

Effect of Educational Program on Mothers' Knowledge and Practices Regarding their Young Children's Oral Health

Noura Y. Abo-Dahab¹, Yousseria El- Sayed Youssef², and Fatma El -zahraa Kamal Elsayed³

¹Nursing Specialist at Technical Institute of Nursing, Sohag University

² Professor of Pediatric Nursing, Faculty of Nursing, Sohag University

³ Assistant Professor of Pediatric Nursing, Faculty of Nursing, Sohag University

Corresponding author email Email: norayousof859@gmail.com

Phone number: 002-01144097518

Abstract

Background: A vital component of both physical and mental wellness is oral health; Early Childhood Caries (ECC) affects children globally, particularly in Egypt, affecting school attendance, educational achievements and work productivity. Early action is essential for preventing. **This study aimed to** analyze how an educational program has affected mothers' knowledge and practices around the oral dental health of their young children. **Design:** In this work, a quasi-experimental research design was employed. **Setting:** The current investigation was carried out at Sohag University Hospital's outpatient dental clinic. **Subjects:** A convenient sample of 100 mothers attended with their young children. **Tools: Two tools used in this study, Tool (1):** An organized questionnaire sheet for an interview includes **part (1):** Socio-demographic traits of the young children's mothers, **part (2):** sociodemographic traits of the child and **part (3):** Mothers' knowledge of the dental health of their children, **Tool (II):** Assessment sheet for reported practices. **Results** The majority of mothers (94%) possessed a high level of experience in post-program implementation. Furthermore, most of the mothers in the research (88%) showed competence in implementing the program after it ended. **Conclusion:** The instructional program increased mothers' knowledge as regard to their young children's dental health. There was a positive correlation between mothers' general knowledge and practices prior to and during the program's implementation. **Recommendation:** must be holding frequent workshops and training sessions for mothers about the dental health of their young children

Keywords: Early childhood caries, Educational Program, Mothers' performance, Oral health.

Introduction

In addition to being a crucial component of both physical and mental health, oral health has been shown to be a powerful predictor of overall population well-being and quality of life. The World Health Organization (WHO) defines oral health as a condition in which people do not experience pain in their mouth or face and are free from issues like cancer, infection, periodontal disease, or tooth decay or loss that interfere with their ability to chew, smile, and speak normally. Poor oral health can lead to cardiovascular, diabetes, and lung diseases, affecting growth and development. Good oral health positively impacts systemic health and individual quality of life, especially in children (Sanaeinasab et al., 2022).

Childhood oral problems significantly impact children and their families, reducing their quality of life and causing significant health and financial consequences. Untreated oral diseases can lead to physical, social, and mental consequences, including toothache, periodontitis, and reduced self-confidence. These issues can also negatively impact school attendance, educational achievements, employment opportunities, and work productivity

(Stoopler et al., 2024).

If identified and treated early, oral disorders are mostly preventable and only need basic treatments. Nurses and midwives have the responsibility to promote health and wellbeing by providing information about oral health self-care, establishing daily routines, cleaning teeth twice a day, having regular dental checks, and referring patients to an oral health professional. They must stay informed about dental health and consistently broaden their understanding via professional growth (Haber& Cipollina, 2024).

Significance of the study

The Global Burden of Disease Study 2017 revealed that oral diseases affect 3.5 billion people around the world. Dental caries is considered the most common chronic disease affecting 2.43 billion people globally. Caries in deciduous teeth affect more than 530 million children worldwide. In most developing countries, dental caries levels were low until recent years. An increase was observed due to rising sugar consumption, inadequate fluoride exposure and limited access to oral healthcare services (James et al., 2018). About 70% of children in Egypt have untreated

dental cavities, according to a 2014 oral health assessment done by the World Health Organization (WHO) and the Egyptian Ministry of Health. When comparing various governorates in 2022, it was found that children in Cairo had the greatest prevalence of dental caries (85%), whilst children in upper Egypt and the Deltas had lower prevalences (82% and 83.5, respectively) (Abou El Fadl et al., 2019). At every stage of life, oral health is critical to overall health and wellbeing. In addition to facilitating physical nutrition, a healthy mouth also fosters social connection, self-worth, and a sense of wellbeing. The mouth provides indicators of general health issues and acts as a window to the rest of the body. Overall health and illness are impacted by oral problems (Salama et al., 2020). When an illness or medical treatment weakens the immune system, oral bacteria can lead to infections in other areas of the body (e.g., infective endocarditis). It is also known that systemic illnesses and their management might affect oral health (e.g., changed balance of oral bacteria, reduced saliva flow). Therefore, it is imperative that programs for mothers about the oral health of their young children be implemented in order to enhance mothers' practices and awareness and prevent dental issues. (Salama et al., 2020).

Aim of the study

The aim of this study was to assess how an educational program affected mothers' knowledge and practices about the dental health of their young children at Sohag city

Research Hypothesis

- 1- Mothers' Knowledge would be improved after program implementation
- 2- Mothers' practices would be improved after program implementation
- 3- There would be a statistically significant correlation between mothers' performance pre and post program implementation

Research design

This study employed a quasi-experimental approach to organize, carry out, and assess the impact of an educational program on mothers' oral health knowledge and practices for their young children.

Research Setting

The present study was carried out at Dental clinic for outpatients at Sohag University Hospital which located in the ground floor of the dialysis building which consists of 4 rooms (three of them for dentist and the last room for nursing).

