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INFLUENCE OF SOCIO-ECONOMIC FACTORS ON UNMET DENTAL TREATMENT NEEDS AMONG ADULT POPULATION WORLDWIDE: A STRUCTURED REVIEW

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ABSTRACT

The 2015 Global Burden of Disease Study estimated that oral conditions affect 3.5 billion people worldwide with a higher burden among adults and those who are socially and economically disadvantaged. Among all factors, economical barriers play a major role in the unmet dental treatment needs among people from low socioeconomic backgrounds. Studies

of inequalities in the use of oral health services by those in need is limited. Therefore, the aim of this structured review is to analyze the existing literature on the influence of socioeconomic status on unmet dental treatment needs in an adult population, worldwide. The review was conducted by searching the database of Pubmed, Google scholar, Science Direct, Cochrane, LILACS and based on inclusion criteria, four relevant studies were found. The articles that met the inclusion criteria were classified regarding methodological quality and risk of bias in categories of high, moderate, or low. The Newcastle Ottawa Scale was used for quality assessment risk of bias. Among these, all 4 studies had low risk of bias and moderate methodological quality. Using this structured review, we can see less number of studies have been conducted correlating socioeconomic status and unmet dental treatment needs so it can be implied that more studies on such ground should be done in various parts of India as well as the world to understand the severity of the health disparities.

INTRODUCTION

In the year 1948, the World Health Organization defined Health as “a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity” but in recent years, it has been amplified to include the ability to lead a “socially and economically productive life”. Therefore, health is a multifactorial concept and among the various determinants of health, socioeconomic conditions have long been known to influence human health¹. As per the National Oral Health Survey and fluoride mapping report (2002-2003), prevalence of dental caries in 15-year old individuals was 63.1% and 80.2% in 35–44-year age groups. Prevalence of periodontal disease was 67.7% in 15-year olds and 89.6% in 35–44 year olds. The mean decayed, missing, filled teeth (DMFT) score is 2.4 in 15-year olds and as high as 5.4 among 35–44 year olds. India stands first in oral cancer prevalence (19 cases per 100,000 population). Rural population and low income socioeconomic families exhibited higher prevalence of oral diseases². It has been demonstrated that the effects of social inequalities on oral health are observable regardless of the method of social classification and the measure of oral health or disease³. Previous studies conducted among adults have indicated that individuals from lower socioeconomic positions tend to have a higher degree of clustering of multiple risk factors for poor dental hygiene, as compared with those in higher socioeconomic positions⁴. Dental health care may be divided into two general types of attention: curative or rehabilitative and preventive services and different factors determine their behavior. The utilization of the curative services is mainly by people from low socioeconomic status. Although dental care is a part of primary health care in India, dental care services are available in very few states at the primary healthcare level^{5,6}. Patients are not covered under any type of insurance, and generally pay out of their pockets to get treatment from both public and private dentists. Utilization is the actual attendance by the members of the public at oral health care facilities to receive care. In regions where adequate dental manpower is available yet the utilization of oral health care services is low thereby widening the oral health differences across the social economic classes⁷. Dental disease is a serious public health problem with universal distribution and affecting all age groups⁸. However, despite this universal distribution, only a few seek dental care. Thus a wide gap is created between the actual dental needs of the population and the demand for dental care which is quite understandable. In India, people

encounter various obstacles in utilization of dental services^{9,10}. These barriers can be removed by motivating people and making them aware about the oral health problems that remove anxiety and fear so that they develop a positive attitude towards dental treatment. It is suggested that mobile dental clinics, dental camps, and dental outreach programs could be solutions to spread awareness and disseminate treatment¹¹. There is a need for reasonably priced, rural oral health centers to make dental care available to rural strata of the population. Unmet treatment needs of the people belonging to lower class should be addressed during conduction of dental programs^{12,13}. Dental care utilization has been associated with perceived need for dental care in a number of cross-sectional and longitudinal studies. Additionally, it has been suggested that the perceived need for dental treatments plays a key role in whether people in general will seek dental care services¹⁴. In particular, unmet dental care needs may be the main factor contributing to poor oral health since oral health problems such as dental caries or periodontal diseases will not get better, if they are not treated. Upon searching the databases, very few studies had come up in which researchers have evaluated the effect of socioeconomic status on unmet dental treatment needs among the middle aged rural population. Economy plays a great role in determining the health of a population¹⁵⁻¹⁷ of a country therefore, more studies must be conducted comparing socioeconomic status and unmet dental treatment needs so old and new models of health can be reintroduced and introduced to address this issue. Previously, we have successfully completed various studies in the field of dental research¹⁸⁻³⁴ for the betterment of our community. Therefore, the aim of this systematic review is to analyze the existing literature on the influence of socioeconomic status on unmet dental treatment needs in an adult population, worldwide.

