implementation, and the variable "clean the tongue" was 31.7% before the program implementation and increased to 78.3% after the program implementation. There were high statistically significant differences ( $P < 0.001$ ).

**Table (5)** explains that; before the program 65% of mothers place the tooth brush at a 45°angle against the gum line and sweep or roll the brush away from the gum line, while

increased to 96.7% after the program. Before the program; 46.7% of them were gently brush the outside, inside and chewing surface of each tooth using short back-and-forth strokes, while increased to 78.3% after the program. Before the program; 26.7% of them were brush the chewing surface (top) of each tooth, while increased to 58.3% after the program. Before the program; 16.7% of them were use tip of brush to brush behind each tooth — front and back, top and bottom and up and down strokes, while increased to 51.7% after the program. Before the program; 43.3% of them were gently brush the tongue to remove bacteria and freshen breath, while increased to 90% after the program. There were high statistically significant differences ( $P < 0.001$ ).

**Figure (2)** illustrates that, the total scores of mothers' practices was satisfactory for 43.3 % of them before the program implementation and increased to 80 % after the program implementation.

**Table (6)** shows that; there were high statistically significant differences between the mothers total knowledge scores and their age, residence, educational levels, occupation and their family size ( $P < 0.001$ ). While there were not statistically significant differences regarding their marital status ( $> 0.05$ ).

**Table (7)** shows that; there were high statistically significant differences between the mothers total practices scores and their age, residence, educational levels, occupation and their family size ( $P < 0.001$ ), while there were not statistically significant differences regarding their marital status ( $> 0.05$ ).

#### **Discussion:**

Oral health is an important component of individual health and has a significant impact on overall health and well-being, so it must be included in the provision of health care and the

design of community based programs. Oral health is precipitated as a separate from general health and, therefore, less important. This perception can be changed by raising oral health awareness, the prevention, early detection, and management of dental, oral problems<sup>6</sup>

This study was aimed to evaluate the effect of educational health program on mothers' knowledge and practices toward their preschool children's oral health. The aim was achieved through: assessing knowledge of mothers regarding oral health.

Concerning socio-demographic characteristics table (1). The finding of the present study showed that the studied sample consisted of 60 mothers, more than two fifths of them their age ranged from 20 to < 30 years old. This finding is in the same line with<sup>7</sup>, who conducted a study to investigate influence of maternal dental anxiety, attendance pattern, and perception of children's quality of life, reported that; the mean age of the mothers was 29.3 years.

Regarding the study sample residence, the current study found that, more than half of mothers came from rural areas. This finding was in disagreement with<sup>8</sup>. who conducted a study to evaluate the effect of educational intervention on quality of life of school age children with dental problems, reported that more than half of children (58 %) were from urban areas.

As regard educational level, the finding of the present study revealed that more than one quarter of the study sample had secondary education, This finding is disagree with<sup>8</sup> who reported that two third of mothers had middle education. Conversely,<sup>9</sup> who studied oral hygiene practices, dental knowledge, dietary habits and their relation to caries among male primary school children, reported that more

than one third of mothers were Illiterate /read and write.

Regarding family size, the current study revealed that more than half of study sample had 5-6 members. Conversely<sup>9</sup> reported that more than two thirds of children were belonged to big-sized families (>6 persons).

Regarding dental history of child table (2): the present study Elaborated that; more than two thirds of children were suffering from oral and teeth problem, whereby, three fifth of children had tooth decay and half of children had injury in teeth. This finding is consistent with<sup>13</sup> who conducted a study to assess the impact of oral diseases and disorders on oral health-related quality of life of preschool children, reported that; early childhood caries was present in three fifth of the sample and oral disorders are common at preschool age, such as traumatic dental injuries.

According to the thesis hypothesis No.1 "The educational health program will improve the mothers' knowledge and practices regarding their children oral health".

Concerning knowledge of mothers regarding children oral health before & after the program implementation Table (3), the finding of the present study showed that the mothers' total knowledge about oral health (teeth and its importance, dental problems, and proper nutrition) improved significantly after the implementation of the program ( $P < 0.001$ ). This finding is consistent with<sup>14</sup> who conducted a study to assess mother's knowledge about preschool child's oral health, reported that oral health of the children is associated with oral health knowledge of their mothers, as oral health related habits (such as those related to oral hygiene and diet) are established during infancy and maintained throughout early childhood.

