Original Article

Socioeconomic inequalities in school children through assessing dental caries status

Maham Shah, Shazia Parveen Rajpar, Nida Zehra Talpur, Farwa Shah, Reshma Khatoon, Shagufta Channa

Department of Community Dentistry, LUMHS Jamshoro, Pakistan

Objective: To determine the effect of socioeconomic status on school children of private and government schools on dental caries

Methodology: This study was carried out in Government and Private schools of Qasimabad, Hyderabad and included 339 school children who were examined from March 2015 to March 2016. All information regarding age, gender, socio economic status, were obtained through a questionnaire. Oral examination was performed to check dental caries.

Results: According to distribution of filled teeth, no significant difference was found (p=0.208). In the government schools, decayed teeth were found significantly associated with poor socioeconomic status (p=0.001). In private schools, sound teeth were significantly noted in upper socioeconomic status and decayed teeth were significantly associated with middle socioeconomic status (p=0.001). In the government schools, missing and sound of teeth were found significantly associated with poor socioeconomic status (p=0.004). In private schools, sound teeth were significantly noted in upper socioeconomic status and decayed teeth were significantly associated with middle socioeconomic status (p=0.001).

Conclusion: There was high prevalence of dental caries among school going children of both schools but slightly more in Government school children. Dental caries was not associated with socioeconomic status. (Rawal Med J 202;46:368-371).

Keywords: Dental caries, inequalities, decayed teeth.

INTRODUCTION

Socio economic status is defined as an economic measure based on income, education and occupational status.[1] It is believed that socioeconomic status, life style, culture and dietary pattern have major impact on dental caries rate.[2,3] Dental caries is a progressive irreversible microbial disease affecting the hard parts of tooth. Fermentation of dietary carbohydrates produce acid and cause the initial lesion.[4] It is the most prevalent oral disease, particularly in childhood.[5,6] Dental caries has become the main focus of dentist because it has high morbidity potential, as 60 to 90% of the schools going children of developing countries are affected.[7]

The reason cause can be improper oral hygiene, cariogenic foods and lack of dental preventive programs, as well as systemic infrastructure deficiencies that prevent proper screening of oral diseases.[8,9] Oral health improving strategies in the community are very costly and often inefficient, which may be due to low literacy rate or lack of awareness.[9-11] Piovesan et al reported percentage of caries prevalence of 39%.[12] In Pakistan, Khan et al repor-ted 62.06% of DMFT with those whose socioeconomic status was high.[13] In Pakistani context, only few studies have been carried out that clarify the factors of oral health associated with high and low socioeconomic status. The aim of this study was to determine the effect of socioeconomic status on school children of private and government schools on dental caries

METHODOLOGY

The study was carried out in Government and Private schools of Qasimabad Hyderabad, Pakistan and included 339 school children who were examined from March 2015 to March 2016. Consent forms in Urdu, English and Sindhi were also given to Principal and Parents/Guardian for the permission of dental examination of school children for study purpose All the information regarding variables like age, gender, socioeconomic status, were obtained through a prescribed questionnaire. Oral examination was performed to check dental caries.

Statistical Analysis: All data analysis was

performed using SPSS Statistics 21. Chi-Square test and t-test was applied and a $p<0.05$ was considered as significant.

RESULTS

In the government schools, decayed teeth were found significantly associated with poor socioeconomic status (p=0.001). In private schools, sound teeth were significantly noted in upper socioeconomic status and decayed teeth were significantly associated with middle socioeconomic status p-value 0.001 (Table 1). In the government schools, missing and sound of teeth were found significantly associated with poor socioeconomic status (p=0.004). In private schools, sound teeth were noted in upper socioeconomic status and decayed teeth were associated with middle socioeconomic status p-value 0.001 (Table 2).

Table 1. Effects of socioeconomic status on decayed teeth (n=339).

DECAYED	Socioeconomic status			Total	p-value
	Upper	Middle	Poor		
Government school					
Sound teeth	00	11(21.6%)	40(33.6%)	51(30.0%)	
Decayed teeth	00	40(78.4%)	79(66.4%)	119(70.0%)	0.001
Total	00	51(100.0%)	119(100.0%)	170(100.0%)	
Private school					
Sound teeth	43(47.3%)	13(16.7%)	00	56(33.1%)	
Decayed teeth	48(52.7%)	65(83.3%)	00	113(66.9%)	0.001
Total	91(100.0%)	78(100.0%)	00	169(100.0%)	

Table 2. Effects of socioeconomic status on missing teeth.