MATERIALS AND METHOD

2.1 Search *strategy*

Electronic search was carried out in the Search engines- PubMed, Science Direct, Cochrane, LILACS and Google Scholar. Initially to obtain the search expression, keywords (with synonyms) taken from the Medical Subject Headings were used.

2.2 Selection *criteria*:

Inclusion criteria outline articles according to the population, comparisons, outcomes, and study design as follow:

Population (P): Middle aged population (30 - 55 years old).

Comparison(C): Low socioeconomic status.

Outcome measures(O): Unmet dental treatment needs.

Study design (S): (i) Descriptive or observational studies evaluating the influence of socioeconomic status on unmet dental needs in rural adult population. (ii) Descriptive studies evaluating influence of socioeconomic status on unmet dental treatment needs below 55 years of age.

Exclusion criteria were: (i) Case reports, review articles, book chapters, and theses. (ii) Literature that cannot be translated by the reviewer were not included in this review. (iii) Studies conducted in urban populations/peri urban population.

2.3 *Data extraction*

The data-extraction was carried out independently by two reviewers by reading the complete articles and considering the following categories: author and journal, study design, sample size, participants and group, methodology, parameters, statistical analysis, results.

2.4 Evaluation *criteria of the quality assessment and risk of bias*

A version of the Newcastle-Ottawa Scale ³⁵, modified for cross-sectional studies was used for quality assessment. The methodological quality of a study was measured by the number of points the study received. The Newcastle-Ottawa Scale uses a star rating system by which stars are allocated across three categories, including five stars for participant selection, two stars for comparability. The risk of bias for each study was independently assessed by the review authors and conflicts concerning risk of bias were sorted by discussion.

RESULTS AND DISCUSSION

The search on the mentioned databases yielded a total of 108 articles. Based on preset inclusion and exclusion criteria, the titles of the studies identified from the search were assessed independently by two review authors (Manali Deb Barma, I.Meignana Arumugham) Conflicts concerning inclusion of the studies were resolved by discussion. Thirty titles were identified from the search after excluding by reading titles and removing duplicates. Abstracts of selected articles were reviewed independently. Twenty articles were excluded after reading the abstract. After reading the full text, one article was excluded. Finally four articles were selected based on eligibility criteria (Figure 1).

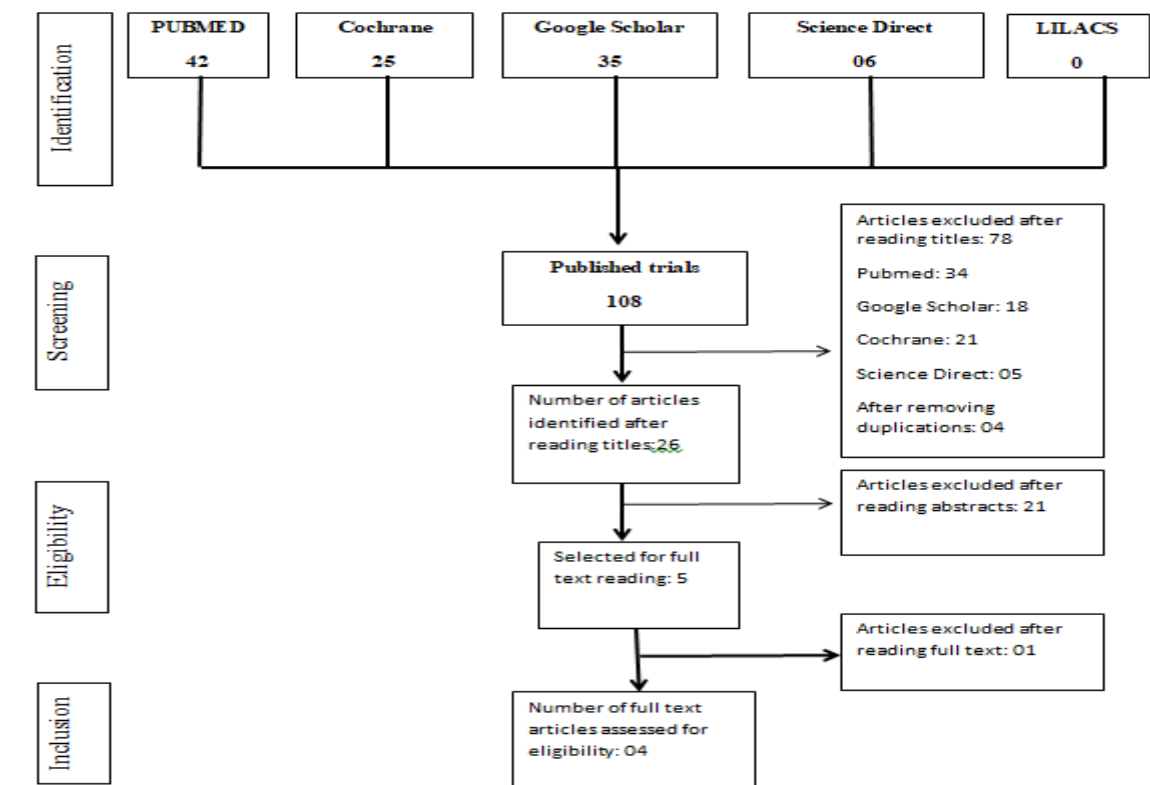


Figure 1: Flowchart of the search process and selection of research studies by using the items recommended for systematic reviews (PRISMA)