Also, <sup>3</sup> reported that high oral hygiene awareness of the mothers had an impact on child oral health. These might be indicates to the adoption of good oral health habits in childhood often takes place at home with the parents, especially the mother. Mothers play an important role in shaping the oral health, attitudes and behavior of their children, as the mother's oral health, habits, attitudes and knowledge affect on the child's dental health because mothers are traditionally regarded as the main caregivers of children.

Regarding mother's practices to maintain the children's oral health before & after the program implementation Table (4, 5). The results of the present study showed that there were high statistically significant differences in the mothers' total practices after the implementation of the program ( $P < 0.001$ ). This finding agreed with that of <sup>10</sup> who conducted a study to investigate the relationship between maternal related factors and the dental health status of pre-school children reported that dental health and diseases in children were mainly influenced by maternal dental health knowledge, attitude and practices. Emphasizing the development of good dental health attitudes among mothers as a tool for influencing not only their own dental health but that of their children, whereby, good dental health knowledge is thought to be the antecedent of good attitudes and this in turn serves as the forerunner for good dental health behavior. This may be indicating that the program had great role in improving the mother's practices to maintain the children's oral health.

As well, <sup>11</sup>, who conducted a study of oral health behavior of parents' status of their children as a predictor of oral health, reported that interventions targeting parental oral health beliefs and practices are beneficial in the

prevention of children's oral health problems such as dental caries.

As well, <sup>3</sup> emphasized that prevalence of caries in those children who practiced tooth brushing by themselves was significantly higher than in those children who brushed under parental supervision.

Maternal influences are of significant importance at this age, because pre-school children are unable to care for themselves and are dependent on their caregivers for their day to day care.

According to the thesis hypothesis No.2 "There is relationship between the mothers' socio-demographic data and their knowledge & practices toward their preschool children's oral health"

Concerning relations between the mothers' total knowledge scores & their socio-demographic characteristics (Tables 6). The finding of the present study revealed that, there were high statistically significant differences between the mothers' total knowledge scores and their age, residence, educational levels, occupation and their family size ( $P < 0.001$ ).

Similarity <sup>11</sup>, who found that there was a significant relationship between education of mothers and plaque index of children. Education of mothers can increase their knowledge, followed by increasing their ability to supervise hygienic practices of their children.

Conversely <sup>10</sup>, who reported that maternal age, location of residence, and social class showed weak correlation with maternal oral health knowledge with no statistical significant difference ( $P > 0.05$ ).

Concerning relations between the mothers' total practices scores & their socio-demographic characteristics (Tables 7). The finding of the present study revealed that, there were high



statistically significant differences between the mothers total practices scores and their age, residence, educational levels, occupation and their family size ( $P < 0.001$ ), this result in the same line with <sup>15</sup>, who conducted a study to assess mother's knowledge and practice regarding oral hygiene and challenges in the prevention of dental caries of under-five children, reported that mother's age and income were significant predictors to keep good oral hygiene practices.

Conversely <sup>12</sup> who conducted a study of awareness of mothers regarding oral health of their children, found that mother age had no significant correlation with either dental health knowledge or practices.

#### **Conclusion:**

According to results & research hypothesis concluded that: The educational health program had a positive effect to improve the mothers' knowledge and practices regarding their preschool children' oral health. Moreover there was a highly

statistically significant relationship between the mothers' total scores of knowledge, practices and their socio-demographic characteristics.

#### **Recommendations:**

On the basis of the current study findings, the following recommendations are suggested:

- 1- Regulatory training program should be strengthened to ensure good oral health of children, and make training courses for large number of mothers about proper teeth cleaning and wright tooth brushing technique.
- 2- All possible forms of mass media such as T.V., Radio, and posters are needed to help in disseminating information about preschool children oral health.
- 3- Further research is also needed on the interventions that may contribute to maintaining preschool children oral health.

