Correlation of Socioeconomic Status and Dental Caries

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ABSTRACT

Aim: To study the correlation between socioeconomic status and Dental caries.

Background: Dental caries is a global public health problem and influences the overall health of children. The risk factors for caries include biological, socio-behavioural and economic factors. Indicators of socioeconomic status are found to be associated with risk factors for dental caries.

Materials and methods: The data of patients visiting OP such as Age, Gender, Caries status and socioeconomic status was collected from DIAS. The data was tabulated in Excel and imported to SPSS version 23.0 for statistical analysis. The statistical tests used were Chi square and correlation analysis. p value < 0.05 was considered statistically significant.

Results: Among the low income group, 21.9% had no initial active lesions, 6.63% had initial active lesions only and 5.48% had moderate or extensive lesions. Among the middle income group, 8.93% had no initial active lesions, 39.19% had initial active lesions only and 10.37% had moderate or extensive lesions. Among the high income group, 2.88% had no initial active lesions, 3.46% had initial active lesions only and 1.15% had moderate or extensive lesions. There was no significant association between socioeconomic status and the caries status of the patients

Conclusion: Within the limits of the study, we conclude that there was no significant association between socioeconomic status and the caries status of the patients.

Key words: Caries, Socioeconomic status, Income, Health, Innovative technology

INTRODUCTION

Dental caries, periodontal diseases and other diseases related to the oral cavity can affect general health and the quality of life The increasing prevalence of dental caries increases the cost of oral health care and causes a financial burden to families and societies, which are of concern. In recent years, there has been a decline in the prevalence of dental caries in both developed and developing countries. However, the prevalence of dental caries remains high among populations of low socioeconomic background [1]. Indicators of socioeconomic status are found to be associated with risk factors for dental caries. Individuals from low socioeconomic background also experience disadvantages with regard to health

in general [1,2]. The association between the different socioeconomic groups and the risk of various systemic health conditions and in access to healthcare services makes social stratification a determinant of these conditions. Advancements in social epidemiology over the past three decades have widened across countries. This poses a challenge to researchers in understanding the social disparities in health thereby improving the health of the overall population [1-3]. However, there is a need to generate improved theoretical frameworks and the necessary data to test and refine them. In recent years, it was also reinforced that socioeconomic status is not only a important predictor of disease occurrence, but the associations reflect causal relations too [4]. Patients from low socioeconomic background with low monthly income and educational level are associated with less access to oral health care services and hygiene products [5,6]. Their knowledge regarding oral health and oral hygiene was also poor, which thereby contributes to a greater frequency and severity of dental caries among people belonging to low socioeconomic status [7,8].

There is also an association between the socioeconomic status of an individual and their oral health. Distribution

of carious lesions is also considered to be a good indicator for socioeconomic development in the particular area. Some of the previous studies have shown that people belonging to low socioeconomic status had poorer oral health status when compared to those belonging to high socioeconomic status. This shows that oral health worsens progressively from higher socioeconomic status to lower socioeconomic status. The socioeconomic status of an individual includes their educational background, monthly income and residential area. It is considered as one of the strongest determinants of dental caries in children. Therefore, previous literature suggests that socioeconomic status of the individual is crucial oral health determinants and inequality in socioeconomic status is a major challenge for public oral health.

Our team has extensive knowledge and research experience that has translated into high quality publications [9-28]. The aim of our study is to find the correlation between socioeconomic status and dental caries status among patients.

MATERIALS AND METHOD

This is a Retrospective cross sectional study conducted in a University setting. The study setting had certain advantages like flexibility in data collection and less expenditure. However it had few disadvantages as it is a unicentric study and has geographical limitations. The ethical approval for the current study was obtained from the Institutional Review Board. The data of patients with dental caries were retrieved from the case sheets of patients. The required data from August 2020 to March 2021 were collected and reviewed. The sample size was 347. The inclusion criteria for the study were patients with Dental caries and their socioeconomic status. Exclusion criteria were the incomplete data and were excluded from the study.

