

# Parents Education and Oral Health Care in Early Childhood Caries prevention In Varamin City; Iran: A Cross Sectional Study

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(Submitted: 15 May 2018 – Revised version received: 16 July 2018 – Accepted: 22 July 2018 – Published online: Spring 2018)

**Objectives** Oral health is a major component of overall health improvement and well-being. A large number of children are suffering from Early Childhood Caries (ECC). Parental knowledge and level of education can improve their child's oral health care leading to reduction of ECC incidence. The aim of this study was to evaluate the level of education and knowledge in a group of parents, having three year old children, on ECC occurrence.

**Methods** A total of eight hundred and fifteen, three-year-old children were recalled using pregnancy records available in healthcare centers of Varamin city, Iran. Dental examinations were performed by two calibrated senior dental students using decayed missed filled teeth (dmft) index using WHO standard method available. Parents' knowledge, level of education and their opinion on their child/children's oral health care were recorded using WHO questionnaire. An independent T-test, Chi-square test and zero inflated Poisson regression was applied for statistical analysis.

**Results** The mean dmft was 2.69 ( $\pm 3.492$ , range 0-19) while 43.4% were caries free. In total, 85% of parents had high levels of education (above high school diploma) and 15% had low levels of education (below high school diploma) including illiterates. Children of parents with higher level of education, experienced less dental caries although this difference was not significant ( $p > 0.05$ ).

**Conclusion** More than half of the three-year-old children living in Varamin city had some degrees of dental caries. Dental caries experience among participating children was rather high, despite most parents were educated.

**Keywords** Childhood, Dental Caries, Parents, Education

## Introduction

Dental caries is one of the most common chronic diseases worldwide.<sup>1</sup> Although dental caries levels have been declining in developed countries, the problem of early childhood caries (ECC) has remained unchanged in many areas, especially the socially deprived communities.<sup>2,3</sup> ECC is affecting the primary dentition and defined as "the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child under the age of six".<sup>4</sup> The etiology consists of a complex interaction between biological and socioeconomic factors. There are three categories for ECC: mild, moderate, and severe. Children with ECC have shown to have high number of teeth affected by progressive carious lesions. Consequences of ECC include a higher risk of pain or discomfort, abscesses, carious lesions in both the primary and permanent dentitions, risk for delayed physical growth and development, restricted daily activity, and diminished oral health-related quality of life.<sup>5</sup>

For ECC prevention, majority of emphasis is placed on the amount and frequency of free sugar contents consumption, infant feeding practice, poor removal of dental plaque and reduced fluoride use. These caries-inducing behaviors are mainly based on the parents' own health experiences,

certain life circumstances and overall personal lifestyle. However, the family (or caregivers) is subjected to strong cultural, economic and marketing influences which shape beliefs, attitudes and behaviors.<sup>5</sup>

Therefore, parental role is the most important aspect of maintaining good oral health.<sup>6,7</sup> Parents are responsible for their child's oral health care. Preschool children are not capable of brushing themselves, lacking manual skills and psychological maturity to understand the importance of maintaining oral health. With growing changes in today's lifestyles, a trend of having single child and increased cost of living, most of parents are at work and have less time to perform day-to-day satisfactory oral health care practices for their child's early years.<sup>6</sup> Parental role is the most important aspect of maintaining good oral health especially in preschool children.<sup>6,7</sup>

Mothers have a significant impact on their children's overall behavior while maternal dietary habits and oral hygiene behaviors can strongly affect their children.<sup>8,9</sup> Maternal oral health knowledge and education and their oral health status can strongly predict the oral health status of their children. Evidence suggest that limited parental education may lead to poor oral hygiene and eventually ECC.<sup>10</sup> Such information may help ameliorate appropriate intervention to improve oral health in primary dentition of selected age group.

The aim of this study was to evaluate the prevalence of dental caries in three-year-old children of parents residing in Varamin city, Iran with various education levels.