**Table (1): Distribution of mothers according to their socio-demographic characteristics (n= 60).**

<b>Socio-demographic characteristics</b>	<b>(No.)</b>	<b>(%)</b>
<b>Age / years</b>		
< 20	6	10.0
20-	26	43.3
30-	21	35.0
40+	7	11.7
<b>Residence</b>		
Rural	33	55.0
Urban	27	45.0
<b>Education</b>		
Illiterate	9	15.0
Read and write	7	11.7
Basic education	13	21.7
Secondary education	17	28.3
High education	14	23.3
<b>Occupation</b>		
Employee	25	41.7
Housewife	35	58.3
<b>Marital status</b>		
Married	53	88.3
Divorced	6	10.0
Widower	1	1.7
<b>The number of family members</b>		
3-4	28	46.7
5-6	31	51.7
7+	1	1.7

**Table (2): Distribution of preschool child according to their dental history (n= 60).**

Dental history	No.	%
<b>The child suffer from oral and teeth problem</b>	43	71.7
<b>The Children's oral Problem</b>		
Tooth decay	36	60
Gingivitis	12	20.0
Dislocated teeth	4	6.7
Abscess in teeth	21	35.0
Broken teeth	10	16.7
Bleeding gum	5	8.3
<b>The child has injury in teeth</b>	30	50.0
<b>Where the injury occurred</b>		
Home	8	13.3
Nursery	21	35.0
Street	10	16.7
Club	7	11.7

**N.B.:** Answers were not mutually exclusive

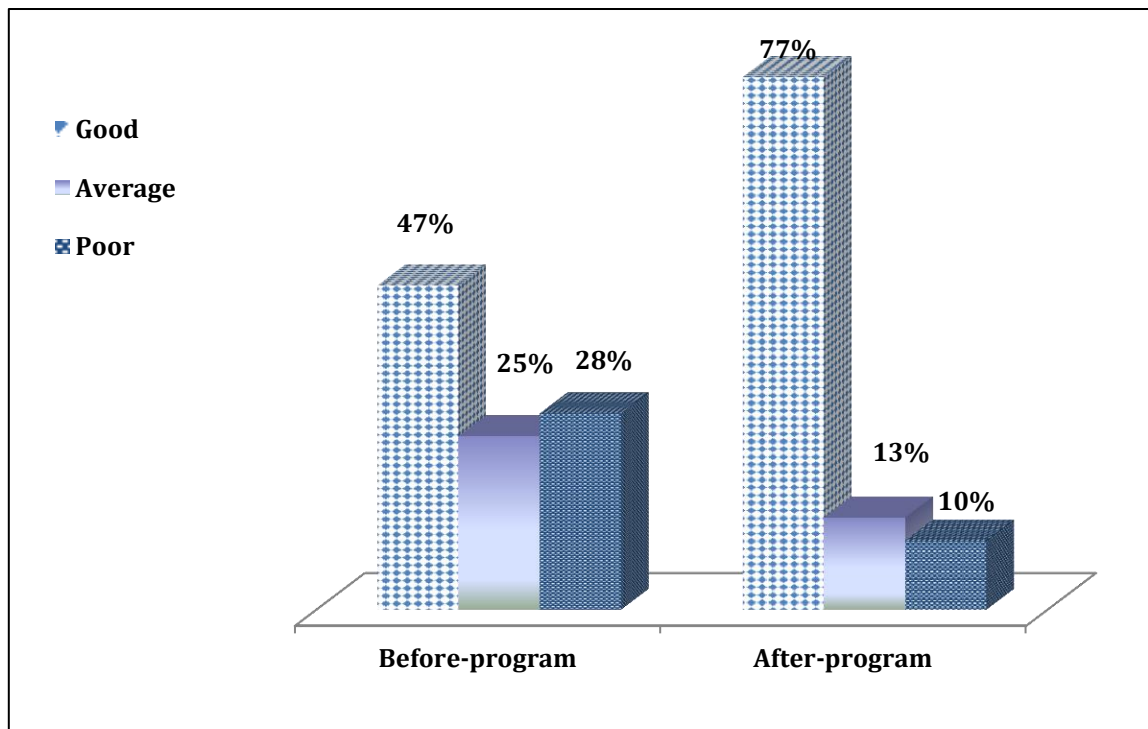
**Table (3): Percentage distribution of the mothers' knowledge regarding child' oral health before& after the program implementation (n=60).**