Subject

A convenient sample of all available mothers attends with their young children at the previously mentioned

setting regardless their characteristics.

- Both gender
- Age from 1 – 6 years
- Free from any other chronic disease

Tools for gathering of data

The following tools were used to gather the data before and after the instructional program.

Tool (I): A structured interviewing questionnaire sheet: This was written in basic Arabic and created by the researcher following a survey of pertinent literature. It included the following parts:

Part I: Socio-demographic characteristics of the young children' mothers included six items as: age, residence, education, occupation, marital status and the number of family members.

Part II: sociodemographic characteristics of the child.

Part III: mothers' knowledge regarding child's oral health which included three main items: (teeth and its importance, dental problems, proper nutrition toward oral health).

Scoring system: After mothers completed the interview questionnaire and their information was verified using a model key response, the scoring system for their knowledge was assessed. As a result, the right response received a rating of one, while the wrong one received a grade of zero. A percentage score was calculated by adding up these scores. As a result, the overall score varied between 0 to 38 (38 questions ×1). mothers' total knowledge was classified as follows:

- ❖ Insufficient understanding (< 60%).
- ❖ Average level of expertise (60% - 75%).
- ❖ Excellent understanding (> 75%).

Tool (II): An observational checklist: This instrument was created to evaluate how mothers treat the dental health of their young children. and included two sessions:

1st session (tooth cleaning): which comprised ten steps: cleaning the child's teeth twice a day, selecting the preferred brush shape, selecting the child's favorite toothpaste flavor, using the brush and toothpaste, teaching the child how to hold the brush and use the toothpaste, cleaning the tongue, teaching the child how to rinse their mouth and spit out any leftover tooth paste, replacing their toothbrush every three months, and scheduling follow-up appointments with the dentist every six months.

2nd session (tooth brushing technique): it involved five steps: putting the toothbrush at a 45° angle against the gum line, sweeping or rolling it away from the gum line, brushing the outside, inside, and chewing surface of each tooth with short back-and-forth strokes, brushing the chewing surface (top) of each tooth, using the brush tip to brush behind each

tooth with front and back, top and bottom, and up and down strokes, and gently brushing the tongue to remove bacteria and freshen breath.

Scoring system: After mothers completed the reported practices assessment sheet, the scoring system for their practices was assessed. As a result, the action that was completed entirely received a score of (1), whereas the action that was not completed received a score of (0). A percentage score was created by adding up these scores. Total score classified as the following:

- ❖ Unsatisfactory practice ($0 > 85\%$).
- ❖ satisfactory practice ($\geq 85\%$)

Pilot study

A Pilot study was carried out on 10 % of the expected sample size, they were (10 mothers) who attending at previously mentioned settings, to evaluate the clarity and applicability of the tools also to determine the time needed for filling the structured questionnaire. Subjects included in the pilot study were included in the study as there were no subsequent modifications in the study tools. The aim of pilot study was to assess clarity and relevance, comprehensiveness, understandable, applicable and easiness of items of tools and estimating the time needed in filling the different tools of data collection.

Tools validity and reliability

Tools of the study were reviewed by 5 panel experts in the field of Pediatric Nursing, Faculty of Nursing, Sohag University to test the content validity to make sure that the tools accurately measure what supposed to measure. Modifications of the tools were done according to the panel judgment on clarity of sentences, appropriateness of content and sequence of items

Reliability for tools was applied by the researcher for testing the internal consistency of the tools. Reliability was assessed using Cranach's alpha test and was estimated as (0.78) for knowledge and (0.90) for practice

Ethical consideration

All the ethical considerations for the mothers were secured. A full explanation about the purpose and benefits of the study was informed to them at the interview, they also allowed to know that their participation is voluntary and they have the right to withdrawal from the study at any time without giving any reason. In addition, confidentiality and anonymity of the subjects was secured when coding the data.

The design of administration

The administrator of the study settings received approval to conduct the study from the director of the hospital to get their cooperation and enable the researcher to schedule frequent attendance of the mothers at appropriate times, a detailed explanation of the study's title, goals, methodology, and tools was provided.

Field work

Data was collected from January 2024 to June 2024, Firstly, the researcher was available at the previously mentioned setting according to availability of cases in the morning shift to collect data using the previous tools and was interviewed the mothers at the previously mentioned setting to assess their performance regarding oral care. The questionnaire sheet was distributed to all mothers according to availability of cases (pre-test), the researcher was present all the time during filling the questionnaire sheet. The researcher observes mother during oral care for dental model using observational checklists, the researcher was observing actual practice of 2-3 mothers/ day.

The following four stages were used to carry out the study:

I- Assessment phase (pre planning phase)

The researcher first conducted interviews with each mother, introduced herself to the mothers who would be involved in the study, and explained the purpose of the study to each mother in order to earn their confidence and trust. She then verbally obtained their consent to participate in the study after outlining its purpose. The researcher next fills out the children's data from the medical sheet after asking each mother to complete the structured interviewing questionnaire sheet separately in order to gather baseline data. The amount of time required for tool I was between twenty and thirty minutes. The time required for (tool II) was between 20 and 30 minutes, and the researcher also reported on mothers' practices while demonstrating oral care for the Dental model.

II- The planning stage

During this phase, the researcher analyzed the results of the assessment phase (pre-test) and determined the true needs of the mothers under study. Taking into consideration the most recent pertinent literature, the researcher created an educational program for mothers on the oral health of their young children.