Missing	Socioeconomic status			Total	p-value
	Upper	Middle	Poor		
Government school					
Sound teeth	00	47(92.2%)	86(72.3%)	133(78.2%)	
Missing teeth	00	4(7.8%)	33(27.7%)	37(21.8%)	0.004
Total	00	51(100.0%)	119(100.0%)	170(100.0%)	
Private school					
Sound teeth	91(47.3%)	68(16.7%)	00	159(33.1%)	
Missing teeth	00	10(5.9%)	00	10(5.9%)	0.001
Total	91(100.0%)	78(100.0%)	00	169(100.0%)	

Table 3. Effects of socioeconomic status on decayed teeth.

Filled	Socioeconomic status			Total	p-value
	Upper	Middle	Poor		
Government school					
Sound teeth	00	44(86.3%)	107(89.9%)	151(88.8%)	
Filled teeth	00	7(13.7%)	12(10.1%)	19(11.2%)	0.596
Total	00	51(100.0%)	119(100.0%)	170(100.0%)	
Private school					
Sound teeth	76(83.5%)	66(84.6%)	00	142(84.0%)	
Filled teeth	15(16.5%)	12(15.4%)	00	27(16.0%)	1.000
Total	91(100.0%)	78(100.0%)	00	169(100.0%)	

Table 4. Dental caries according to type of school.

Dental carries	Type of school		Total	p-value
	Govt.	Private		
Decayed				0.560
sound teeth	51	56	107	
decayed teeth	119	113	232	
Total	170	169	339	
Missing teeth				0.001
Sound teeth	133	159	292	
Missing teeth	37	10	47	
Total	170	169	339	
Filled teeth				0.208
sound teeth	151	142	293	
filled teeth	19	27	46	
Total	170	169	339	

In the government schools, missing and sound teeth were found without significant association (p=0.596). In private schools, sound and filled teeth were found also without significant association with socioeconomic status p-value 1.000 (Table 3). A significant difference was found in the distribution of missing teeth (p=0.001). According to distribution of filled teeth, no significant difference was found (p=0.208) (Table 4).

DISCUSSION

According to WHO, dental caries has been ranked as number three among all chronic non communicable disease that requires worldwide attention for prevention and treatment.[14] In this study, overall 96.1% prevalence of dental caries was seen among both schools. Studies by Kumar et al and Joshi et al reported that there is higher prevalence of 77-80% dental caries in age group of 5-12 years.[15,16] Joyson et al and Prabhu et al from India reported a 61.2-67.2 % prevalence of dental caries.[17,18] These results were not in accordance to the results from the study as current study were conducted in different zones of schools, difference in sample size, methodology etc. Higher caries prevalence with advancing age could be due to the fact that there is susceptibility of newly erupted teeth to become decayed in existing poor Grewal et al reported that there was increased prevalence of dental caries till nine years and after which there was decrease in caries rate until age of 12 and 15 years.[19]

In this study, poor socioeconomic status had significantly impacted on dental caries as decayed, missing and filled of teeth were significantly associated with poor socioeconomic status. A study by Rehman et al showed that caries experience was inversely related to socioeconomic status and it is strongly associated with increased frequency of sugar consumption and increased frequency of snacking in between meals.[20]

Dental caries can be minimized by adopting good quality oral hygiene practices. Untreated teeth may seriously affect the child's life because of pain, discomfort, and it may lead to acute and chronic infections, altered sleeping and eating habits. It is suggested that development of healthy life styles and to build healthy environment in schools is needed.

CONCLUSION

There was high prevalence of dental caries among school going children of both schools but slightly more in Government school children.

