Assessing the Relationship of Maternal Factors and Family Income with Early Childhood Caries: A Hospital Based Study

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ABSTRACT

Background

Earlychildhood caries (ECC) is a multifactorial disease. Maternal factors and family income has major influence on the caries status of children.

Objective

To assess the relationship of maternal factors and family income with early childhood caries among children attending Pediatric Dentistry department of Dhulikhel Hospital.

Method

A cross sectional study was conducted among 239 children of age 3 to 6 years attending Pediatric Dentistry department of Dhulikhel Hospital, Kavre, Nepal. Age of child, mother's occupational status,educational level and family income were recorded. Oral examination of child was done to record decayed, missing, filled teeth (dmft). Descriptive analysis was done to observe the caries experience. Chi - square test was used to assess the relationship of caries experience with occupational status, education of mother and family income.

Result

The mean decayed, missing, filled teeth of the children was7.04±4.10. There was no significant relationship of early childhood caries with occupational status of mother (p=0.675), education of mother (p=0.140) and family income (p=0.158).

Conclusion

There was no relationship of maternal factors and family income with early childhood caries when surveyed among the children visiting Pediatric Dentistry department of Dhulikhel hospital.

KEY WORDS

Early childhood caries, Income, Mother's education

INTRODUCTION

Early childhood caries (ECC) is the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger.[1]

Dental caries is a multi factorial disease which is attributed to various factors like poor oral health behavior, frequent consumption of sugar, no exposure to fluoride and low socioeconomic status of family. ECC is a serious public health concern especially for social disadvantaged groups, in both developed and developing worlds.[2] Oral health pathfinder survey of Nepal reported that approximately 58% of children at age 5-6 yearsexperienced dental caries.[3] A recent school based study done in 18 districts of Nepal found mean decay value for 5-6 years old children was 5(SD 4.22).[4]

Socioeconomic factors clearly impact the development of caries and need to be understood.[5] Education level is an important socioeconomic indicator that reflects knowledge and skills for making health behavior choices.[6] Usually, mother is the main caregiver during earlychildhood and plays a pivotal role in her child's health.[7] Children's dietary habits vary according to their mother's educational level, resulting in low income families consuming diets higher in added sugars than diets of higher income families.[8]

To our knowledge, there is no any research exploring the relationship between socioeconomic factors and ECC in Nepalese children population. So, this study was aimed to assess the relationship of maternal factors as occupational working or household, educational level and family income with ECC.

METHODS

A cross sectional study was conducted among 239 children of age 3 years to 6 years visiting Pediatric Dentistry department of Dhulikhel Hospital, Kavre, Nepal. Convenience sampling was done to recruit the children who came to the department between February to April 2016.

Ethical approval for the study was obtained from Institutional Review Committee of Kathmandu University School of Medical Sciences. Parental consent as well as assent from the children was obtained prior to recording the data.

Birth date of child was recorded along with different maternal factors like occupational working or household and educational level divided into three categories (table 1). Yearly family income in Nepali rupees was also classified into three categories (<200000, 200000-399999 and ≥400000)

Intraoral examination for each child was done in the dental chair under adequate illumination using mouth mirror and

Table 1. Mother's educational level

Category 1	Illiterate
	Non formal education
Category 2	Primary education
	Lower secondary education
	Higher secondary education
Category 3	Bachelor degree
	Master degree or above

Shepherd's hook explorer (No. 23) to record the child's caries experience as deacyed, missing or filled primary teeth (dmft) index according to WHO guidelines (WHO, 1997).[9] Healthy children with no history of any congenital or genetic problems and no any medical history were included.

Data was analyzed using Statistical Package for Social Sciences (SPSS v 20.0). Descriptive analysis was done to observe the dental caries experience (dmft). Chi-square test was done to assess the relationship of maternal occupational status, maternal education and family income with ECC. The level of significance was set as <0.05.

RESULTS

The total population of the study consisted of 239 children of age 3 to 6 years among which 56.1% were males and 43.9 % were females. The mean age of the children was 55.7 months. The mean dmft was 7.04±4.10 dmft was further divided into three categories as 0, 1-2, ≥3 to observe the severity of ECC.

However, there was no significant relationship of dmft seen with mother's occupation (p=0.675), educational level (p=0.140) and family income (p=0.158) (table 2).

Table 2. Association of caries experience with mother's occupation, education and family income

	Decayed missing filled teeth			P value
Mother's occupation	0	1-2	≥3	
Occupational worker	9(3.8%)	8(3.3%)	83(34.7%)	0.675
Housewife	9(3.8%)	9(3.8%)	121(50.6%)	
Mother's education				
Category 1	1(0.4%)	2(0.8%)	26(10.9%)	
Category 2	13(5.4%)	15(6.3%)	148(61.9%)	0.140
Category 3	4(1.7%)	0(0.0%)	30(12.6%)	
Family income				
<200000	2(0.8%)	8(3.3%)	55(23.0%)	
200000-399999	10(4.2%)	4(1.7%)	84(35.1%)	0.158
≥400000	6(2.5%)	5(2.1%)	65(27.2%)	

*p≤0.05 considered as statistically significant

DISCUSSION

The result of the study demonstrated a very high caries experience of the children who visited Pediatric Dentistry department of Dhulikhel Hospital (7.04±4.10). This may be attributed to changing dietary habits of children as frequent intake of snacks, sweet foods and soft drinks.The other most important reason for observing high dmft may be because the study population were the children visiting pediatric dentistry department for treatment and the cause of visit was mostly for the carious teeth. A recent study done in Nepal demonstrated that young children of age 5-6 years had more untreated carious lesion than older age group suggesting the need for government to implement programs to prevent oral diseases in the country.[4]

The present study demonstrated no relationship of ECC with maternal occupation. Several other studies also failed to find such correlation.[10-13] These studies have examined the association between parental occupation and dental caries using crude measurement of employment status, such as employment vs. unemployment. This may be the reason for insignificant finding in the present study also as maternal occupation was recorded as housewife or occupational worker only.

The present study also did not find any relationship of dmft with mother's education. Similar finding was reported in other researches as well.[14,15] A study done in cohort of adolescent mothers in Brazil demonstrating no relationship of maternal education with ECC had all mothers presenting similar educational experiences and shared low socioeconomic backgrounds which made difficult to detect the influence of these variable in caries status.[15] This could be the reason that have impaired the observation of potential relationship between maternal education and caries status in the present study also as the majority of mothers had similar educational level.

The results of several studies have demonstrated the association of mother's education with higher risk for caries in children.[16-19] Similarly, significant inverse associations were observed between parental levels of education and household income and the prevalence of dental caries in three year old Japanese children.[20] A recent systematic review concluded that lower family income and parental education were associated with higher risk of dental caries in children aged 0–6 years.[21]

On the contrary to these studies, the present study did not show any relationship of dental caries experience with family income. This may be because population of children served by Dhulikhel Hospital are mostly from remote areas with most of them belonging from lower socioeconomic background who do not visit dental hospital unless the condition is symptomatic.

Limitation of the study is that since the study was hospital based, generalizability is low. Secondly, sample of the study had similar socioeconomic background which affected the outcome of the research.

CONCLUSION

Maternal occupation, educational level and family income had no relationship with early childhood caries. Further population based study on large sample of children with wide range of socioeconomic background of family has to be conducted to assess the relationship.

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