The general goals: The mothers' practices and understanding of their young children's dental health

had improved at the program's end

Specific objectives:

Upon completion of the course of study, the mothers were able to illustrate the anatomical structure of teeth, define teeth, discuss that human teeth consist of two sets, identify the dental installation, recognize dental care, explain the importance of cleaning teeth, realize consequences of neglecting to brush your teeth, identify definition, other names, number of them and the importance of baby teeth, follow a healthy diet., apply tips for taking care of a child's teeth, identify causes, stages of caries, risk factors, complications, signs and symptoms of tooth decay, realize how to choose a toothbrush., realize how to choose toothpaste, identify time to change your toothbrush., commitment to the duration of teeth cleaning, realize when to see a dentist, identify the instructions for maintaining the toothbrush, practice the steps for cleaning teeth, identify purpose and how to use the electric toothbrush, identify benefits, how many times using it? and how to use of dental floss, mention components, benefits, advices and how to use the siwak. And enumerate dental injuries and how to deal with them.

III- Implementation phase

Implementation of the educational program administered to the mothers based on their needs after the pre-test. This phase was achieved through three sessions (one session for theoretical part and two sessions for the practical part) to be conducted for each group separately at a period of 3 days. Each session started by a summary of the previous session and objectives of new one. A schedule for mothers developed included date, time, place, topics and duration of each session, using lectures, group discussion, demonstration, redemonstration, video teaching and booklet considered appropriate to increase the impact of teaching. The practical parts cover the procedures related to oral care. Also, the strategy of teaching program was determined by; choosing the appropriate teaching method in the form of (lecture, small-group discussion, demonstration and redemonstration) and choosing the appropriate teaching media in the form of (video, audiovisual material).

Educational program helps in explaining complex knowledge, using simple and apparent language to suit the mothers. Also, provides the mothers with the information need when they need it and in an interactive format. Motivation and reinforcement during sessions in practical part were used in order to enhance sharing in this study. All knowledge and practices' media are accessible by mothers at all

levels such as WhatsApp groups, Telegram groups and Facebook groups.

IV- The evaluation stage

Following the program's implementation, the mothers' practices and knowledge were assessed right away. Using the identical pretest data gathering instruments, the post-tests were given.

Design of statistics

Version 15 of the Statistical Package for Social Sciences (SPSS) was used to compute data entry and statistical analysis. The acquired information was arranged, edited, examined, and, where needed, displayed as percentages and numbers in tables, figures, and diagrams. The chi square test was performed to compare the data across the various time points, and a frequency distribution was created to describe the qualitative data. To determine the link between the variables, Pearson's Correlation coefficient (r) was employed. Using the chi square test, the association between research variables and personal data was examined. Statistical significance was defined as a P-value of less than 0.05, high significance as a P-value of less than 0.001, and insignificance as a P-value greater than 0.05.

Results

Table (1): shows that, more than half (56%) of the studied mothers were in the age group 20 < 30 years old with mean age 28.55 ± 6.34 years. Concerning educational level of the studied mothers, the most (85%) of them were high education. Regarding occupation, less than two thirds (62%) of them had work. Also, the majority (95%) of them married, less than three quarters (73%) of the studied mothers were 3-4 members in their family, also (60%) & (48%) of the studied mothers were living in Urban area.

Table (2) clarifies that, more than half (56%) of the studied children were in the age group 3- 6 years old with mean age 3.40 ± 1.24 years and less than two thirds (59%) of them were males. Also, less than two thirds (63%) of the studied children were ranked first among their siblings.

Table (3) indicates that, all (100%) of the studied mothers had correct answer regarding items (It is necessary to take the child for regular dental visits, Does the mother clean the child's teeth, It is necessary to clean the child's teeth after every meal, Baby teeth do not require good care because they will fall out anyway, Is good oral health linked to good general health, Are healthy baby teeth necessary for children to chew food properly) in post program implementation compared to (76%, 93%, 79%, 67%, 95% & 87%) of them had correct answer

for the same items respectively preprogram implementation. There were highly statistically significant differences ($p \leq 0.01$) in all items of mothers' knowledge about the cleaning of the child's teeth pre and post educational program implementation with elevation in post program except the items (Is good oral health linked to good general health and why are teeth brushing important) had statistically significant differences ($p \leq 0.05$).

Figure (1): clarifies that the vast majority of the mothers in the study (94%) had a satisfactory degree of post-program implementation knowledge. However, only 5% of them possessed a high level of pre-program implementation knowledge.

Table (4): portrays that, the majority (92%,92%,94% and 95%) of the studied mothers had done practice in post educational program with highly statistically significant ($p < 0.01$) as Choose the form of the brush which the child prefers, Change the toothbrush every 3 months, learn child holding brush and use tooth paste and Teach child how to rinse the mouth and spit out the remaining tooth paste.

Table (5): reveals that, the majority (90%) of the studied mothers had done practice in post educational program with highly statistically significant ($p < 0.001$) as brush the chewing surface (top) of each tooth.

Figure (2): illustrates that, the most (88%) of the studied mothers had satisfactory practice in post program implementation. While, less than half (48%) of them had satisfactory practice level in preprogram implementation.

Table (6): indicates that, there was highly statistically significant relationship between Marital status, The number of family members and Family Income in preprogram implementation at $p \leq 0.01$. While, there was statistically significant relationship in Occupation in post program implementation at $p \leq 0.05$.

