



Original article

## ORAL HEALTH EDUCATION AND MOTIVATION FOR PARENTS AND THEIR CHILDREN IN NURSERIES

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### SUMMARY

**Introduction:** Health education and motivation are essential public health tools and effective primary preventive methods. Nurseries can serve as ideal settings for health promotion.

**Purpose:** To organize and conduct oral health education and motivation panel for children and parents in nurseries.

**Materials and methods:** A motivational and educational panel for nursery-age children and their parents was created. The panel included 1. Motivational and educational module for parents in the form of a PowerPoint lecture; 2. Motivational and educational module for children - fairytale - "How Yoni defeats the Tooth Monsters" and two games - "What Mr. Toothy likes to eat" and "Let us wipe the germs from Mr. Toothy."

**Results:** All mothers confirmed that the PowerPoint presentation was helpful. Nearly 98% of mothers learned new and valuable things about teething. The same percentage of mothers admitted that they had gained new knowledge on increasing their child's interest in performing regular oral hygiene. The results showed increased interest in oral hygiene and diet games in both groups of children included in the educational panel. The older children get, the more interest they show in listening to fairytales.

**Conclusion:** Mothers and children have received the module very well, so it would be a valuable part of any nursery program.

**Keywords:** oral health education, motivation, nurseries,

### INTRODUCTION

Dental caries is considered to be a public health problem due to its high prevalence and severity, requiring specific policies and actions for prevention [1]. Education and information about preventive methods are important factors for dental caries prevention in the community [1]. Early childhood is the most crucial period for the future of oral health because during this stage, children's teeth erupt, bacteria colonize the oral cavity, and there is the building of diet and hygiene habits that will determine the state of oral health of the individual [2]. Early childhood caries (ECC) is one of the most prevalent diseases in children worldwide [3]. ECC is defined as the presence of one or more decayed, missing, or filled tooth surfaces in any primary tooth in a child under the age of six [4]. The definition of severe early childhood caries (S-ECC) is any sign of smooth-surface caries in a child younger than three years of age [4]. The incidence of ECC among children with primary dentition is 1.76 billion [5]. To understand the prevalence of ECC, data were abstracted from 72 worldwide studies between 1998 and 2018 that measured caries prevalence in preschool children. The caries prevalence for 4 year old children from these studies ranged from 12% to 98% [6]. The surveys clearly indicate that besides ECC being highly prevalent, it is largely untreated in children under age three [6].

Thus, early infant dental care plays an essential role in preventing and promoting oral health [7]. Successful preventive actions in early childhood can positively influence the pattern of oral health throughout life. Children are not only fast learners and eager to acquire new skills but also at risk of developing dental health problems [1].

Oral health in children depends on their caregivers, who are responsible for monitoring the child's eating habits, supervising and helping with tooth brushing [8]. Parents' oral health behavior, attitudes, and knowledge may be accepted as shaping the oral health behavior of their children [8]. Studies show that mothers play an important role in preventing oral diseases by implementing the necessary hygiene practices for their babies and providing behavioral habits for years [9]. Further, educating women and mothers in minimizing risk

behaviors or promoting protective behaviors has positively influenced children's oral health and reduced their risk of caries progression [10]. Therefore, educating mothers and teaching them responsibility for their child's dental health is beneficial. Nurseries can serve as ideal settings for such oral health promotion.

**PURPOSE**

To organize and conduct health training and motivation for children and parents in nurseries with the help of motivational and educational materials.

**MATERIALS AND METHODS**

With the help of didactic, interactive, verbal, visual, and game methods, we created a panel consisting of two modules: (1) a motivational and educational module for parents (2) a motivational and educational module for children in nursery age.

- **Motivational and educational module for parents** – An educational module for parents in the form of a lecture was prepared - a PowerPoint presentation with a duration of 15–20 minutes. The educational module included anticipatory guidance grouped into several key topics related to infant oral care. After the motivational and educational module ended, each mother completed a short survey. The survey was anonymous and contained eight questions. Through the responses received, we evaluated whether the educational module on oral care for young child was helpful to parents.

- Motivational and educational module for children in nursery age:
  - Fairytale “How Yoni defeats the tooth monsters”
  - designed to motivate and educate children and increase their interest in oral care and health. The text of the tale is short, presented in an engaging form, and adapted to

the age of the children. Children were involved in the story as participants. They asked questions and looked at the pictures. The goal was for the children to remember the book's plot and learn more about proper oral care.

- Game “What Mr. Toothy likes to eat” - the game's purpose is to help young children learn about healthy and unhealthy foods. Children stood in a semi-circle around the dentist. Two children's shopping baskets were placed in front of them with happy and sad teeth on them. Different food products in the form of figures were placed in a box. One piece of food was taken from the food box and shown to the children. The children participated actively in the game, with each child talking about the food and placing it in the appropriate shopping basket. The game is played weekly, and scores are tallied twice – at baseline and after one month.