The necessary data such as Age, Gender, Caries status and their socioeconomic status were collected and tabulated in Excel. The data was cross verified by the analyzer. The tabulated data from Excel was imported to SPSS version 23.0 for statistical analysis. The data was represented by the means of bar graphs and the statistical tests used were Chi square and correlation analysis. The correlation between Dental caries and socioeconomic status were analysed. Statistical significance was set at $p<0.05$.

RESULTS

Among the total patients 53.31 % were males and 46.69% were females (Figure 1). 10.37% belonged to the 10-20 years age group, 36.31% belonged to the 20-30 years age group, 23.34% belonged to the 30-40 years age group and 29.97% belonged to the above 40 years age group (Figure 2). 33.72% of patients had no initial active lesions, 49.28% had initial active lesions only and 17% of them had moderate or extensive lesions (Figure 3). 34.01% belonged to the low income group, 58.5% belonged to the middle income group and 7.49% belonged to the high income group (Figure 4). Majority of the patients had initial active lesions only. Active caries were found predominantly in the age group of 20-30 years. Majority of the patients belong to the middle income group. Among the low income group, 21.9% had
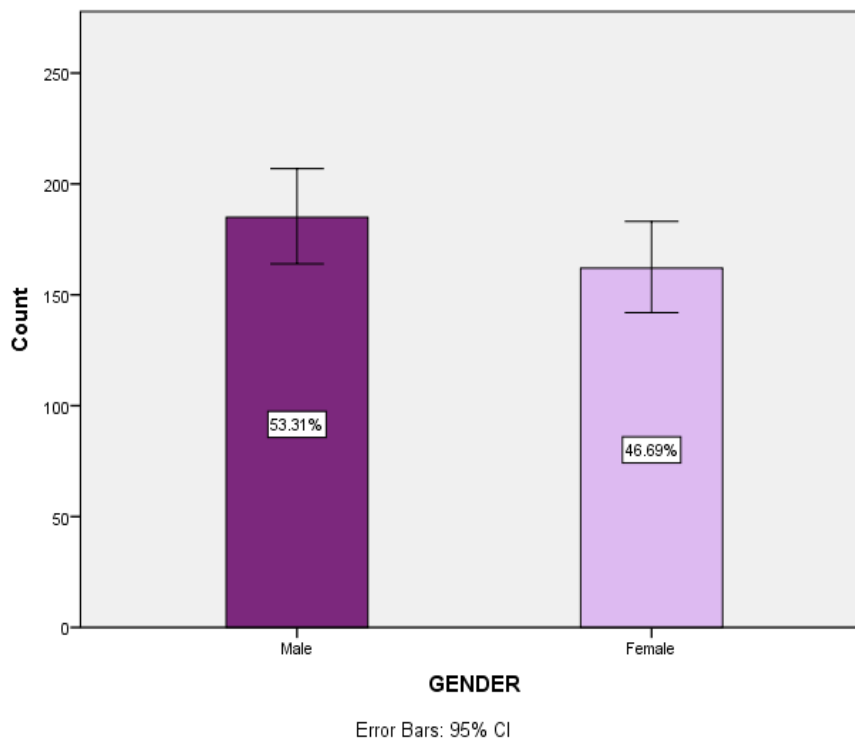

Figure 1: Bar graph representing the gender of the patients taken for the study. X axis represents the gender and Y axis represents the percentage of patients 53.31% of patients were males and 46.69% of patients were females.

