

Cross-sectional Study of Impact of Socioeconomic Factors on Prevalence of Caries among Urban Population in Andhra Pradesh

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Abstract

Background: Oral health is considered as an vital component of various dimensions of general health well being. The magnitude of caries varies from region to region with respect to geographical distribution. The reasons may be due factors like age, sex, dietary pattern, socioeconomic conditions. **Objectives:** To estimate the impact of Socioeconomic status and other social factors on the prevalence of carries. **Materials And Methods:** A hospital based cross-sectional study was carried out in Kurnool population between June 2016 and May 2017. Study participants were patients attending the outpatient department of Dental Hospital, Kurnool. A total of 400 patients attending the outpatient department were recruited for the study. **Results:** With respect to association between socioeconomic status and caries 84.2% of those belonging to lower SES had caries when compared to middle SES (10.8%) and higher SES (4.9%). This difference was found to be statistically significant. Prevalence of caries was high in those who were alcohol users (72.6%) when compared to non alcohol users (56.6%). 83.7% of tobacco users were having caries when compared to 33.8% among non tobacco users. **Conclusion:** From our study it can be concluded that the association between socioeconomic status and caries cannot be denied. Implementation of oral health programmes with multipronged strategy to address various socioeconomic factors in addition to effective counseling for those who have behaviours like tobacco and alcohol use can act as effective tool in bringing down the burden of caries problem among population of developing countries.

Keywords: Caries; Socioeconomic Status; Tobacco; Alcohol.

Introduction

Oral health is considered as an vital component of various dimensions of general health well being. The effects of dental caries on a person can vary from difficulty to speak, socialize and eating pattern too [1].

Disturbances in the equilibrium between multiple factors like diet, microbial flora and host over a considerable period of time will enhance the demineralization of the tooth's enamel thereby resulting in caries formation [2].

The magnitude of caries varies from region to region with respect to geographical distribution. The reasons may be due to factors like age, sex, dietary pattern, socioeconomic conditions, oral hygienic practices and overall health status of the person [3].

Although the factors affecting the caries process have been studied individually in different parts of the country [4-7] the influence of SES (Socio Economic Status) has not been analyzed indepth in Kurnool population.

Socioeconomic status which includes components like occupation, income, and education can serve as an indirect factor for other determinants of burden

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caries like lifestyle, environmental exposure and access to health care etc.

Hence this study was conducted to estimate the influence of socioeconomic status and other social habits on the prevalence of dental caries in Kurnool population.

Materials and Methods

A hospital based cross-sectional study was carried out in Kurnool District of Andhra Pradesh between June 2016 and May 2017. Approval from the institutional ethical committee was obtained for conducting the study.

Study participants were patients attending the outpatient department of G Pulla Reddy Dental College and Hospital, Kurnool. Informed consent was obtained from the patients after explaining about the purpose of the study and assurance of confidentiality with respect to the information collected.

Sample size was calculated based on the study done in Chennai population where the reported prevalence of caries was 84% [8]. Desired sample size after applying the formula $4pq/L^2$ was 305. However a total of 400 patients attending the outpatient department were enrolled for the study.

Data collection tool included details of information on sociodemographic details like education, income, occupation and the social habits like tobacco use and alcohol consumption, and the oral examination for the presence or absence of dental caries and also details about restoration.

With regard to oral cavity examination strict adherence to personnel protective measures was followed. The examination setting consisted of sterile mouth mirror and explorer under illumination

Those patients having definite cavitations of the tooth surface were considered for diagnosis of dental caries. The data was analyzed using Statistical Package for the Social Sciences version 20.

Results

A total 400 patients attending the outpatient department were participated in the study with the age group ranging from 16 to 62 years. 42.75% were in the middle age group (30-49yrs) followed by 24.5% belonged to young age group (20-29yrs). Among the study participants 72.3% (289) were males and 27.7% (111) were females. 12.7% of

the participants were illiterates and more than half of them were employed and two third of the study subjects belonged lower socioeconomic status (Table 1).

With respect to association between socioeconomic status and caries 84.2% of those belonging to lower SES had caries when compared to middle (10.8%) and higher SES (4.9%). This difference was found to be statistically significant.

