Original Article

Dentistry

Dental Caries Status among Children aged 12-14 Years in Urban and Rural Areas of Lasbella District, Balochistan

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ABSTRACT

Objective: To assess the dental caries status among 12 to 14 years old children in urban and rural schools.

Study Design: A cross sectional was done

Place and Duration of Study: The study was carried out at Lasbella District of Balochistan in October 2010. The duration of study was one month. The study was conducted in one urban and one rural school.

Materials and Methods: The study population was consist of 108 students aged 12-14 year. The DMFT score was recorded on WHO recommended forms for dental caries status. The study period was one month and was conducted in one urban & two rural schools of Lasbella district

Results: The study population consisted of 108 students and out of them 55.6% belonged to rural school and 44.4% belong to urban school The mean DMFT of rural was higher 2.63± 2.44 as compared to the urban population 2.08± 2. DMFT was highest at the age of 13 years 2.55± 2.17. Males had a higher mean of DMFT 2.46± 2.17 as compared to females 2.32± 2.44. Although there were no significant differences of means of DMFT by age, sex & location of school. Out of the total urban students 39.6% of school children were caries free as compared to 20% of students in the rural population.

Conclusion: Our study highlighted the extent of dental disease in urban and rural areas of district Lasbella. There is need and high demand for dental services and awareness raising programs in these areas.

Key Words: Dental Caries, School children, DMFT.

INTRODUCTION

Dental caries or dental cavities, is a chronic infectious disease caused by bacteria present in the oral cavity which dissolve the mineralized portions of teeth.[1] Dental Caries is a global disease and it affects the health of individuals by pain, tooth loss, infection, and, in severe cases, death.[2] 90% of schoolchildren have cavities worldwide, and the disease being more severe in Latin America and Asia.[3]

During the past years, pattern, prevalence and distribution of dental caries has been changed among populations.[4] Studies indicate that the incidence of dental caries will increase in many developing countries, particularly due to a growing consumption of sugars and inadequate exposure to fluorides.[5] Changing life styles are thought to be a potential risk factor for the occurrence of dental caries and the socioeconomic factors have contributed in increase of dental caries status in developing countries as compared with developed countries.[6]

Hub city is the largest industrial city of Balochistan province and is situated 18 kilometers away from SITE Karachi. It is considered as a fast growing and culturally dynamic city.[7] To date there has not been any published or unpublished data available on DMFT status and difference of dental caries status in urban and rural areas of Lasbella district.

The aim of this study was to assess dental caries status among children in urban and rural schools of district Lasbella, Balochistan.

MATERIALS AND METHODS

A cross sectional study was carried out among school children aged 12-14 years old in urban and rural schools of district Lasbella. The study was conducted in 1 of the urban school in Hub city and 2 of the rural schools in Gaddani and Winder town of district Lasbella, Balochistan. The objectives of study were to assess the dental caries status and its association with general characteristics among rural and urban school students aged 12-14 years in Lasbella district of Balochistan province.

Sampling technique: With the total sample size of 108 school children, Purposive sampling was done by selecting two schools in rural area (Gaddani and Winder) and one school in urban area of Hub city. The entire students of grade 6 of schools with total number of 60 students of age 12-14 years old from 2 schools in rural and 48 students from one school in urban were included in this study.

Research Instrument: The study was conducted by using examination form from WHO (World health

Organization). Sterilized Instruments for Oral examination (Instruments tray, mouth mirror, explorer, gloves, mouth mask and table cloth) were provided by the researcher.

Validity & Reliability: Standardization and calibration for oral examiners was performed at department of community and preventive dentistry, dental section Bolan medical college Quetta with Kappa score of 0.90

Study population: Students aged 12-14 years old studying in school at Hub city and rural towns of Gaddani and Winder were the study population. A total number of 108 school children were included in the study.

Inclusion and exclusion criteria: School children aged 12-14 years in grade 6, of secondary schools who had the permission from the parents to participate in this survey were included in this study. School children who were older than 14 years and younger than 12 years old or were absent from school during the day of the survey were excluded from the study.