no initial active lesions, 6.63% had initial active lesions only and 5.48% had moderate or extensive lesions. Among the middle income group, 8.93% had no initial active lesions, 39.19% had initial active lesions only and 10.37% had moderate or extensive lesions. Among the high income group, 2.88% had no initial active lesions, 3.46% had initial active lesions only and 1.15% had moderate or extensive lesions. There was no significant association between socioeconomic status and the caries status of the patients ($p > 0.05$) (Figure 5).
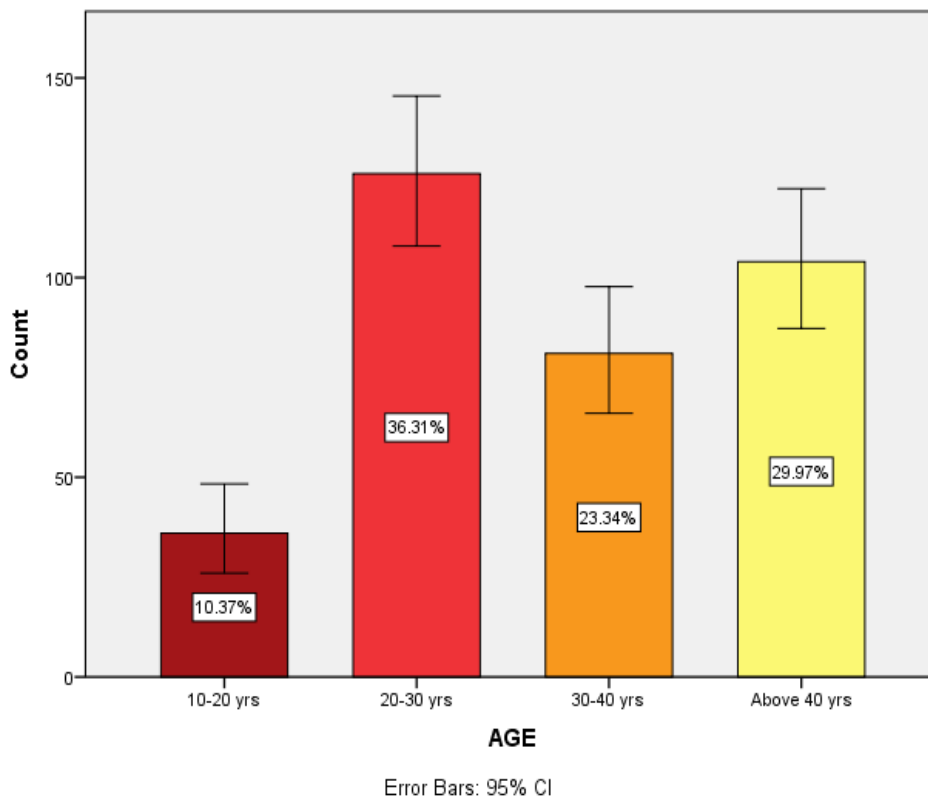

Error Bars: 95% CI

Figure 2: Bar graph representing the age group of the patients taken for the study. X axis represents the age group and Y axis represents the percentage of patients. 10.37% belonged to the 10-20 years age group, 36.31% belonged to the 20-30 years age group, 23.34% belonged to the 30-40 years age group and 29.97% belonged to the above 40 years age group.
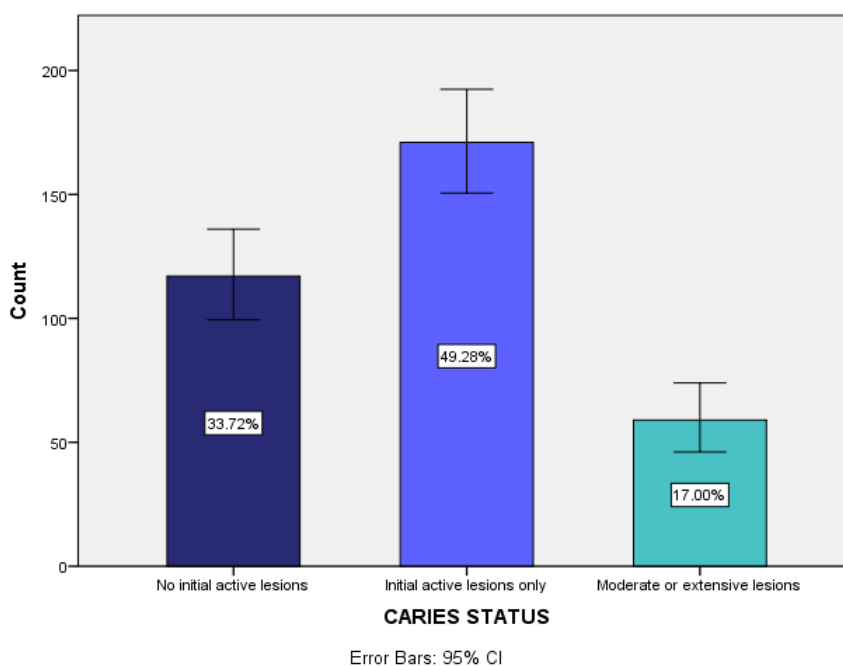