## Materials and Methods

This study was approved by the Committee of Ethics in Research Affairs of Dental School, Shahid Beheshti University of Medical Sciences (IR.SBMU.PHNF.REC.1396.61). Mothers or legal guardians of children were asked to sign an informed consent form prior to the commencement of the study.

This community-based cross-sectional study was performed to provide baseline data for a community oral health promoting intervention to be implemented in "Pishva" and "Pakdasht" regions, located in Varamin city. Data collection started in July 2015, and lasted for three months. Based on a survey data conducted among Iranian population earlier<sup>11, 12</sup>, the mean dmft (SD) for three-year-old Iranian children was reported 1.9 (2.8), of which 94% was related to caries component. Considering 95% confidence interval with 0.8 power, and 25% estimated reduction in decayed teeth after a three-year intervention, a sample size of 495 subjects in each neighborhood was calculated.

Three-year-old children were recalled randomly from the list of children who had received their vaccination at 18 months of age (with over 95% population coverage). Random sampling was conducted using records from all 16 healthcare centers in Pishva and Pakdasht neighborhoods. All 3-year-old children had equal chances to participate. Children were excluded if they encounter a major systemic diseases, were on long-term medication or were uncooperative and refused examination. Mothers received an oral examination and completed mothers' questionnaire in order to gather their oral health information.

Two dentists were calibrated according to the World Health Organization (WHO) oral health survey basic methods.<sup>11</sup> Intra and inter-examiner reliability for measuring dental

caries was tested for both examiners. In case of examination of both mother and child, mother was examined by a different examiner to ensure blindness on her child's oral health status.

The questionnaire included children's demographic characteristics, perceived oral health, and parental level of education. Parents' level of education was divided into two categories: 1. Diploma or higher than diploma (high education) 2: Lower than diploma or illiterate (low education).

The number of decayed, missing and filled teeth was recorded by oral examination under natural light using a dental mirror, and round-tip periodontal probe (WHO probe) according to WHO recommendations. Selected mothers responded to the questionnaire in a face to face interview. All participating children received a tube of child's toothpaste and a tooth brush in order to motivate participation. Brushing method was instructed to all mothers and brushing at least twice daily was emphasized.

Data analysis was performed using SPSS version 21 (SPSS Inc., IL, USA). For all statistical tests, a confidence interval of 95% and significance level of 5% ( $P < 0.05$ ) were considered. An independent T-test was applied in addition to a chi-square test.

"d", zero inflated poisson regression was also used with STATA 15.

## Results

From 911 three-year-old children invited to participate in this study, 96 did not show up and 12 were not cooperative enough for oral examination. Intra- and inter-examiner reliability for measuring dental caries was over 80% for both examiners. Of the remaining 815 children, 398 (48.4%) were boys and 417 (51.2%) were girls.

The mean dmft of all sample population was 2.69 ( $\pm 3.492$ ) with 56.6% of children having detected caries. The mean dmft was 2.54 ( $\pm 3.39$ ) in girls noticeably more than the mean dmft in boys 2.86, ( $\pm 3.59$ ) ( $P < 0.05$ ). (Table 1)

Table 1- Distribution of demographic, indices in 3-year-old children (n=815) and their parents' level of education

Variables		N (%)	d (Mean, SD)	Poor Perceived Oral Health (%)	Caries Free (%)
Sex	Male	398 (48.4)	2.78 (3.54)	90	43.5
	Female	417 (51.2)	2.49 (3.4)	89.6	43.4
	Missing data	0	-	-	-
	p-value	-	0.47	0.86	0.98
Background	Mother's educational level				
	High school diploma and upper	694 (35.2)	2.63 (3.44)	89.2	43.2
	Lower than high school diploma	118 (14.5)	2.67 (3.58)	93.8	44.1
	Missing data	97 (11.9)	-	-	-
	p-value	-	0.85	0.17	0.86
Father's educational level	High school diploma and upper	688 (84.4)	2.56 (3.40)	88.7	44.8
	Lower than high school diploma	125 (15.3)	3.05 (3.73)	96.2	36
	Missing data	2 (0.2)	-	-	-
	p-value	-	0.71	0.01	0.06
All		815	2.63 (3.45)	89.8	43.4

Looking at the calculated data of this study 85.2% of mothers had high school diploma or higher from which

89.2% believed that their three year old children had poor oral hygiene. Another 14.8% of mothers had low level of

education from which 93.8% believed their children had poor oral hygiene.