Data collection: The study was conducted in the month of October 2010 and the duration of data collection was one month. Permission from district education officer and principal of relevant school was asked to conduct the survey. The survey team consisted of 2 examiners, 2 recorders and 1 dental assistant.

The oral examination was conducted in a room having natural light & good ventilation. Students were examined in a resting position by lying down on the table, with the examiner standing in 12 o'clock position behind the student's head. The recorder sat close to the examiner for the ease of data recording and for good communication and listening skills in order to avoid error while recording.

Data Analysis: After the completion of the examination the form was edited and entered in computer by using SPSS 18. For descriptive statistics, number, frequencies, percentage, means with standard deviation were used. ANOVA was used to demonstrate the differences of means and binary logistic regression was used to calculate odd ratios (OR). p-value less than 0.05 was accepted as statistically significant.

Scope and Limitation of the study: The sample was not representative of the general population of the province. Hence, the results of the study may not be induced to represent the general population as a whole.

RESULTS

1. General Characteristics: This study was cross-sectional and was carried out in urban & rural school children aged 12-14years old in Lasbella district. The study population consisted of 108 students and out of them 55.6% belonged to rural school and 44.4% belong to urban school. From the total study population 26.9% were 14 years old, 16.7% were 13 years old and 56.5% were 12 years old. Between the sexes out of a total of 43.5% males, 45% belonged to rural school and 41.7% belong to urban school. (Table I)

Table No. 1: General Characteristics of School Children by type of school

Variables	Rural (n-60) %	Urban (n-60) %	Total Number (n-108) %
Age:			
12yrs	18 (30%)	43 (89.6%)	(56.5%)
13 yrs	14 (23.3%)	4(8.3%)	18 (16.7%)
14 yrs	28 (46.7%)	1 (2.1%)	29 (26.9%)
Sex:			
Male	27 (45.0%)	20 (41.7%)	(43.5%)
Female	33 (55.0%)	28 (58.3%)	61 (56.5%)

2. Caries status among school children

2.1 Mean and Standard Deviation of DMFT of school children by age, sex and location of school

Mean of DMFT was highest at the age of 13 years was 2.55± 2.17 followed by 14 years 2.37± 2.87 and 12 years 2.34± 2.10. Males had a higher mean of DMFT 2.46 (2.17) as compared to female 2.32± 2.44. The mean DMFT of rural was higher 2.63± 2.44 as compared to the urban population 2.08± 2.14. There were no significant differences of means of DMFT by age, sex & location of school. (Table 2)

Table No.2: Mean DMFT (SD) status of school children by age, sex & location of school

Variables	Number	DMFT		p-value*
		Mean	SD	
Age (yrs)				
12	61	2.34	(2.10)	0.71
13	18	2.55	(2.17)	
14	29	2.37	(2.87)	
Sex				
Male	47	2.46	(2.17)	0.75
Female	61	2.32	(2.44)	
Location of school				
Urban	48	2.08	(2.14)	0.21
Rural	60	2.63	(2.44)	

*p- value from ANOVA

2.2 Means and Standard deviation of components of DMFT by type of school

The mean of DMFT was higher in the rural population 2.63 ± 2.44 as compared with the urban population 2.08 ± 2.14. The mean of decayed teeth (DT) was higher in rural population 1.68 ± 1.74 as compared to urban 1.41 ± 1.64. The mean of missing teeth (MT) was also higher in the rural population 0.28 ± 0.66 as compared to urban 0.12 ± 0.33. The mean of filled teeth (FT) were higher in the rural population 0.66 ± 1.11 as compared to the urban population 0.54 ±1.23. There were no statistical significance differences among all means. (Table 3)

Table No.3: Comparison of Mean & SD of Components of DMFT by type of school.