Error Bars: 95% CI

Figure 3: Bar graph representing the caries status of the patients taken for the study. X axis represents the caries status of the patients and Y axis represents the percentage of patients. 33.72% of patients had no initial active lesions, 49.28% of patients had initial active lesions only and 17% of patients had moderate or extensive lesions.
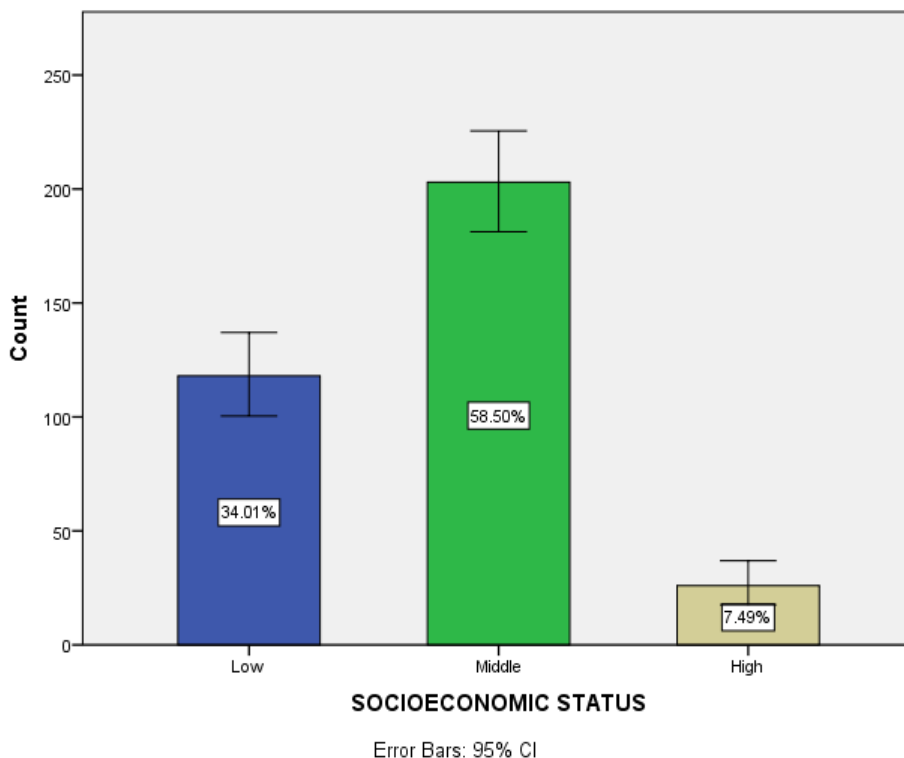
Figure 4: Bar graph representing the socioeconomic status of the patients taken for the study. X axis represents socioeconomic status and Y axis represents the percentage of patients. 34.01% belonged to the low income group, 58.5% belonged to the middle income group and 7.49% belonged to the high income group.
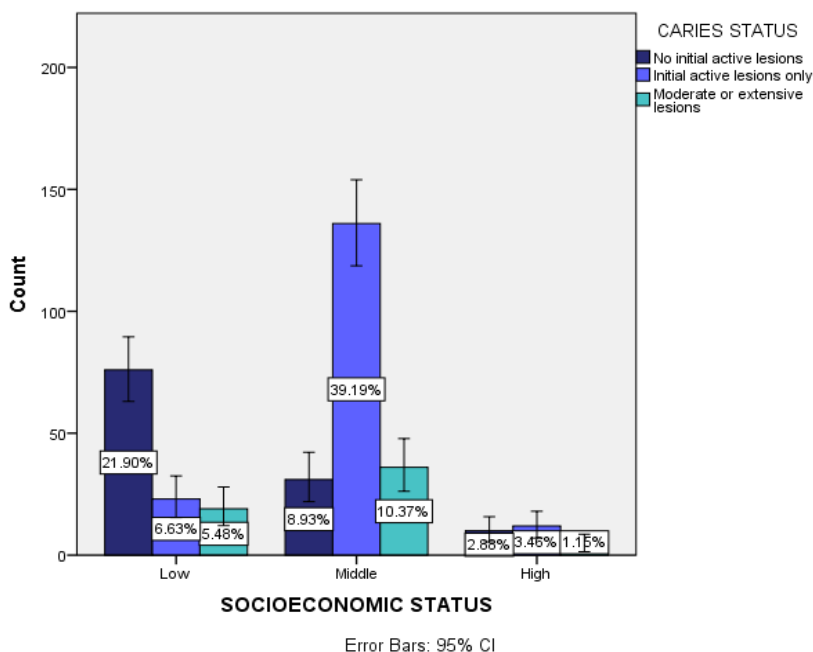