Table (7): indicates that, there were highly statistically significant ($p \leq 0.01$) relationships between mothers' total practice level with both Residence and no statistically significant relationships between mothers' total practice level with both the number of family members and family income in preprogram implementation and between mothers' total practice level with the number of family members in post program implementation.

Table (8): shows correlation between mothers' total knowledge and total practice pre and post program implementation. It revealed that there was positive correlation between mothers' total level of knowledge and practice in pre and post program implementation.

Results**Table (1): Percentage distribution of young children's mothers according to their sociodemographic characteristics (no=100).**

Mothers' sociodemographic characteristics	Studied mothers (no= 100)	
	No.	%
Age in years		
< 20	6	6%
20 < 30	56	56%
30 < 40	31	31%
≥ 40	7	7%
$\bar{x}\pm SD$	28.55±6.34	
Educational level		
Illiterate	1	1%
Read and write	3	3%
Basic education	2	2%
Secondary education	9	9%
High education	85	85%
Occupation		
Working	62	62%
Not work	38	38%
Marital status		
Married	95	95%
Divorced	3	3%
Widow	2	2%
The number of family members		
3-4	73	73%
5-6	22	22%
7 and more	5	5%
Residence		
Urban	60	60%
Rural	40	40%

Table (2): Percentage distribution of the studied children's according to their sociodemographic characteristics (no=100)

Children's sociodemographic characteristics	Studied children's (no= 100)	
	No.	%
Age in years		
1 < 3	44	44%
3- 6	56	56%
$\bar{x}\pm SD$	3.40±1.24	
Sex		
Male	59	59%
Female	41	41%
Birth order		
-First	63	63%
-Second	17	17%
-Third	8	8%
-Fourth	8	8%
-Fifth and more	4	4%

Table (3): Percentage distribution of the studied mothers' knowledge regarding their young children's oral health (Pre/post program implementation) (no=100).

Mothers' knowledge of their young children's oral health	Studied mothers (no=100)								χ^2	p-value
	Pre-program implementation				Post-program implementation					
	Correct answer		Incorrect answer		Correct answer		Incorrect answer			
	No.	%	No.	%	No.	%	No.	%		
when Primary Tooth Erupts?	67	67.0	33	33.0	95	95.0	5	5.0	24.23	0.00**
when Permanent Tooth Erupts?	56	56.0	44	44.0	98	98.0	2	2.0	48.47	0.00**
What is the role of the fluoride in the tooth paste?	57	57.0	43	43.0	95	95.0	5	5.0	39.58	0.00**
What is the role of the fluoride in the tooth paste?	21	21.0	79	79.0	99	99.0	1	1.0	126.75	0.00**
What is the most common dental disease in the child?	84	84.0	16	16.0	99	99.0	1	1.0	14.47	0.00**
Which of the following food items can lead to tooth decay?	56	56.0	44	44.0	94	94.0	6	6.0	38.51	0.00**
Which of the following do you think prevents the tooth decay?	4	4.0	96	96.0	95	95.0	5	5.0	165.64	0.00**
Which of the following can lead to irregular teeth?	68	68.0	32	32.0	96	96.0	4	4.0	26.56	0.00**
How typically from time to time require to replace child's toothbrush?	65	65.0	35	35.0	96	96.0	4	4.0	30.61	0.00**
Is brushing your child's teeth important?	95	95.0	5	5.0	97	97.0	3	3.0	0.52	0.471
Why are teeth brushing important?	87	87.0	13	13.0	96	96.0	4	4.0	5.21	0.023*
It is necessary to take the child for regular dental visits	76	76.0	24	24.0	100	100.0	0	0.0	27.27	0.00**
Does the mother clean the child's teeth?	93	93.0	7	7.0	100	100.0	0	0.0	7.25	0.01**
It is necessary to clean the child's teeth after every meal	79	79.0	21	21.0	100	100.0	0	0.0	23.46	0.00**
Baby teeth don't require good care because they will fall out anyway?	67	67.0	33	33.0	100	100.0	0	0.0	39.52	0.00**
Is good oral health linked to good general health?	95	95.0	5	5.0	100	100.0	0	0.0	5.13	0.02*
Are healthy baby teeth necessary for children to chew food properly?	87	87.0	13	13.0	100	100.0	0	0.0	13.90	0.00**
When was the child first dental visit?	15	15.0	85	85.0	99	99.0	1	1.0	143.94	0.00**
When do you take your child to visit the dentist?	18	18.0	82	82.0	98	98.0	2	2.0	131.36	0.00**
When did you commence the cleaning of your child's teeth?	27	27.0	73	73.0	96	96.0	4	4.0	100.54	0.00**
What kind of treatment do you prefer if you saw dental caries in your child's tooth?	29	29.0	71	71.0	97	97.0	3	3.0	99.19	0.00**

Figure (1): distribution of the studied mother's total knowledge level pre and post educational program implementation (no=100).