Total items	Before- program (%)			After- program (%)			X2	P-value
	Good	Average	Poor	Good	Average	Poor		
<b>Knowledge about teeth and its importance</b>								
Important of teeth.	8.3	4.2	37.5	58.3	13.4	28.3	27.2	<0.001**
Important of primary teeth.	13.4	8.3	78.3	35.0	28.3	36.7	21.4	<0.001**
Types of teeth.	63.3	3.4	33.3	95.3	1.3	3.4	18.8	<0.001**
The common dental problems in children.	10.0	15.0	75.0	50.0	30.0	20.0	38.1	<0.001**
The role of fluoride in the tooth paste.	18.3	13.4	68.3	43.3	36.7	20.0	29.0	<0.001**
<b>Knowledge about dental problems</b>								
Discoloration of teeth.	15.0	11.7	73.3	48.3	31.7	20.0	34.3	<0.001**
Tooth decay.	16.7	16.7	66.6	58.3	25.0	16.7	32.8	<0.001**
Gingivitis.	15.0	13.3	71.7	55.0	31.7	13.3	42.2	<0.001**
Dental injuries.	11.7	8.3	80.0	51.7	31.7	16.7	48.2	<0.001**
Missing of teeth or extraction.	13.3	11.7	75.0	50.0	35.0	15.0	16.3	<0.001**
<b>Knowledge about proper nutrition</b>								
The importance of proper food.	15.0	13.3	71.7	45.0	25.0	30.0	21.3	<0.001**
The needed nutrients to maintain oral health.	11.7	13.3	75.0	41.7	38.3	20.0	36.4	<0.001**
The foods that harm oral health.	10.0	6.7	83.3	40.0	36.7	23.3	43.6	<0.001**

**N.B.:** Answers were not mutually exclusive.

**\*\* Highly statistically significant difference (P < 0.001).**

**Figure (1): Percentage distribution for total knowledge scores of mothers regarding their child's oral health before & after the program implementation (n=60).**



**Table (4): Percentage distribution of mother's practices regarding their child teeth cleaning before & after the program implementation (n=60).**

Teeth Cleaning	Before- program (%)		After- program (%)		X2	P-value
	Done	Not Done	Done	Not Done		
Clean the child's teeth twice a day.	48.3	51.7	90.0	10.0	24.4	<0.001**
Choose the form of the brush which the child prefers.	18.3	81.7	53.3	46.7	10.9	<0.001**
Choose flavor toothpaste favored child.	16.7	83.3	48.3	51.7	13.7	<0.001**
Use the brush and tooth paste	65.0	35.0	96.7	3.3	19.4	<0.001**
Learn child holding brush and use tooth paste.	26.7	73.3	58.3	41.7	12.3	<0.001**
Use dental floss.	23.3	76.7	58.3	41.7	15.2	<0.001**
Clean the tongue.	31.7	68.3	78.3	21.7	26.3	<0.001**
Teach child how to rinse the mouth and spit out the remaining tooth paste.	46.7	53.3	78.3	21.7	12.8	<0.001**
Change the toothbrush every 3 months	25.0	75.0	76.7	23.3	32.0	<0.001**
Follow-up with the dentist every 6 months.	30.0	70.0	78.3	21.7	28.2	<0.001**
<b>Total</b>	65.0	35.0	96.7	3.3	19.4	<0.001**

**N.B.: Answers were not mutually exclusive.**

**\*\* Highly statistically significant difference (P < 0.001).**

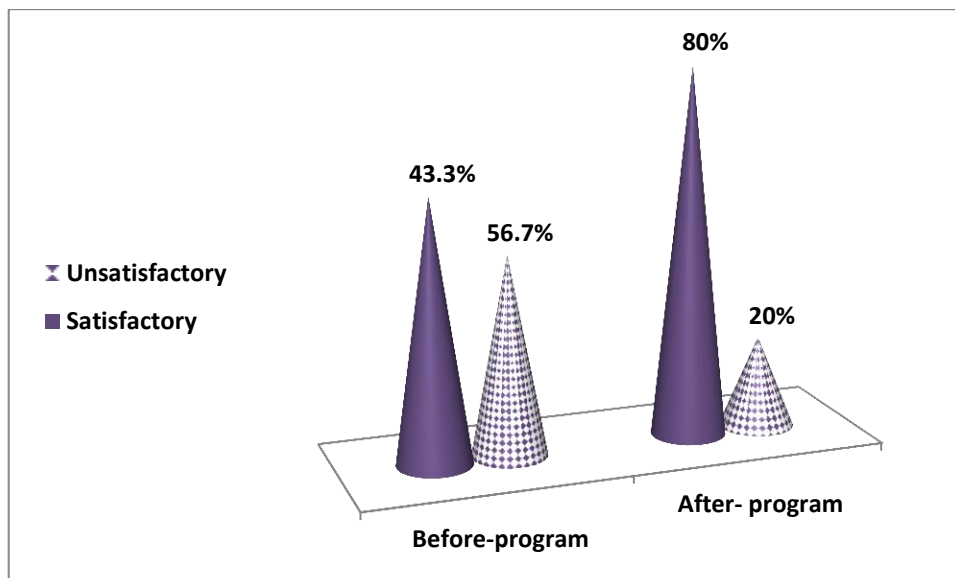
**Table (5): Percentage distribution of mothers tooth brushing technique of their child before & after the program implementation (n=60).**

