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CARIES PREVALENCE AMONG 3-5 YEARS OLD CHILDREN IN KHARTOUM STATE - SUDAN

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ABSTRACT

Dental caries is among the most prevalent health problems of young children. The main objective of the study was to estimate dental caries prevalence among Sudanese preschool children .Three hundred and forty two Sudanese children aged 3-5 years selected using a multistage sampling technique, from kindergartens in different areas of Khartoum state. clinical examination for dental caries were conducted by single examiner using WHO criteria .Early childhood caries (ECC) was diagnosed when the child had two or more dmf (diseased, missed and filled) maxillary incisor teeth. The chi-square test and two-way analysis of variance were used for statistical analysis with the level of significance of $P<0.05$.

The results showed that 35.4% of the children examined were caries-free, while 64.6% had caries .Mean dmft was 3.53. However 17.0% of the children had early childhood caries. Socio-economical status of the kindergarten, gender and educational level of the parents did not show a significant relationship with dental caries, While age of children had a significant effect $P<0.05$.

In conclusion, there was marked increase in the dmft (3.53) among Sudanese preschool children. 35.4% were caries free. The prevalence of dental caries increased significantly with age. There is an urgent need for oral health programs targeted at the treatment and prevention of dental caries in preschool children.

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INTRODUCTION

Dental caries is one of the prevalent infectious diseases. It is a preventable and reversible process, yet it continues to be the single most common chronic disease of childhood [(1)] .It is a major problem in dentistry and should receive significant attention in every day practice. Dental caries is unequally distributed among populations, with caries incidence, prevalence, and severity being greater among minority and economically disadvantaged children than among other groups. [(2)] In many countries issues of oral health in children revolve principally around dental caries. The oral health of preschool child has not nearly been documented to the same extent as the dental health of school children. This is probably because primary teeth in many countries are still not considered to be as important as permanent teeth and also because in many of the developing countries, the older children may be going to school and are easier to identify and include in oral health surveys. [(3)]In most European countries, North America and Australia in particular , caries experience has declined in parallel with the increasing use of fluoride tooth paste [(4)] .However a current review by *Bagramian et al* (2009) of the available epidemiological data from many countries clearly indicates that there is a global marked increase in the prevalence of dental caries among children and adults[(5)]. In Khartoum- Sudan, Ghandour *et al* (1992) studied a group of 320 nursery preschool children 3-5 years old. The results showed that 40% of the girls and 48% of the boys were caries - free. Mean dmft for girls was 0.8 and for boys was 1.6. [(6)] Another study done by Raadal *et al*. (1993) among 275 preschool children aged 4-5 years. The mean dmft was 1.68 and 58% of the children were caries free. [(7)] However after all these years and in view of the change in life style of the Sudanese ,particularly in Khartoum state, it is important to examine the status of dental caries among preschool children.

The main objective of the present study was to determine the prevalence of dental caries among Sudanese pre-school children(age 3-5 years) in Khartoum State, and to access the distribution of dental caries according to age, gender, parents educational and socio-economic status .

MATERIALS AND METHODS

Across sectional descriptive community based study, among 342 preschool children age 3-5 years male and female .The children were selected by multistage cluster sampling technique from different kindergartens in

Khartoum State- January - 2011. Children were examined in their school in day light using an upright chair. Dental caries was assessed using the diagnostic criteria recommended by WHO (1997). Early childhood caries (ECC) was diagnosed when the child had two or more dmf (diseased, missed and filled) maxillary incisor teeth.
Computerized data analysis was performed using Statistical Package for Social Sciences (SPSS) program version 17. The chi-square test and two-way analysis of variance were used for statistical analysis with the level of significance of P<0.05.

RESULTS

The 342 children constituting the sample were equally divided between male and female children, (50 %) were males and (50 %) were females. According to the level of kindergarten, (42.4%) of the children were from a high socio economic status area and kindergarten, while (57.6%) are from low status areas.

Of the 342 children examined (35.4%) were caries – free, while (64.6%) had caries .The mean dmft was 3.53 (Fig.1). Of those who were caries – free, (32.9%) were boys and (37.8%) were girls with no significant difference between sex P>0.05 (Table 1). As shown in figure (11) according to the level of kindergarten From the high status kindergarten's 95 (65.5%) had caries while 126 children (64.0%) from low status kindergartens had caries, no significant difference in the caries prevalence was shown between the high and low socio economic status (p>0.05). . The percentages of children affected by dental caries in the age groups 3,4 and 5 years was found to be (10%), (33.5%) and (56.6%) respectively (Table 111) the results showed a highly significant (P= 0.000 . Educational levels of both father and mothers showed no significant effect on the prevalence of dental caries, those who had non educated mothers 65% had caries compared to 35% caries - free. While those who had educated mothers 64.6%had caries while 35.4% were caries free (Table IV).
As shown from figure (II) the prevalence of early childhood caries among the total children examined was 58 children (17%)

Table 1: Prevalence of dental caries among Sudanese preschool children according to gender

Gender	No	Affected		Caries - free		Dmft Mean+SD
		n	%	n	%	
Male	170	114	67.1	56	32.9	3.64(±1.68)
Female	172	107	62.2	65	37.8	3.42(±1.34)
Total	**342**	**221**	**64.6**	**120**	**35.4**	**3.53**(±1.55)

P = 0.348

Table (2): Prevalence of dental caries among Sudanese preschool children according to socio economic status of kindergartens

Level of kindergartens	Affected		Caries - free		Dmft Mean+SD
	n	%	n	%	
Low	126	64	71	36	3.61(±1.68)
High	95	65.5	50	34.45	3.45(±1.34)
Total	**221**	**64.6**	**212**	**35.4**	**3.53(±1.56)**

P = 0.766

Table (3): Prevalence of dental caries among Sudanese preschool children according to age.