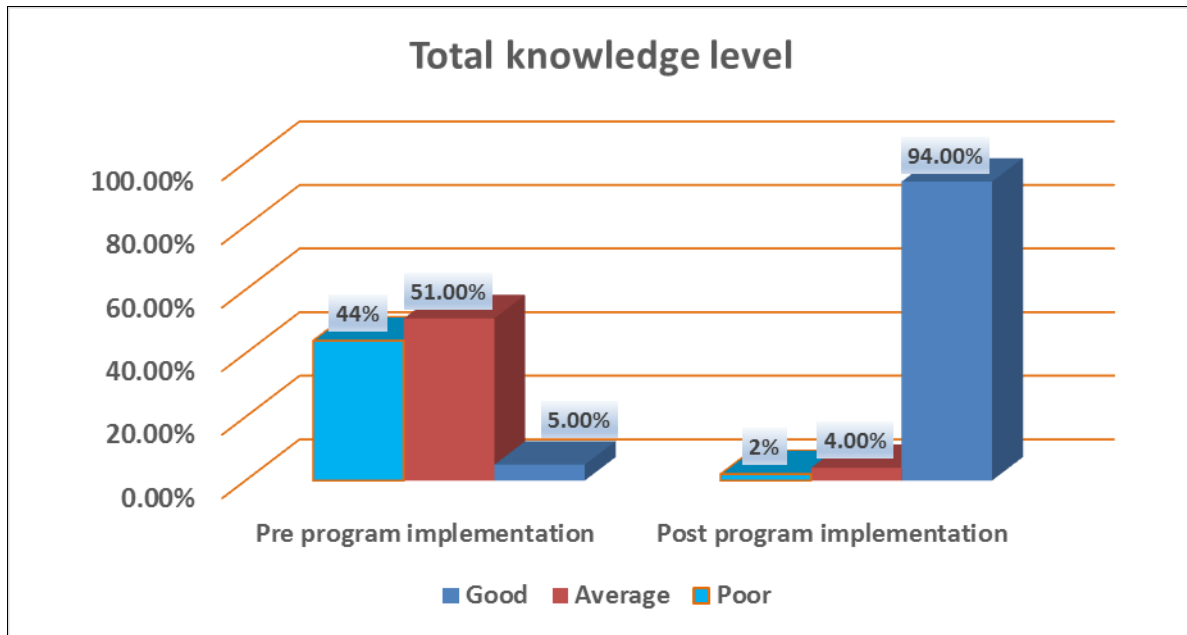


Table (4): Percentage distribution of the studied mother's reported practices towards cleaning their children's teeth (Pre/post program implementation) (no=100).

Mother-reported practices regarding brushing her children's teeth	Studied mothers (no=100)								χ^2	p-value
	Pre-program implementation				Post-program implementation					
	done		Not done		done		Not done			
	No.	%	No.	%	No.	%	No.	%		
Clean the child's teeth twice a day?	56	56%	44	44%	81	81%	19	19%	14.48	0.00**
Choose the form of the brush which the child prefers?	64	64%	36	36%	92	92%	8	8%	22.84	0.01**
Choose flavor toothpaste favored child?	49	49%	51	51%	85	85%	15	15%	29.31	0.00**
Use the brush and tooth paste?	57	57%	43	43%	90	90%	10	10%	27.96	0.00**
Learn child holding brush and use tooth paste?	62	62%	38	38%	94	94%	6	6%	29.84	0.00**
Use dental floss?	54	54%	46	46%	88	88%	12	12%	28.07	0.00**
Clean the tongue?	59	59%	53	53%	81	81%	19	19%	11.52	0.00**
Teach child how to rinse the mouth and spit out the remaining tooth paste?	65	65%	35	35%	95	95%	5	5%	28.13	0.00**
Change the toothbrush every 3 months?	63	63%	37	37%	92	92%	8	8%	24.12	0.00**
Follow-up with the dentist every 6 months?	48	48%	52	52%	80	80%	20	20%	22.22	0.00**

(*) A statistical significant at $P \leq 0.05$

(**) Highly statistical significant at $P \leq 0.01$

Table (5): Percentage distribution of the mothers reported practices regarding technique of brushing their children's teeth (Pre/post program implementation) (no=100).

The technique mothers practice by brushing their children's teeth	Studied mothers (no=100)								χ^2	p-value
	Pre-program implementation				Post-program implementation					
	done		Not done		done		Not done			
	No.	%	No.	%	No.	%	No.	%		
Place the tooth brush at a 45°angle against the gum line and sweep or roll the brush away from the gum line?	49	49%	51	51%	86	86%	14	14%	31.20	0.00**
Gently brush the outside, inside and chewing surface of each tooth using short back-and-forth strokes?	44	44%	56	56%	88	88%	12	12%	43.14	0.00**
Brush the chewing surface (top) of each tooth?	55	55%	45	45%	90	90%	10	10%	30.72	0.00**
Use tip of brush to brush behind each tooth — front and top and bottom and up and down strokes. ?	52	52%	48	48%	85	85%	15	15%	25.24	0.00**
Gently brush the tongue to remove bacteria and freshen breath?	60	60%	40	40%	86	86%	14	14%	17.15	0.00**

(**) Highly statistical significant at $P \leq 0.01$

(*) A statistical significant at $P \leq 0.05$

Figure (2): distribution of the studied mother's total practices level pre and post educational program implementation (no=100).