Prevalence of caries was high in those who were alcohol users (72.6%) when compared to

Table 1: Sociodemographic distribution of Study participants

Variables	Males	Females	Total
Age group (in years)			
<20	42 (73.6)	13(26.4)	57 (14.25)
20-29	24(58.5)	17(41.5)	41(10.25)
30-39	37(58.7)	28(41.3)	63(15.75)
40-49	123(83.1)	25(16.9)	148(37)
50-59	36(67.9)	17(32.1)	53(13.25)
>60	27((71)	11(29)	38(9.5)
Occupation			
Working	192(85.7)	32(14.3)	224 (56)
Not working	97(55.1)	79(44.9)	176(44)
Educational status			
Illiterate	28(54.9)	23(45.1)	51(12.75)
Primary	37(54.4)	31(45.6)	68(17)
Middle	71(62.8)	42(37.2)	113(28.25)
Higher	96(92.3)	8(7.7)	104(26)
PU	37(88)	5(12)	42(10.5)
Degree	20(90.9)	2(9.1)	22(5.5)
Socioeconomic status (Modified BG Prasad)			
Class I	12 (63.2)	07(36.8)	19(4.75)
Class II	31(73.8)	11(26.2)	42(10.5)
ClassIII	64(84.2)	12(15.8)	76(19)
ClassIV	85(69.7)	37(30.3)	122(30.5)
ClassV	97(68.8)	44(31.2)	141(35.25)

Table 2: Association between caries and socioeconomic status

SES (Modified BG Prasad Classification)	Caries		Total
	Present	Absent	
Class I	3(15.7)	16(84.3)	19(4.75)
Class II	9(21.4)	33(78.6)	42(10.5)
ClassIII	27(35.5)	49(64.5)	76(19)
ClassIV	86(70.5)	36(29.5)	122(30.5)
ClassV	123(87.2)	18(22.8)	141(35.25)
TOTAL	248 (62)	152(38)	400(100)

$\chi^2 = 111$, $df = 4$ $P < 0.001$

Table 3: Association between caries and alcohol use

Alcohol use	Caries		Total
	Present	Absent	
Yes	98(72.6)	37(27.4)	135(33.75)
No	150(56.6)	115(43.4)	265(66.25)
TOTAL	248(62)	152(38)	400(100)

$X^2=9.7$, $df=4$ $P<0.002$

Table 4: Association between caries and tobacco use

Tobacco use	Caries		Total
	Present	Absent	
Yes	113(83.7)	31(16.3)	144(36)
No	135(33.8)	121(66.2)	256(64)
TOTAL	248(62)	152(38)	400(100)

$X^2=25.9$, $df=4$ $P=0.000$

non alcohol users wherein it was 56.6%. 83.7% of tobacco users were having caries when compared to 33.8% among non tobacco users. Association between prevalence of caries and factors like tobacco use and alcohol consumption was found to be statistically significant.

Discussion

A good oral health care is at most aspect of overall healthy wellbeing of population in any society. Socio demographic factors will have an impact on the health status of the people.

In this study we noticed that higher prevalence of caries in those who belonged to lower socioeconomic status. Similar findings were reported by Baskaran Veni Ashok et al. (2017) [8] in a study done among Chennai population where it was 91% among lower SES. This may due to lack of access to oral health care or due to illiteracy in knowing the importance of oral health.

In our study there was significant association between tobacco use and the prevalence of caries was reported which was similar to the study by Sajith Vellappally (2008) wherein it was 44.6% [9] among tobacco users. This may due to the presence of fermentable sugar in tobacco products, which have the ability to stimulate cariogenic bacterial growth. And they were more reluctant to attend the dental care and less prone to use of dental aids that can be the reason for bad oral hygiene which over a period of time will result in caries.

Our study showed significant association between alcohol consumption and caries. Similar findings were reported by the done by Kakarla Priyanka et al. (2017) among adult population in Andhra Pradesh [10] and studies by studies conducted by Harris C et al. [11], Dasanyaka AP et al. [12], Hornecker E et al. [13], and Sullivan EM [14]. This may be due to experience dry mouth at night and neglecting both personal health care, and consumption of refined carbohydrates [12].

Conclusion

From our study it can be concluded that the association between socioeconomic status and caries cannot be denied. Implementation of oral health programmes with multipronged strategy to address various socioeconomic factors in addition to effective counseling for those who have behaviours like tobacco and alcohol use can act as effective tool in bringing down the burden of caries problem among population of developing countries.

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