Tooth brush technique	Before- program (%)		After- program (%)		X2	P-value
	Done	Not Done	Done	Not Done		
Place the tooth brush at a 45°angle against the gum line and sweep or roll the brush away from the gum line	65.0	35.0	96.7	3.3	19.4	<0.001**
Gently brush the outside, inside and chewing surface of each tooth using short back-and-forth strokes	46.7	53.3	78.3	21.7	12.8	<0.001**
Brush the chewing surface (top) of each tooth.	26.7	73.3	58.3	41.7	12.3	<0.001**
Use tip of brush to brush behind each tooth — front and back, top and bottom and up and down strokes.	16.7	83.3	51.7	48.3	13.7	<0.001**
Gently brush the tongue to remove bacteria and freshen breath.	43.3	56.7	90.0	10.0	29.4	<0.001**
<b>Total</b>	46.7	53.3	78.3	21.7	12.8	<0.001**

**N.B.: Answers were not mutually exclusive.**

**\*\* Highly statistically significant difference (P <0.001).**

**Figure (2): Percentage distribution for total practices scores of mothers regarding their child oral health before & after the program implementation (n=60).**





**Part(V): Relationships between the knowledge, practices of mothers and their socio-demographic characteristics (Tables 6 & 7 ).**

**Table (6): Relations between the mothers' total knowledge scores regarding child's oral health & their socio-demographic characteristics (n=60).**

Socio-demographic Characteristics	Total knowledge						Chi –Square	
	Before- program (%)			After- program (%)			X2	P-value
	Good	Average	Poor	Good	Average	Poor		
<b>Age / years</b>								
< 20	0.0	16.7	83.3	50.0	33.3	16.7	28.6	< 0.001**
20-	53.8	30.8	15.4	69.3	23.0	7.7		
30-	23.8	14.3	61.9	90.5	9.5	0.0		
40+	14.3	28.6	57.2	100.0	0.0	0.0		
<b>Residence</b>								
Rural	37.0	55.6	7.4	51.9	29.6	18.5	20.87	< 0.001**
Urban	63.6	15.2	21.2	91.0	6.0	3.9		
<b>Educational levels</b>								
Illiterate	22.2	11.1	66.7	55.6	33.3	11.1	36.21	< 0.001**
Read and Write	0.0	0.0	100.0	57.1	42.9	0.0		
Basic Education	0.0	30.8	69.2	61.5	23.1	15.4		
Secondary Education	47.1	35.3	17.6	88.2	11.8	0.0		
High Education	50.0	28.6	21.4	100.0	0.0	0.0		
<b>Occupation</b>								
Employee	76.0	8.0	16.0	88.0	12.0	0.0	13.04	< 0.001**
Housewife	5.7	34.3	60.0	60.0	22.9	17.1		
<b>Marital status</b>								
Married	32.1	26.4	41.5	75.5	13.2	11.3	8.4	> 0.05
Divorced	66.7	8.0	33.3	100.0	12.0	0.0		
Widower	0.0	0.0	100.0	0.0	100.0	0.0		
<b>The number of family members:</b>								
3-	14.3	21.4	64.3	53.6	25.0	21.4	24.39	< 0.001**
5-	54.8	25.8	19.4	83.9	9.7	6.4		
7+	0.0	0.0	100.0	0.0	100.0	0.0		