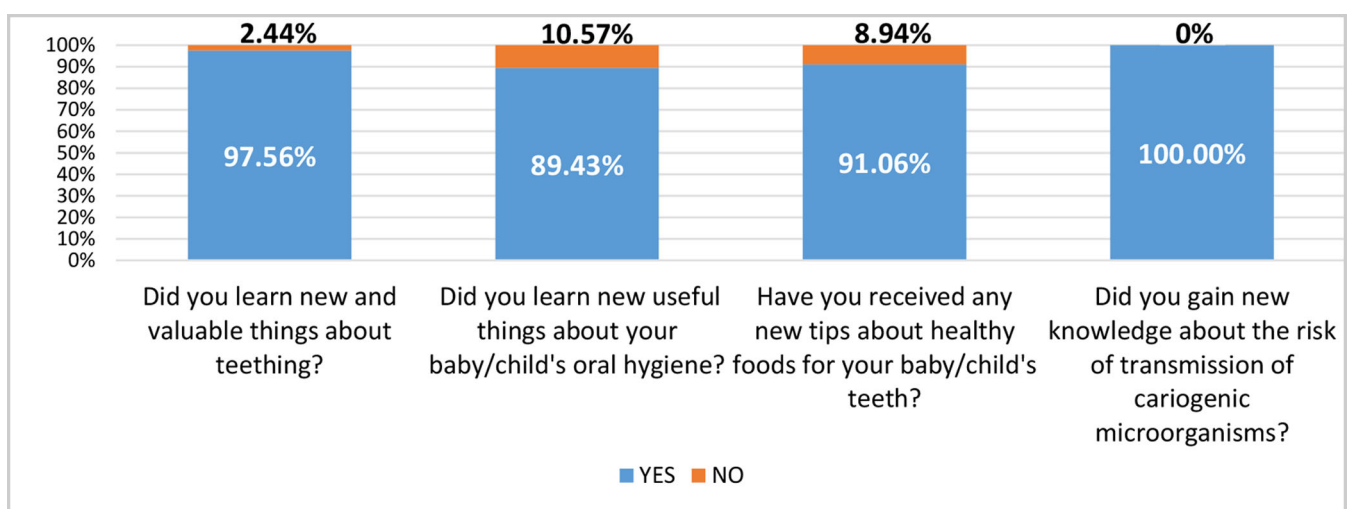
- Game “Let us wipe the germs from Mr. Toothy” - the game aims to teach children that brushing their teeth is fun, healthy, and should be done daily. The children stand in a semicircle around the dentist. In front of each child on a table, we placed a laminated “smile with teeth” cartoon, felt-tipped pens, and a toothbrush. Each child drew germs on the laminated smile. The child then used the toothbrush and tried to clean the drawn germs. The game was played weekly, and baseline data and data after one month was reported.

Within three months, we visited four nurseries to fulfill our motivational and educational panel. One hundred twenty-three children and their mothers participated in the study.

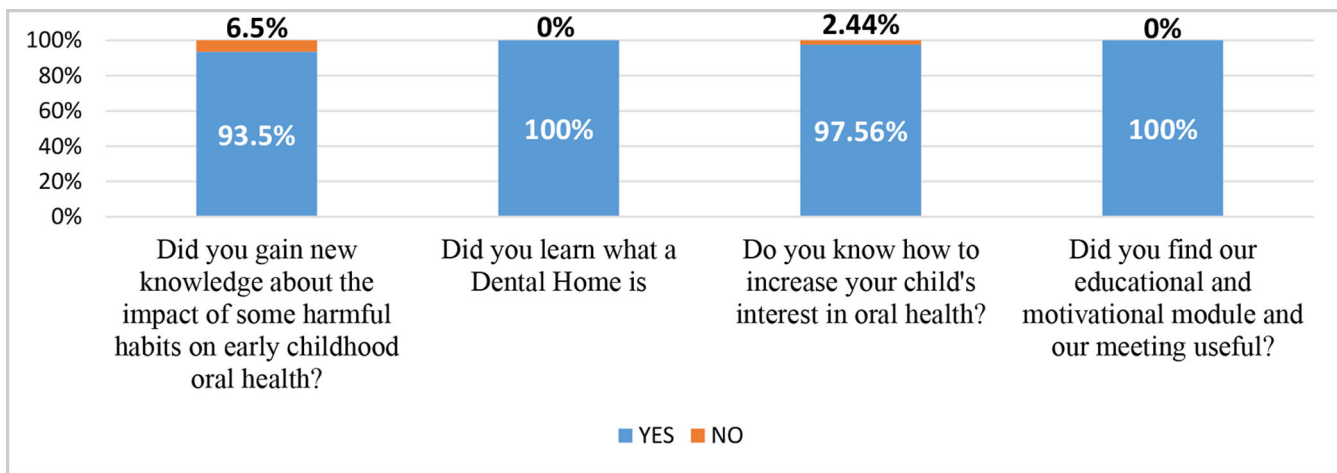
**RESULTS**

The results of the completed questionnaires after the special educational lecture with the mothers are presented in graphs 1 and 2.

