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The Effect of Infant Feeding Habits, Parents' Education and the Area of Residence on Nursing Caries of Preschool Children in Mosul City.

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ABSTRACT

Aims: To evaluate the effectiveness of some nursing caries factors related to presentation such as gender variation, pattern of feeding habits, parent's education and area of residence through a random sample of preschool children in Mosul City. **Materials and Methods:** A sample of 271 children was selected from 2–5 year olds, attending the Pedodontic clinic of Dentistry College at Mosul University and some others private dental clinic in Mosul City. For each child, clinical exanimation was performed on dental chair. The examination was conducted with a visual and non tactile technique. The criterion used for nursing caries was the presence of caries on the labial or lingual surfaces (smooth surface) of at least two maxillary incisors with absence of caries in mandibular incisors. The questionnaire was designed to collect general information on each child: name, age, gender as well as questions including area of residence (rural or urban) and parental education levels. Dietary information sought included past and current infant feeding practices either; breast feeding, bottle feeding or mixed of both. Chi – square (X2) test was used to determine the gender differences for each group and between total samples of different groups. The differences were considered significant at $p \leq 0.05$. **Results:** A total of 271 children with nursing caries, 146 (53.87%) males and 125 (46.13%) females of 2 – 5 years old were included in this study. The higher number of children was from rural area than those from the urban area with significant difference ($p \leq 0.05$) between them. Concerning parents' education, nursing caries was significantly the higher amongst children of mothers and fathers with the lowest level of education. The lowest percentages of children were seen in the children of parents educated to beyond college level. The higher number of children was of breast feeding group followed by bottle feeding group and mixed feeding group with a significant difference ($p \leq 0.05$) between breast feeding and mixed feeding groups only. Meanwhile, there was no significant difference ($p>0.05$) between different genders among all variables groups. **Conclusions:** The occurrence of nursing caries in preschool children appears to vary significantly with respect to the area of residence, parental education and feeding habits groups. The improvement of different familial factors may have an impact on the oral health of children.

Key words: Nursing caries, area of residence, parents' education, feeding practice, preschool children.

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INTRODUCTION

Nursing caries is particularly a severe form of dental decay affecting the primary dentition in infants and young children[1, 2].

Various terms have been used to describe this condition including nursing bottle caries, nursing bottle syndrome, baby bottle caries and baby bottle tooth decay. This rampant destruction of the primary dentition is associated with prolonged and frequent oral exposure to cariogenic substances [1, 3].

The feature that distinguishes nursing caries from classical rampant caries is the specified absence of lesions on the mandibular incisors, which are protected by action of tongue and lower lip during feeding, and pooled sublingual saliva [4]. Nursing caries has posed a challenge to the dental profession throughout the developing and

developed countries [5]. Despite the major advances in the field of caries prevention over the past few decades, there are reports of high nursing caries prevalence in young children [6, 7].

In Saudi Arabia, dentist working with children have long expressed their concerns about the seriousness of the nursing caries problems [8]. A study by Al–Amoudi *et al.* [7] reported a nursing caries prevalence of 20% in a selected sample of 3–6 years old children examined in Jaddah.

In Western societies the most common cause of nursing caries is the use of a nap–time and/ or night–time bottle that contains milk extrinsic sugars provide 19 % of the calories instead of the maximum 10% recommended in the Committee on Medical Aspects report on wearing[9].

With the overall decline in dental caries in the child population, there has been an increasing interest in the condition of nursing caries [10]. This type of dental caries is rapid in onset compromises a young child's smile and is difficult to treat. Indeed the usual clinical solution is to extract many of the primary teeth under a general anesthetic; a psychologically traumatic event that may turn children into dental phonics [3].

It has been reported that the nursing caries is more prevalent among deprived communities. In the industrial city of Salford situated in the north west of England, there is a high level of deprivation [11], and it supported by Winter *et al.* [12] who found that among these poor social conditions nursing caries would be widespread.

It is known that the problem of nursing caries can be greatly curtailed by encouraging early weaning from the bottle [13].The use of a feeder cup from 8 to 12 months of age and brushing with a fluoride toothpaste will offer a major health gain to young children if parents can be persuaded to adopt and implement these positive dent-al habits. The preventive messages are clear and giving the appropriate preventive information to parents may be one way to reduce the problem of nursing caries by changing the social norms related to weaning [14].

The aims of this study are to evaluate the effects of gender variation, pattern of feeding habits, parent's education and the area of residence on nursing caries of preschool children in Mosul City. Such information would provide a valuable base to set up an effective preventive program in the future.

MATERIALS AND METHODS

A sample of 271 children was drawn from 2–5 year olds, attending the Pedodontic Clinic of Dentistry College at Mosul University and some private dental clinic in Mosul City–Iraq.

For each child, clinical exanimation was performed on the dental chair. In each clinical examination, wet gauze pads were used to clean the tooth surface. The examination was conducted with a visual and non tactile technique; this method is known as "lift the lip" technique. No dental probing was performed on these children and the mouth mirror was used for indirect vision in lingual areas of the teeth [15].

The criterion used for nursing caries was the presence of caries on the labial or lingual surfaces (smooth surface) of at least two maxillary incisors with absence of caries in mandibular incisors [12, 16]. The data on dental caries were collected with special attention to the presence of cavitated decayed tooth surfaces while chalky area and initial caries were excluded as recommended on, diagnosing and reporting nursing caries for the research purposes [17].

The questionnaire was designed to collect general information on each child: Name, age, gender and as well as questions including area of residence (rural or urban) and parental education. The classification of education was as the follows: No education, primary school level education, secondary school level education, college level education and post graduate level education. Dietary information sought included past and current infant feeding practices either; breast feeding, bottle feeding or mixed of both.