**\*\* Highly statistically significant difference (P < 0.001).**

**Table (7): Relations between the mothers' total practices scores & their socio-demographic characteristics (n=60).**

Socio-Demographic characteristics	Total practices				Chi –Square	
	Before- program (%)		After- program (%)		X2	P-value
	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory		
<b>Age / years</b>						
< 20	16.7	83.1	66.7	33.3	17.05	< 0.001**
20-	23.0	77.0	69.3	30.7		
30-	76.2	23.8	95.2	4.8		
40+	71.4	28.6	100.0	0.0		
<b>Residence</b>						
Rural	14.8	85.2	59.3	40.7	17.14	< 0.001**
Urban	21.2	78.8	45.5	45.5		
<b>Educational levels</b>						
Illiterate	11.1	88.9	77.8	22.2	34.54	< 0.001**
Read and Write	57.1	42.9	85.7	14.3		
Basic Education	69.2	30.8	76.9	23.1		
Secondary Education	58.9	41.1	88.2	11.8		
High Education	57.1	42.9	100.0	0.0		
<b>Occupation</b>						
Employee	36.0	64.0	92.0	8.0	15.04	< 0.001**
Housewife	14.3	85.7	68.6	31.4		
<b>Marital status</b>						
Married	37.7	62.3	92.0	20.8	5.51	> 0.05
Divorced	33.3	66.7	68.6	16.7		
Widower	100.0	0.0	100.0	0.0		
<b>Family size:</b>						
3-4	14.3	85.7	57.1	42.9	17.14	< 0.001**
5-6	71.0	29.0	93.5	6.5		
7+	0.0	100.0	100.0	0.0		

**\*\* Highly statistically significant difference (P < 0.001).**

## References:

1. Moulana S, Yashoda R, Puranik M, Hiremath S, Gaikwad R. (2012): Knowledge, attitude and practices towards primary dentition among the mothers of 3-5 year old pre-school children in Bangalore city. *J Indian Assoc Public Health Dent*;19:83-92.
2. Rajesh G, Prasad K, Mohanty V, Javali S. (2013): Effect of various methods of oral health education on oral health knowledge and oral health status of high school children in Gadag town – A randomized control trial. *J Indian Assoc Public Health Dent*; 11:41-5.
3. Prashanth P, Priya S, Durgesh B, and Sapna K. (2012): Prevalence of early childhood caries and associated risk factors in preschool children of urban. Bangalore, India: A cross-sectional study *European Journal of Dentistry* 6(2): 141–152.
4. Shivaprakash P, Elango I, Baweja D & Noorani H. (2009): The state of infant oral healthcare knowledge and awareness: Disparity among parents and healthcare professionals. *J Indian Soc Pedod Prev Dent*. Pp., 27:39–43.
5. World Health Organization (WHO, 2012): Definition of Health. P.1. Available at: <http://apps.who.int/aboutwho/en/definition.htm>. Accessed on January 28/ 2015.
6. National Institute of Dental and Craniofacial Research (2010): The meaning of oral health. Available at: <http://www.nidcr.nih.gov/viewers/players.htm>. Accessed on 17 January 2015.
7. Goettems M, Ardenghi T, Demarco F, Romano A & Torriani D. (2012): Children's use of dental services: Influence of maternal dental anxiety, attendance pattern, and perception of children's quality of life. Brazil, *Community Dent Oral Epidemiology*; 40: 451–458.
8. Abdel Salam A, (2011): The effect of educational intervention on quality of life of school age children with dental problems, Benha University.
9. Amin T. (2008): Oral hygiene practices, dental knowledge, dietary habits and their relation to caries among male primary school children in Al Hassa, Saudi Arabia, *Int J Dent Hygiene* 6; 361–370.
10. Abiola A, Eytipe O, Sonny J & Morenike F. (2009): Do maternal factors influence the dental health status of Nigerian pre-school children? *International Journal of Paediatric Dentistry*; 19: 448–454
11. Elham B, Abolghasem H & Tayeb M. (2013): Oral health behavior of parents status of their children as a predictor of oral health, Hindawi Publishing Corporation, ISRN Dentistry, <http://dx.doi.org/10.1155/2013/741783>.
12. Sultan S, Ain T & Gowhar O. (2016): Awareness of Mothers Regarding Oral Health of their Children in Kashmir, India. *International Journal of Contemporary Medical Research*; 3(7):2168-2171.
13. Abanto J, Carvalho T, Mendes F, Wanderley M, Bonecker M & Raggio D, (2011): The impact of oral diseases and disorders on oral health-related quality of life of preschool children, *Community Dent Oral Epidemiology*; 39: 105–114.
14. Suresh B, Ravishankar T, Chaitra T, Mohapatra A & Gupta V. (2011): Mother's knowledge about preschool child's oral health, *Journal of Indian Society of Pedodontics and Preventive Dentistry*; 28: 282-287.
15. Reang T and Bhattacharjya H. (2014): Mother's knowledge and practice regarding oral hygiene and challenges in the prevention of dental caries of underfive children in an urban resettlement colony. *International journal of medical science and public health*; 3(1): 76-80.