Author Contributions:
Conception and Design: Maham Shah
Collection and Assembly of data: Shazia Parveen Rajpar
Analysis and interpretation of data: Maham Shah
Drafting of the article: Nida Zehra Talpur
Critical revision of the article for important intellectual content: Reshma Khatoon
Statistical Expertise: Reshma Khatoon
Final approval and guarantor of the article: Maham Shah, Shagufta Channa
Corresponding author email: Maham Shah:shahmaham18@yahoo.com
Conflict of Interest: None declared
Rec. Date: Nov 22, 2020 Revision Rec. Date: Mar 5, 2021 Accept Date: April 10, 2021

REFERENCES

1. Whittle J, Whittle K, House hold income in relation to dental health and dental behaviors, The use of super profiles. Community Dent Health 1998;15:150-54.
2. Axelsson P. Other caries-preventive factors. Axelsson P. An introduction to risk prediction and preventive dentistry. Germany-Quintessence books. 1999:77-103.
3. Vohra R, Vohra A, Jain A. The determinants of dental caries among school-going children of Jaipur, Rajasthan: A cross-sectional study. SRM J Res Dent Sci 2012;3:227-9.
4. Idris SH, Shujaat NG. Effectiveness of health promoting school and illicit drug abuse, mental health and healthy

eating Habits. Pak Oral Dent J 2009;29:327- 30.
5. Okoye LO, Ekwueme OC: Prevalence of Dental Caries in a Nigerian Rural Community:Preliminary Local Survey. Ann Med Health Sci Res 2011;1:187-96.
6. Dawkins E, Michimi A, Ellis-Griffith G, Peterson T, Carter D, English G. Dental caries among children visiting a mobile dental clinic in South Central Kentucky: a pooled cross-sectional study. BMC Oral Health 2013;13:1-9.
7. Moses J, Rangeeth BN, Gurunathan D: Prevalence of dental caries, socio-economic old schoolgoing children of chid ambaram status and treatment needs among 5 to 15 year old schoolgoing children Of Chidambaram. J Clin Dign Res 2011;5:146-51.
8. Shujaat NG, Idris SH. Prevalence Dental Caries among 6-10 old children in a suburbanarea of Lahore. Pak Oral Dent J 2009;29:317-20.
9. Sujlana A, Pannu PK. Family related factors associated with caries prevalence in the primary dentition of five-year-old children. J Indian Soc Pedod Prev dent 2015;33:83-5.
10. Chinzorig T, Aida J, Cooray U, Nyamdorj T, Mashbaljir S, Osaka K, et al. Inequalities in Caries Experience Among Mongolian Children. Int J Environ Res Public Health 2019;16:3892-5.
11. Setty JV, Srinivasan I. Knowledge and awareness of primary teeth and their importance among parents in Bengaluru City, India. Int J Clin Pediatr Dent 2016;9:56-9.
12. Piovesan C, Antunes JL, Mendes FM, Guedes RS, Ardenghi TM. Influence of children's oral health-related quality of life on school performance and school absenteeism. J Public Health Dent 2012;72:156-63.
13. Khan MA, Khan D, Qureshi ZU. Dental ailments among low and high socioeconomic status school children aged 11-12 years. Pak Oral Dental J 2011;31:14-7.
14. Marrs JA, Trumbley S, Malik G. Early childhood caries determining the risk factors and assessing the prevention strategies for nursing intervention. Pediatr Nurs 2011;37:9-15.
15. Kumar MP, Joseph T, Varma RB, Jayanthi M. Oral health status of 5 years and 12 years school going children in Chennai city- An epidemiological study. J India Soc Pedo Prev Dent 2005;23:17-22.
16. Joshi N, Rajesh R, Sunita M. Prevalence of dental caries among school children in Kulasekharam Village: a correlates prevalence survey. J India Soc Pedo Prev 2005;23:138-40.
17. Moses J, Rangeeth BN, Gurunathan D. Prevalence of dental caries, socio-economic old school going children of chidambaram status and treatment needs among 5 to 15 year old school going children of chidambaram. J Clin Diagn Res 2011;5:146-51.
18. Prabhu S. John J. Dental caries prevalence among 12 year old school children from urban and rural areas in Tamil Nadu, India- A comparative study. Eur J Dent 2013;13:326-30.
19. Grewal H, Verma M,Kumar A. Prevalence of dental caries and treatment needs amongst the school children of three educational zones of urban Delhi, India. Indian J Dent Res 2011;22:517-19.
20. Rehman MM, Mahmood N, Rehman BU. The of caries with oral hygiene status and extra-oral risk factors. J Ayub Med Coll Abbottabad 2008;20:103-8.