Age/years	Affected		Caries - free		dmft mean+SD
	n	%	n	%	
(3-3.5)	32	37.3	34	62.7	1.75(±0.57)
(4-4.5)	74	67.3	36	32.7	3.36(±1.60)
(5-5.5)	125	72.3	48	27.7	4.25(±2.0)
Total	**221**	**64.6**	**121**	**35.4**	**3.53**(±1.70)

P = 0.000

Table (4): Prevalence of dental caries among Sudanese preschool c1hildren according their mother level of education

Mother education level	Affected		Caries – free	
	N	%	N	%
Illiteracy	26	65.0	14	`35.0
Primary	43	69.4	19	30.6
Secondary	99	62.7	59	37.3
Post-graduate	53	64.4	29	35.6
Total	**221**	**64.6**	**121**	**35.4**

P = 0.957

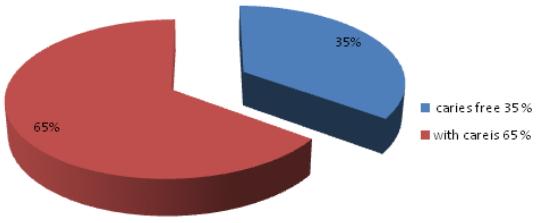

Figure (I): Prevalence of dental caries among 3-5 years old Sudanese preschool children in Khartoum State.

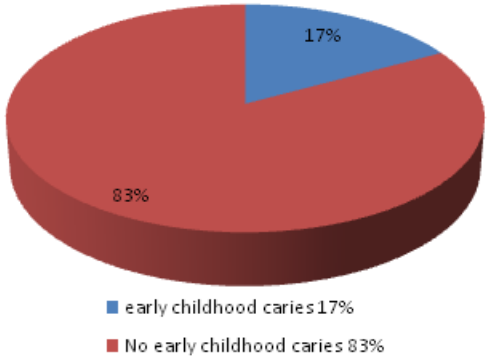

Figure (2) prevalence of early childhood caries among Sudanese preschool children in Khartoum state

DISCUSSION

Since the population under study is homogeneous and according to previous studies which showed that the size of the problem of dental caries in pre-school children is huge, therefore there was no need to increase the sample size to the extent that may lead to type 11 error.

This study revealed that the prevalence of dental caries among pre-school children aged 3-5 years in Khartoum State has increased markedly in compared to the same age group of children in the previous studies in Sudan 1992[6] and 1993[7]. One of the goals of Oral Health set by WHO for the years 2020 is to increase the proportion of caries free 6 years old by X %.[8] from the result of the present study more preventive effort are needed to achieve this goal. The prevalence of dental caries among preschool children in this study was higher compared to studies done in UK.[9] and some African countries including South Africa[10] and Nigeria [11] ,but it was lower than the results from some other studies [12 ,13, 14] where higher prevalence of dental caries was reported. The results of the present study were similar to those done in Kenya[15].
In agreement with previous studies in literatures [16, 11, 17] the prevalence of dental caries increased significantly with age. This may be due to the fact that once cavitations have occurred it is irreversible, and new caries lesions also developed with increasing age. Gender did not have a significant relationship with caries prevalence similar to Saudi Arabia study results [18], but some studies showed girls are more affected than boys [19].
The type and location of kindergartens considered as an indicator for the socioeconomic status in the present study, the absence of a significant relation between high and low class kindergartens and the prevalence of dental caries is in agreement with previous studies in the Sudan [6], but in contradict with some studies in other parts of the world` [9, 16, 17] where low socio economic status associated with

increased caries prevalence. This may indicate that socio economic status in Khartoum did not have an effect on dietary habits. The educational level of the parents has no significance relationship with the dental caries of the children in this study. It may also reflect that in Sudan dental awareness and attitude did not improve with higher educational levels. This result contradicts with that reported in the literature [20, 21]

The prevalence of ECC in this study was found to be less than that found in some studies ([22] [23] this may be due to differences in feeding habits. However further studies are needed including dietary analysis before final conclusions could be drown.

In conclusion: The result of the present study showed an increase in the dmft (3.53) among Sudanese preschool children. 35.4% were caries - free. The prevalence of dental caries increased significantly with age, and no significant relationship with gender, educational level of the parents and socioeconomic status could be found. The prevalence of early childhood caries in this study is 17% among the total number of examined children. There is an urgent need for oral health programs targeted at the treatment and prevention of dental caries among Sudanese children.

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