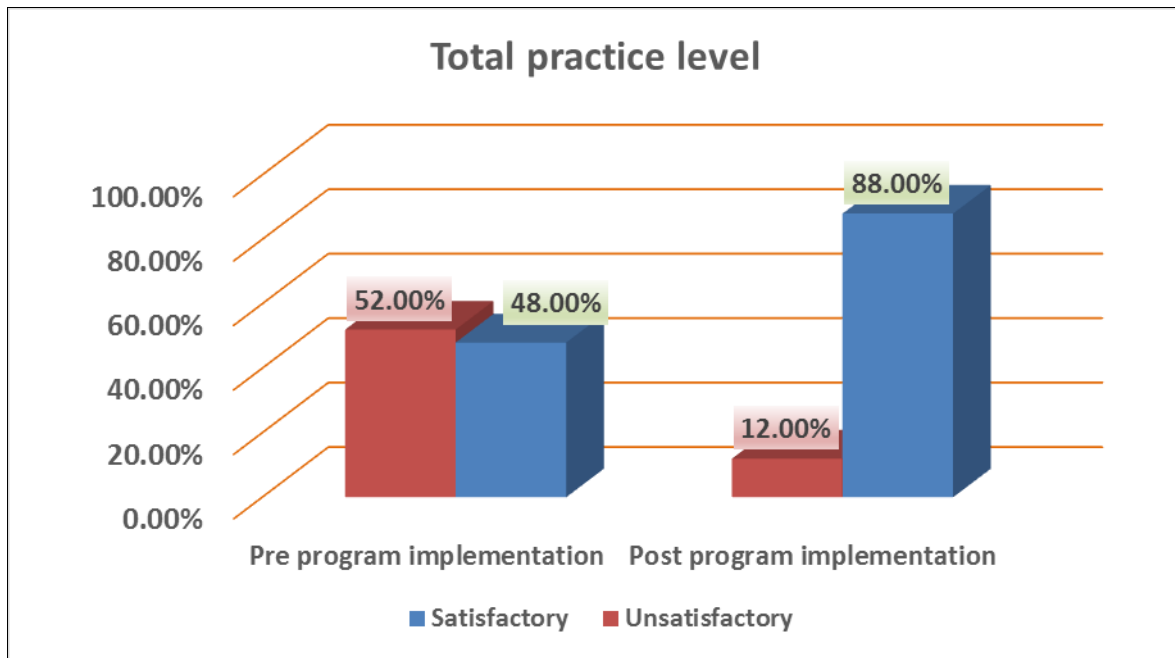


Table (6): Relation between mother's total knowledge level and their sociodemographic characteristics (per/post program implementation)) (no=100).

Mother's sociodemographic characteristics	Per program implementation						Post program implementation						χ^2	p-value		
	Good (5)		Average(51)		Poor (44)		Good (94)		Average (4)		Poor (2)					
	No.	%	No.	%	No	%	No.	%	No.	%	No.	%				
Age in years																
< 20	0	0.00	1	1.96	5	11.36	5.48	0.484	4	4.26	1	25.00	1	50.00	17.95	0.00**
20 < 30	3	60.00	30	58.82	23	52.27			55	58.51	1	25.00	0	0.00		
30 < 40	2	40.00	15	29.41	14	31.82			29	30.85	2	50.00	0	0.00		
≥ 40	0	0.00	5	9.80	2	4.55			6	6.38	0	0.00	1	50.00		
Educational level																
Illiterate	0	0.00	0	0.00	1	2.27	2.76	0.949	0	0.00	1	25.00	0	0.00	74.85	0.00**
Read and write	0	0.00	1	1.92	2	4.55			1	1.06	0	0.00	1	50.00		
Basic education	0	0.00	1	1.92	1	2.27			1	1.06	0	0.00	1	50.00		
Secondary education	0	0.00	5	9.62	4	9.09			8	8.51	1	25.00	0	0.00		
High education	5	100.00	44	86.54	36	81.82			84	89.36	2	50.00	0	0.00		
Occupation																
Working	5	100.00	33	64.71	24	54.55	4.26	0.119	61	64.89	0	0.00	1	50.00	6.98	0.03*
not work	0	0.00	18	35.29	20	45.45			33	35.11	4	100.00	1	50.00		
Marital status																
Married	5	100.00	47	92.16	43	97.73	15.02	0.00**	91	96.81	3	75.00	1	50.00	34.50	0.00**
Divorced	0	0.00	3	5.88	0	0.00			2	2.13	1	25.00	0	0.00		
Widow	0	0.00	1	1.96	1	2.27			1	1.06	0	0.00	1	50.00		
The number of family members																
3-4	3	60.00	40	78.43	30	68.18	14.59	0.01**	69	73.40	3	75.00	1	50.00	22.29	0.00**
5-6	2	40.00	9	17.65	11	25.00			22	23.40	0	0.00	0	0.00		
7 and more	0	0.00	2	3.92	3	6.82			3	3.19	1	25.00	1	50.00		
Residence																
Urban	4	80.00	27	52.94	29	65.91	2.53	0.282	57	60.64	2	50.00	1	50.00	0.266	0.877^{ns}
Rural	1	20.00	24	47.06	15	34.09			37	39.36	2	50.00	1	50.00		

Table (7): Relation between mother's total practice level and their sociodemographic characteristics (per/post program implementation) (no=100).