Among fathers 84.4% had high school diploma or higher from which 88.7% believed that their child had poor oral hygiene, while 15.6% of fathers had low level of education from which 86.2% believed that their child had poor oral hygiene. Children with parents having higher levels of education experienced lower dental caries. (Table 1). The results of zero inflated poisson regression indicated no significant effect of sex and parental education on children's "d".

## Discussion

The mean dmft of all children was 2.69. Dental caries was higher in females than males with no detectable significant difference in dental caries rate between them. These findings were consistent with the results of earlier studies carried out in Tehran, Iran.<sup>12, 13</sup> In total 43.3% of examined children of this investigation were caries-free. This could be due to Child's age as at three years old the primary dentition has just been completed and the dentition is starting to be exposed to cariogenic factors such as sugar. Results of this study indicated that the mean dmft of three-year-old children was higher than the previous study carried out in 1999 using a national sample of 750 Iranian three-year-old children with a mean dmft of 1.8.<sup>11</sup>

Results of his study showed that children with parents of higher levels of education enjoyed lower decay rates although no significant relationship was detected between parental level of education and children's dental caries experience.

In a study conducted in Salem, India, the prevalence of ECC was found to be 16% in a local sample population. ECC was mainly observed in children of working mothers, low parental education, and low socioeconomic status.<sup>13</sup>

In 2015, Weatherwax *et al.* suggested that parent's years of education were significantly the difference between the dmft score of their child ( $P < 0.05$ ) with higher levels of education being associated with lower dmft ( $P < 0.05$ ).<sup>15</sup> This difference may also be due to the small sample size and the differences in socio-demographic status of the sample population.

Oral health status of three-year-old children was not found to be at a satisfactory level with more than half of the three-year-old children experiencing degrees of caries.

Improvement in mother's education, knowledge and attitude toward oral health care behaviors can directly influence the child's oral health. This interventional method should mainly target mothers having preschool children or even mothers being pregnant at the time. Azevedo *et al.*, stated that educational intervention targeting mothers of one-year olds, can reduce dental caries.<sup>9</sup> Although there are evidence to suggest that a motivational interviewing approach can induce a positive effect on parents/caregivers' oral health knowledge, attitude and behavior.<sup>15</sup> Jiang *et al.*, also suggested that the effectiveness of oral health education and hands-on training for parental tooth brushing may not be different from that of oral health education alone for preventing dental caries in young children with low risk of dental caries.<sup>16</sup>

It is also believed that good oral health care knowledge does not necessarily produce good practices.<sup>6, 17, 18</sup> This emphasizes that parents need to be trained and motivated to carry out oral hygiene practices in a proper and efficient way.

## Conclusion

Based on the findings dental health status of three year old children of this study were not at a satisfying level while more than half of the three-year-old Varamin residing children had dental caries. Parents' level of education didn't show any significant effect on their children's dental health care.

## Acknowledgements:

This article has been extracted from the thesis written by Mitra Ghazizadeh Ahsaie for fulfillment of a Master of Public Health (MPH) degree, at the School of Public Health, Shahid Beheshti University of Medical Sciences. The authors would like to thank the staff of the Health Care Center of Varamin city and the School of Public health, Shahid Beheshti University of Medical Sciences, for their valuable efforts.

## Conflict of Interests

None Declared ■

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**How to cite:**

Hossein Hatami, Zahra Ghorbani, Marzie Deghatipour, Mitra Ghazizadeh Ahsaie. The Relation between the Level of Education among Parents of Three Year Old Children and Oral Health Care in Prevention of Early Childhood Caries In Varamin City: A Cross Sectional Study. *J Dent Sch* 2018; 36(2):57-60.

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