Variables	N	DMFT Mean (SD)	DT Mean (SD)	MT Mean (SD)	FT Mean (SD)
Urban School	48	2.08 (2.14)	1.41 (1.64)	0.12 (0.33)	0.54 (1.23)
Rural school	60	2.63 (2.44)	1.68 (1.74)	0.28 (0.66)	0.66 (1.11)
p-va/ue*		0.22	0.42	0.13	0.58

*** p- value from ANOVA**

2.3 Proportion of students with caries free.

Out of the total urban students 39.6% of school children were caries free as compared to 20% of students in the rural population. (Table 4)

Table No.4: Number and percent of caries free by area

%age	Variable	N
39.6	Urban	19
29	Rural	12
28.7	Total	31

3. Association between general characteristics and dental caries.

Analysis by binary logistic regression was used to determine association between general characteristics and dental caries. Independent variables were age and gender when dependant variable was caries status by caries free (DMFT=0) and having caries (DMFT= and >1 or atleast DMFT= 1). Odds ratios were used to describe for the association between general characteristics of the students and chances to develop disease. Crude Odds ratios were estimated by using logistic regression. Odds ratios had a null value of 1.0, which indicated that the independent variable tested did not show a consistent association with the dependent variable.

Table No.5: Association between general characteristics of students (108) and dental caries

Variables	Total	OR	95% CI	
			Lower	Upper
Sex				
Female	61	1.0	0.47	2.54
Male	47	1.095		
Type of school				
Urban	48	1.0	1.112	6.176
Rural	60	2.621		

Crude OR of male were 1.095, which means that male students were 1.095 times more likely to have caries than female students.(OR=1.095, 95% CI 0.393-2.12) But there was no statistical significance.

Crude OR for rural school children was 2.621 which means that children studying in the rural schools were 2.621 times more likely to have caries than children who were studying in urban schools.(OR=2.621,95% CI 1.112-6.176) (Table 5)

DISCUSSION

The aim of the study was to assess the dental caries status and its association with general characteristics among school children aged 12- 14 years old in urban and rural areas of district Lasbella. Also to study the extent of the disease in urban and rural areas in order to determine the treatment needs and preventive efforts required to improve the oral health of the school children.

The results of the study showed a higher mean DMFT of 2.63±2.44 in rural school children as compared to mean DMFT of 2.08±2.14 in urban school children. This finding is comparable in terms of caries experience in urban and rural to a finding by R Yee, Mc Donald[8] among 12 -13 years old school children in Nepal.

In this study 40% of the school children were caries free in urban as compared to 20% of them in rural schools. The results were similar to a study conducted by D Bratthall[9] in Southern Thailand, at age 12, 70% of school children had caries and DMFT level of 2.4. Possible explanation for this discrepancy might be due to the differences in oral hygiene practice, food habits and lack of preventive dental services in rural areas and lack of dental education in rural areas.

The mean DMFT increased with age in this study, but 13 years mean DMFT is slightly more than 14 years old age group. The mean DMFT was 12 years (2.34), 13 years (2.55) and 14 years (2.37). This finding is comparable in terms of caries experience in a study by S.A. Okeigbemen[10] among 12-15 years old school children in Egor district, Nigeria.

CONCLUSION

The high prevalence of dental caries found in this group of children and the very low effective treatment requires urgent efforts to initiate planning strategies for prevention and treatment in this highly selected group of population. Dental caries status among students in rural school was higher than urban school.

There is need and high demand for dental services in these rural areas. The study highlighted the extend of dental disease in urban and rural areas of district Lasbella, which reflects high treatment needs.

Recommendations:

Reduction of high caries levels can only be achieved by a preventive and oral hygiene promotion program; therefore there is great need to change from restorative orientated dental services to preventive oriented dental services in order to improve oral health status of this population. The need to initiate school dental health education programs for children and their parents is a must to increase the dental awareness on the importance of oral health and how to prevent oral diseases by improving oral hygiene practices and change in dietary

habits. Control over candies and snacks being sold around the school premises.

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