Mother's sociodemographic characteristics	Per program implementation				χ^2	p-value	Post program implementation				χ^2	p-value
	Satisfactory (48)		Unsatisfactory (52)				Satisfactory (88)		Unsatisfactory (12)			
	No.	%	No.	%			No.	%	No.	%		
Age in years												
< 20	3	6.25	3	5.77	4.35	0.226^{ns}	3	3.41	3	25.00	10.91	0.01**
20 < 30	25	52.08	31	59.62			52	59.09	4	33.33		
30 < 40	14	29.17	17	32.69			26	29.55	5	41.67		
≥ 40	6	12.50	1	1.92			7	7.95	0	0.00		
Educational level												
Illiterate	0	0.00	1	1.92	5.07	0.194^{ns}	0	0.00	1	8.33	34.36	0.00**
Read and write	3	6.25	0	0.00			0	0.00	2	16.67		
Basic education	0	0.00	2	3.85			2	2.27	0	0.00		
Secondary education	4	8.33	5	9.62			5	5.68	4	33.33		
High education	41	85.42	44	84.62			81	92.05	5	41.67		
Occupation												
Working	28	58.33	34	65.38	12.1	0.00**	55	62.50	7	58.33	11.54	0.00**
not work	20	41.67	18	34.62	7		33	37.50	5	41.67		
Marital status												
Married	46	95.83	49	94.23	4.94	0.09^{ns}	83	94.32	12	100.00	0.718	0.699^{ns}
Divorced	0	0.00	3	5.77			3	3.41	0	0.00		
Widow	2	4.17	0	0.00			2	2.27	0	0.00		
The number of family members												
3-4	30	62.50	43	82.69	5.27	0.07^{ns}	66	75.00	7	58.33	3.48	0.175^{ns}
5-6	15	31.25	7	13.46			17	19.32	5	41.67		
7 and more	3	6.25	2	3.85			5	5.68	0	0.00		
Residence												
Urban	27	56.25	33	63.46	12.19	0.00**	53	60.23	7	58.33	11.45	0.00**
Rural	21	43.75	19	36.54			35	39.77	5	41.67		

(*) Highly statistical significant at $P \leq 0.01$ (**) Highly statistical significant at $P \leq 0$.**Table (8): Correlation between mother's total knowledge and total practice pre and post program implementation (no=100).**

Pearson correlation	Total mother's knowledge			
	Pre-program implementation		Post-program implementation	
	r	p-value	r	p-value
Total mother's practice	0.203	0.043*	0.434	0.00**

(r) Correlation coefficient,

(*) A statistical significant at $P \leq 0.05$ and,(**) Highly statistical significant at $P \leq 0.01$ **Discussion**

The most prevalent non-communicable diseases that negatively affect a person's quality of life are oral diseases, which can also affect a person's nutrition, eating habits, self-esteem, and general health. According to the findings of an epidemiological study on oral health status published by Egypt, dental service utilization is below ideal levels. In total, 40%

of participants stated that they had oral issues at the time of the examination but chose not to seek treatment from a dentist. According to the participants' visiting habits, 20% had never gone to a dentist and nearly 20% had not seen one in over two years. (Salama, Konsowa & Alkalash, 2020).

Therefore, In Sohag City, the current study sought to assess how an educational program affected mothers'

knowledge and practices about the dental health of their young children.

As regard to percentage distribution of the studied mothers' knowledge regarding their young children's oral health (Pre/post program implementation) the current study indicated that, all of the studied mothers had correct answer regarding items (It is necessary to take the child for regular dental visits, Does the mother clean the child's teeth , It is necessary to clean the child's teeth after every meal, Baby teeth do not require good care because they will fall out anyway, Is good oral health linked to good general health, Are healthy baby teeth necessary for children to chew food properly) in post program implementation compared to the majority of them had correct answer for the same items preprogram implementation. Additionally, there were highly statistical significant differences ($p \leq 0.01$) in all items of mothers' knowledge about the cleaning of the child's teeth before and after the adoption of educational programs with elevation in post program except the items (Is good oral health linked to good general health and why are teeth brushing important) had statistical significant differences ($p \leq 0.05$). This may be attributed to mothers concern for their children's health and indicated the effectiveness of the educational program.

These results were similar with the study conducted by **Al-Oufi & Omar, (2016)**, who studied "Oral health knowledge and practices of mothers toward their children's oral health in Al Madinah" and revealed that majority of mothers recognized correctly that tooth brushing and regular dental visits prevents the dental caries. These results were congruent with the study carried out by **Abdat & Ramayana, (2020)**, which titled "Relationship between mother's knowledge and behaviour with oral health status of early childhood" and showed that one half of mothers had correct answer regarding visiting the dentist regularly is important to maintain the oral health of children.

Regarding distribution of the studied mother's total knowledge level pre and post educational program implementation the current study viewed that, most of the studied mothers had good knowledge level in post program implementation. While, the minority of them had good knowledge level in pre-program implementation. This may be attributed to lack of conducted oral health educational programs for mothers and indicated the comprehensiveness and easy presentation of the educational program that was successful improving mothers' awareness and knowledge levels.

These results were supported by the study conducted by **Mahmoud & Sobhy, (2017)**, which titled "Effect of educational health program on mothers' knowledge and practices towards their preschool children's oral health" and revealed that less than half of mothers had good total knowledge scores pre-program

implementation, while after the program implementation increased to more than three quarters of them. These results were in the same line with the study performed by **Moslemi, Mollasdollah, Akbari, Sadrabad & Fatahdost, (2017)**, which entitled "Effect of education on knowledge, attitude and performance of mothers regarding oral hygiene of their 6-12 year old children" and revealed that more than one third of mothers had good level of knowledge; this value significantly changed to nearly two thirds of them after the intervention with high statistical significant difference at ($P < 0.0001$).