**Graph 1.** Answers to the questions 1-4 from the questionnaire



**Graph 2.** Answers to the questions 5-8 from the questionnaire



On all topics discussed during the educational lecture, more than 90% of the mothers gained new knowledge. All mothers confirmed that the meeting was helpful to them, and they now knew about the risk of early transmission of cariogenic MOs and the role of the Dental Home. Nearly 98% of mothers interviewed learned new and valuable things about teething. The same percentage of mothers ad-

mitted that they had gained new knowledge on increasing their child’s interest in performing excellent and regular oral hygiene. All the mothers admitted that they learned new things about the risks and the rules for preventing the transmission of cariogenic microorganisms.

Table 1 shows the results from the fairytale reading.

**Table 1.** Results from the fairytale

| Groups       | Number/percentage of children who listened with interest |              | Number/percentage of children who did not listen with interest |              | t-test          |
|--------------|--|--------------|--|--------------|-----------------|
|              | n  | % ± sp       | n  | % ± sp       |                 |
| Age 1 – 2    | 5  | 50 ± 15.81   | 5  | 50 ± 15.81   |                 |
| Age 2 - 3    | 42   | 84.00 ± 5.18 | 8  | 16.00 ± 5.18 | t=9.27, p<0.05  |
| Age 3 - 4    | 60   | 95.24 ± 2.68 | 3  | 4.76 ± 2.68  | t=23.84, p<0.05 |
| <b>Total</b> | 107  | 86.99 ± 3.03 | 16   | 13.01 ± 3.03 | t=17.25, p<0.05 |

The results showed that the older children get, the more interest they show in listening to fairytales. Except for the youngest age group, in the remaining two groups,

there were reliably more children who kept quiet (p<0.05) and expressed interest in this module from the motivational and educational panel.

**Table 2.** Results from the game “What Mr Toothy likes to eat”

| Groups       | Number of children given correct answers |              |                 |        | t-test          |
|--------------|--|--------------|-----------------|--------|-----------------|
|              | Baseline                                 |              | After one month |        |                 |
|              | n  | % ± sp       | n               | % ± sp |                 |
| Age – 2 – 3  | 20                                       | 40.00 ± 6.93 | 50              | 100%   | t=8.66, p<0.05  |
| Age – 3 – 4  | 39                                       | 61.90 ± 6.12 | 63              | 100%   | t=8.59, p<0.05  |
| <b>Total</b> | 59                                       | 52.21 ± 4.70 | 113             | 100%   | t=10.17, p<0.05 |

The table shows that at baseline, the percentage of correct answers in both age groups is less than 62%. One month later, the correct answers were 100% in both studied groups of children. Differences were supported with statistical significance (p<0.05). The children had a lot of fun

during this educational game. They actively participated and accepted each assigned task with interest and responsibility and eagerly awaited their rewards “for a job well done.”

**Table 3.** Results from the game “Let us wipe the germs from Mr. Toothy.”

| Groups              | Number of children given correct answers - age 2 – 3  |           | Number of children given correct answers - age 3 – 4   |              | t-test         |
|---------------------|---|-----------|--|--------------|----------------|
|                     | n   | % ± sp    | n  | % ± sp       |                |
| Baseline (1)        | 39  | 78 ± 5.86 | 48   | 76.19 ± 5,37 | t=0.23, p>0.05 |
| After one week (2)  | 45  | 90 ± 4.24 | 60   | 95.24 ± 2,68 | t=1.04, p>0.05 |
| After two weeks (3) | 50  | 100%      | 62   | 98.41 ± 1,57 | t=1.01, p>0.05 |
| t-test              | t <sub>1,2</sub> =1.66, p>0.05, t <sub>1,3</sub> =3.76, p<0.05 t <sub>2,3</sub> =2.36, p<0.05 |           | t <sub>1,2</sub> =3.17, p<0.05 t <sub>1,3</sub> =3.97, p<0.05, t <sub>2,3</sub> = 1.02, p>0.05 |              |                |

The results showed increased interest in the oral hygiene game in both groups of children studied within the educational panel. In the second week, 100% of the children in the younger age group and 98% of the children over three received stickers for a well-done job.