Figure 5: Bar graph representing the association between caries status and socioeconomic status of the patients taken for the study. Among the low income group, 21.9% had no initial active lesions, 6.63% had initial active lesions only and 5.48% had moderate or extensive lesions. Among the middle income group, 8.93% had no initial active lesions, 39.19% had initial active lesions only and 10.37% had moderate or extensive lesions. Among the high income group, 2.88% had no initial active lesions, 3.46% had initial active lesions only and 1.15% had moderate or extensive lesions. There was no significant association between socioeconomic status and the caries status of the patients (p>0.05).

DISCUSSION

The elderly and the middle age population's oral health status seems to decline because of social and economic inequalities. The severity of dental caries was significantly associated with the socioeconomic status

markers of educational level, household income and type of household in this older population [29]. Our results showed that patients with a higher educational level and family income, and those from non-agricultural families, had less prevalence of Dental caries. Socioeconomic status is also considered to be a determinant in caries risk assessment. People belonging to the low socioeconomic group are more likely to present with pain, damaged teeth, unreplaced extracted teeth and other periodontal diseases [30].

Educational level of the patient affects the type of job and income, and thus access to preventive measures such as tooth cleaning habits, health service use and a low-carbohydrate diet. Those with a high school background or above were less likely to have Decayed and Missing teeth [31]. Patients with any educational level higher than illiterate were more likely to seek professional help and to make better use of medical services and information. People with a lower educational level were more likely to have tooth extractions without receiving prosthesis. These findings indicate the need for programmes targeted at people with low educational levels to encourage them to receive appropriate treatment [32,33].

Educational qualification and the household income of people were significantly associated with the severity of Dental caries and other oral health-related issues and awareness. Monthly income of the individual mainly affects the number of filled teeth. Educational status, household income and socioeconomic status interact with each other in influencing dental caries [34]. The preventive strategies for Dental caries should focus on educating people about the consequences of oral diseases and on promoting oral health education, which particularly targets the population with low educational standards, household income and those from agricultural families [35]. Our study also shows that the government should provide economic assistance and medical insurance funds to cover oral diseases for populations with patients of low socioeconomic status. Furthermore, the research with a follow-up design is needed to confirm the causal relationship between socioeconomic status and dental caries and evaluate the effect of targeted intervention.

LIMITATIONS OF THE STUDY

This study is limited by a few factors. The sample size can be expanded and it is also a short duration study. Some of the patients may be left undiagnosed. The study also has geographical limitations since it is a hospital setting. However, various difficulties were faced when studying the dental caries status, which includes doctors or clinicians with variations in levels of knowledge, skill and experience, inconsistencies in judgments and research bias.

FUTURE SCOPE OF THE STUDY

A large sample size of patients from different

ethnicities would give better results for the study. Other epidemiological studies covering extended time periods would help in collecting important information and validate the findings further. The significance of correlation between socioeconomic status and dental caries during the clinical examination of the patient, especially for children and adolescents should be considered. Further studies on socioeconomic status and dental caries should have adequate sample size for an accurate determination of the association between socioeconomic status and dental caries status of the patients.

CONCLUSION

Within the limits of this study, we conclude that there was no significant association between the socioeconomic status and the caries status of the patients. Socioeconomic status plays a crucial role in explaining dental caries outcome. High educational level, high household income were protective against Dental caries. Prevention is the most cost-effective approach for reducing the prevalence of dental caries. Further research is required to confirm the correlation between socioeconomic status and dental caries and to evaluate the effect of targeted intervention.

CONFLICT OF INTEREST

None declared.

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