Concerning percentage distribution of the studied mothers reported practices towards cleaning heir children's teeth (Pre/post program implementation) the current study demonstrated that, all of the studied mothers had done practice in post educational program with highly statistical significant ($p < 0.01$) 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. This may be attributed to mothers own oral health care behaviors.

These results were in harmony with **Soltani et al., (2020)**, who showed the score of the children's oral self-care significantly increased in the experimental group after intervention ($p < 0.001$). These results were consistent with **Mahmoud, Kowash, Hussein, Hassan & Al Halabi, (2017)**, who studied "Oral health knowledge, attitude, and practices of Sharjah mothers of preschool children, United Arab Emirates" and revealed that nearly two fifths of mothers changing child's toothbrush every 2-3 months. These results were consistent with **Mobeen, (2015)**, who studied "~~To Access the~~ Knowledge and Practice of Brushing Technique of Parents/Caretaker on Their Children" and showed the majority of mothers used toothpaste to clean teeth, two fifths of them changed tooth brush every 2-3months. Additionally, these results were supported by **Khan, Mani, Doss, Danaee & Kong, (2021)**, who studied "Pre-schoolers' tooth brushing behaviour and association with their oral health" and revealed that half the children were observed to use fluoridated toothpaste under parental supervision.

According to percentage distribution of the technique mothers practice by brushing their children's teeth (Pre/post program implementation) the current study revealed that, the majority of the studied mothers had done practice in post educational program with highly statistical significant ($p < 0.001$) as brush the chewing surface (top) of each tooth. This may be explained by mothers' awareness of adequate brushing techniques that may be due to their oral health self-care.

These results were similar with **Mahmoud & Sobhy, (2017)**, who revealed that there was highly statistical significant difference in the studied mothers practice regarding teeth brush at post educational program ($p < 0.001$). These results were congruent with **Pawar, Kashyap & Anand, (2018)**, who studied "Knowledge, attitude, and practices of mothers related to their oral health status of 6-12 years old children in Bhilai city, Chhattisgarh, India" and revealed that nearly two thirds of mothers brush their children tooth in up-down motion. These results were consistent with **Mobeen, (2015)**, who showed that maximum did not have enough knowledge and practice of oral health and brushing technique.

Regarding distribution of the studied mother's total practice level pre and post educational program implementation the current study illustrated that, most of the studied mothers had satisfactory practice in post program implementation. While, less than half of them had satisfactory practice level in preprogram implementation. This may be due to the effectiveness of the educational program in changing mothers' knowledge which reflected positively on their practices.

These result were supported by **Mahmoud & Sobhy, (2017)**, who demonstrated that more than two fifths of mothers had satisfactory practice before the program implementation and increased to majority of them after the program implementation. These results disagreed with **Salama, Konsowa & Alkalash, (2020)**, who studied "Mothers' knowledge, attitude, and practice regarding their primary school children's oral hygiene" and revealed that more than half of mothers had satisfactory level of oral hygiene practice. These results were different with **Mohamed, Hassan & Ali, (2024)**, who studied "Mothers' Awareness, Attitude and Practices Regarding Preschool Children's Oral Health" and found that almost two-thirds of mothers had super habits.

these results were compatible with **Emadian, Shafaroudi, Mesgarani, Afkhaminia & Nahvi, (2020)**, who studied "Mother's knowledge regarding oral health among their preschool children" and reported that a significant relationship was observed between having multiple children and an increase in knowledge in mothers at (p -value = 0.043).

Concerning relation between mother's total practice level and their personal characteristics (pre/post program implementation) the current study indicated that, there were highly statistical significant ($p \leq 0.01$) relationships between mothers' total practice level with residence and no statistical significant relationships between mothers' total practice level with both the number of family members in preprogram implementation and between mothers' total practice level with the number of family members in post program implementation. This may be due to

availability of dental health services in urban than rural areas.

These results were different with **Al Mejmaj, Nimbeni & Alrashidi, (2022)**, who studied "Association between Demographic Factors Parental Oral Health Knowledge and their Influences on the Dietary and Oral Hygiene Practices followed by Parents in Children of 2–6 Years in Buraidah City Saudi Arabia" and revealed that there was statistical significant difference between parents total practice with their financial status and number of children.

The current study found a statistically significant positive association between the mothers' total level of knowledge and practice before and after program implementation. This was in relation to the mothers' overall knowledge and practice before and after program implementation. This could be the case because knowledge helps people arrange information into a coherent or intelligible whole, especially when it cultivates wisdom and comprehension, which form the foundation of people's practices.

This result was similar with **Salama et al., (2020)**, who revealed that there were statistically significant differences between mothers' knowledge score and their appropriate oral hygienic practice and dental health status of their children. Moreover, this result was compatible with **Choufani & Barakat, (2023)**, who revealed that better maternal knowledge lead to better oral health practices in children.

Conclusion

The educational program was successful in raising mothers' knowledge and practices with relation to the dental health of their young children. Mothers' overall level of knowledge and practices before and after the preprogram implementation also showed a positive association.

Recommendations

1. Organizing frequent workshops and teaching programs for mothers about the dental health of their young children.
2. Creating instructions for mothers on how to care for their children who have dental issues in order to lessen the complications that may arise.
3. Additional research ought to be carried out in order to replicate the study on a larger sample size in order to generalize the findings.

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