Data were analyzed using numbers of children and percentages. Chi–square (X^2) test was used for determining the gender differences for each group and between total samples of different groups. The differences were considered significant at $p \leq 0.05$.

RESULTS

A total of 271 children with nursing caries, 146 (53.87%) males and 125 (46.13%) females of 2–5 years old were included in this study. The number and percentage of nursing caries children (males, females and total sample) were distributed according to the area of residence is shown in Table (1). The higher number of children was from the rural area 218 (80.44%); than those from the urban area 53 (19.56%) with a significant difference ($p \leq 0.05$) between them. Meanwhile, there was no significant difference ($p > 0.05$) between different genders among area of residence groups.

The number and percentage of nursing caries children (males, females and total sample) were distributed according to the mother's education level is shown in Table (2). The higher number of children was of mothers with primary school education level (96, 35.42%) and of illiterate mothers (95, 35.06%), followed in order by those of secondary school education level (43, 15.87%), college education level (35, 12.92%) and post–college education level (2, 0.74%) with a significant difference ($p \leq 0.05$) between all groups except that there was no significant difference between primary school education level mothers group and of illiterate mothers group ($p > 0.05$). Meanwhile, there was no significant difference ($p > 0.05$) between different genders among mother's education groups.

The number and percentage of nursing caries children (males, females and total sample) were distributed according to the father's education level is shown in Table (3). The higher number of children was of illiterate fathers (94, 34. 69%), followed in order by those of with primary school education level (63, 23.25%), secondary school education level (58, 21.40%), college education level (35, 12.92%) and post–college education level (21, 7.75%) with a significant difference ($p \leq 0.05$) between all groups. Meanwhile, there was no significant difference ($p > 0.05$) between different genders among father's education groups.

The number and percentage of nursing caries children (males, females and total sample) were distributed according to the past and current feeding practice is shown in Table (4). The higher number of children was of breast feeding group (105, 38.75%) followed by bottle feeding group (90, 33.21%) and mixed feeding group (76, 28.04%) with significant difference ($p \leq 0.05$) between breast feeding and mixed feeding groups only. Meanwhile, there was no significant difference ($p > 0.05$) between different genders among feeding practice groups.

Table (1): Number and percentage of children with nursing caries distributed according to the area of residence.

Area of Residence	Gender	Nursing Caries	
		Number	Percentage
Rural	Male	112	83.56
	Female	106	84.8
	Total	218*	80.44
Urban	Male	34	23.29
	Female	19	15.2
	Total	53*	19.56
Total Sample	Male	146	53.87
	Female	125	46.13
	Total	271	100

***** Significant difference between different groups for total sample at $p \leq 0.05$; ($X^2 = 100.46$, df = 1); No significant difference between different groups at $p > 0.05$.

Table (2): Number and percentage of children with nursing caries distributed according to the mother's education.

Mother's Education	Gender	Nursing Caries	
		Number	Percentage
No Education	**Male**	52	35.62
	Female	43	34.4
	Total	95* #	35.06
Primary Education	**Male**	48	32.88
	Female	48	38.4
	Total	96* #	35.42
Secondary Education	**Male**	24	16.44
	Female	19	15.2
	Total	43*	15.87
College Education	**Male**	19	13.01
	Female	16	12.8
	Total	35*	12.92
Post– College Education	**Male**	2	1.37
	Female	0	0.00
	Total	2*	0.74
Total Sample	**Male**	146	53.87
	Female	125	46.13
	Total	271	100

***** Significant difference between different groups for total sample at $p \leq 0.05$; ($X^2 = 122.32$, df = 4). # No significant difference between total sample children of no education and primary school education mothers at $p > 0.05$..

Table (3): Number and percentage of children with nursing caries distributed according to the father's education.

Father's Education	Gender	Nursing Caries	
		Number	Percentage
No Education	**Male**	58	39.73
	Female	36	28.8
	Total	94*	34.69
Primary Education	**Male**	33	22.60
	Female	30	24.00
	Total	63*	23.25
Secondary Education	**Male**	31	21.23
	Female	27	21.60
	Total	58*	21.40
College Education	**Male**	12	8.22
	Female	23	18.4
	Total	35*	12.92
Post– College Education	**Male**	12	8.22
	Female	9	7.20
	Total	21*	7.75
Total Sample	**Male**	146	53.87
	Female	125	46.13
	Total	271	100

***** Significant difference between different groups for total sample at $p \leq 0.05$; ($X^2 = 44.2$, df = 4); No significant difference between different groups at $p > 0.05$.

Table (4): Number and percentage of children with nursing caries distributed according to the feeding practice.

Feeding Practice	Gender	Nursing Caries	
		Number	Percentage
Breast Feeding	**Male**	59	40.41
	Female	46	36.80
	Total	105*	38.75
Bottle Feeding	**Male**	51	34.93
	Female	39	31.20
	Total	90	33.21
Mixed Feeding	**Male**	36	24.66
	Female	40	32.00
	Total	76*	28.04
Total Sample	**Male**	146	53.87
	Female	125	46.13
	Total	271	100

*Significant difference between different groups for total sample of breast feeding group and mixed group at $p \leq 0.05$; ($X^2 = 4.66$, df = 2); No significant difference between different groups at $p > 0.05$.

CONCLUSIONS

The occurrence of nursing caries in preschool children appears to vary significantly with area of residence, parental education and feeding habits. Such patterns of caries have been considered a significant public health problem indicative of an underlying nutritional deficiency in the peri–natal period. The improvement of different familial factors may have weighable role on the oral health of children.

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