### DISCUSSION

Early preventive dental oral care can be provided through a motivational and educational program for parents and children in the nursery age with advanced guidance for parents on diet, non-food habits, growth and development of teeth, injury prevention, oral hygiene, etc. [11]. Infant oral health programs implemented in different parts of the world have proven to prevent dental caries. Children whose parents participated in similar programs have lower values of caries indices [12].

The educational panel in this research includes: (1) a Motivational and educational module for parents; (2) a Motivational and educational module for children of nursery age - through books and games. Similar ideas and elements have been implemented by several researchers [13, 14]. Colleagues in Toronto (Canada) use anticipatory parenting guidelines in the form of a DVD entitled Baby Oral Health as an educational method [13]. This DVD is designed to provide comprehensive education on infant oral health. It includes topics such as the role of a healthy pregnancy, stages of dental development, early childhood caries, trauma, nutrition, oral hygiene, fluoride prophylaxis, cariogenic bacteria, oral habits, and regular dental visits. The implementation of such prevention protocols - through lectures, seminars, audio-visual and other methods and means of providing advance guidance) according to some researchers [15], it has the potential to lead to greater awareness among the public, increased use of dental services, and reduced incidence of preventable oral diseases among target populations.

The educational and motivational module in this research was helpful on all children’s oral health topics. The motivational module with mothers of young children had a significant effect because more than 90% of the participants acquired new knowledge about oral care in early childhood (graphs 1 and 2). The results from the study showed that a large percentage of mothers (over 90%) received new information about teething, oral hygiene, bad habits, and proper diet for the young child. Educational seminars are an effective form of health education, do not

require much time and resources, and can be implemented in nursery and kindergarten programs. Dentists, medical staff, and caregivers in nurseries and kindergartens can conduct similar modules. Lecture-based educational modules effectively improve parents’ knowledge and retain it over time [14].

Mothers with their young children should be introduced to creating a Dental Home for their child from an early age [7]. Researches show that young children suffer from dental caries as early as infancy [16]. The ECC prevalence among a sample of 1,280 children aged 3–5 years was 74.3%, and the mean decayed-missing-filled teeth (dmft) was 4.9 ± 5.0 [17]. Another clinical examination of children aged 10 to 42 months in Poland showed that 21.05% of boys and 18.51% of girls had dental caries [18]. Based on their results, colleagues concluded that the dental health status and oral care of nursery school children and their parents were unsatisfactory. It is helpful for parents to know about proper oral hygiene, dietary habits, and the risks of bacterial colonization responsible for dental caries in the child’s mouth. A study found that children of parents who went through an educational program when their children were under 12 months of age had an 80% lower chance of developing tooth decay [19]. Providing oral health education from a pamphlet and through brief oral instructions to mothers during the first year of their child’s life may represent a valuable tool in preventing early childhood caries [19]. As a form of prevention for Bulgarian children, this research proposes introducing a regular dental educational program focused on oral health and anticipatory guidelines for children of nursery age and their parents. The present motivational panel is a first step and a start in this direction, and more nurseries can adopt it not only in the territory of Sofia but also in the whole country.

No studies were found in the literature that evaluated reading dental children’s books to increase children’s interest in oral health and care. Educational children’s books are an excellent solution for learning basic skills and developing different abilities. Books support a child’s cognitive development and help when we introduce the child to a new stage of his life—for example, building hygiene habits when entering kindergarten and school [20].

This research found that the children had much fun during the educational games. They actively participated and accepted each assigned task with interest and respon-

sibility, were quick to brag about the results achieved, and eagerly awaited their rewards “for a job well done.” All children responded well to our educational panel.

An interactive way of teaching basic health concepts through games, books, and posters is an alternative approach to creating basic health knowledge about hygiene and nutrition [21, 22]. Applying a motivational and educational oral health program for children from 1 to 4 years of age, based on specially selected thematic books, games, and entertainment, is an easy and effective method of giving oral health instructions and increasing children’s interest in oral care. After running a specially designed module for nurseries, it was found that children’s interest in oral hygiene and feeding games increased. The children accepted both games well and participated willingly and with interest. All the children learned at the end of our panel which foods are good and bad for teeth. 76-78% of the children initially succeeded in the oral hy-

giene game. However, after three weeks, this percentage increased to 100%.

## CONCLUSION

Mothers and children have received the current module well, and it would be a valuable part of any nursery program. This research found that children’s interest in oral hygiene and feeding games increased. The children accepted both games well and participated willingly and with interest. All the children learned at the end of the panel which foods are good and bad for teeth. The children had much fun during the educational games, actively participated, and accepted each assigned task with interest and responsibility. As an effective form of health education, knowledge seminars do not require much time and resources and can be implemented in nursery programs. Our motivational panel is a first step and a start in this direction, and we hope more nurseries will adopt it.

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