Data extraction (qualitative synthesis) from the articles selected is described in Table 1. All the four articles belonged to different parts of the world. . Since the aim of this review was to assess the influence of socioeconomic status on unmet dental treatment needs in the middle aged rural population, studies where the age group was less than 30 years and more than 55 years were excluded from the review, studies where only the urban population was assessed were also excluded. Among the four studies, only one study used a validated tool to measure the disparities, one study had a non validated but well described tool, and in the rest two studies the measurement tools were neither validated nor described properly. It was not possible to statistically analyse all the four studies since homogeneity couldn't be achieved. One study from India was found to be relevant to this review, where barriers to dental care utilization³⁶ was assessed in a town in Shimla among 309 participants. The findings of the study concluded that the younger population were more willing to visit a dentist for their treatment needs, compared to the older generation owing to the reason that they were economically slightly well off and had more knowledge regarding the importance of oral health. In the study done by Piotrowska D et al (2018)³⁷, here was a significant relation ($p < 0.001$) between the income level and the use and non-use of services, despite such a need both in cities and villages which was confirmed by the multivariate logistic regression analysis. Somkotra T³⁸ concluded in his study that a poor inequality in self reported worse oral health status, as dental treatment needs were observed in people of low socioeconomic status. In M Lundgren et al's³⁹ study, again it was concluded that with higher rates of urbanization there was an increase in utilization of dental services. Also it was observed that edentulous patients had low utilization of dental services. It has been proven that a significant association exists between the individual's oral health and awareness and socioeconomic status. Individuals with lower socioeconomic groups have less awareness and access to oral health care. Individuals from lower socioeconomic groups unable to use the oral hygiene aids like mouthwash, interproximal brushes, and various medicated toothpaste because of their high cost. Comparatively individuals from higher economic status have access to all the above-mentioned oral health aids and also the awareness of its role in improving periodontal health. The quality assessment of the included studies was done according to the Newcastle-Ottawa scale (Table 2), which has been used in other reviews as well⁴⁰. Three out of two studies received a score of 8, and one study received a score of 6 stars. According to the Newcastle Ottawa scale, if fewer than 6 stars are present then a high risk of bias is considered but the articles in this structured review had less risk of bias. Data extraction (qualitative synthesis) from the articles selected is described in Table 1. All the four articles belonged to different parts of the world. . Since the aim of this review was to assess the influence of socioeconomic status on unmet dental treatment needs in the middle aged rural population, studies where the age group was less than 30 years and more than 55 years were excluded from the review, studies where only the urban population was assessed were also excluded. Among the four studies, only one study used a validated tool to measure the disparities, one study had a non

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Therefore, further studies should be conducted to assess the relation between socioeconomic status and unmet dental treatment needs to come up with solutions on how to surpass this problem and leading to the goal of Health for All.

Table 1: Summary of main data extracted from the articles

Article	Author: /Year	Population	Methods of evaluation	Statistics used	Result	Limitation	Future scope

Socioeconomic inequalities in use of dental care in urban and rural areas of Poland.	Piotrowska DE et al;2018	N - 12,532 Urban- 6411 Rural - 6121	PAPI (Paper and Pen Personal Interview)	Chi square, Multivariate, univariate logistic regression	Urban dwellers: 1.34 times greater odds of using dental services.	SES not applicable worldwide.	Validated questionnaire can be used
Socioeconomic inequality in self-reported oral health status: the experience of Thailand after implementation of the universal coverage policy	Somkotra et al;2011	N- 32,748	Health & Welfare Survey Self Questionnaire.	Descriptive, Concentration Index	CI- - 0.208; Worse oral health status in lower SES group.	Age range used was too varied and vast.	Specific age group based population to be concentrated on.
Barriers to utilization of dental services in Shimla, India.	S Fotedar et al;2013	N- 319	Self administered questionnaire.	Chi square, Multivariate analysis	Oral health status worse among low SES (OR:1.95, CI: 1.71-2.22)	Limited sample size. Non validated questionnaire	Study can be extended to other panchayats and towns for generalizability.

Utilization of dental services in relation to socioeconomic and health factors in the middle aged and elderly Swedish population.	M Lundgren et al; 1998	N-9301	Validated Self administered questionnaire	Descriptive, Logistic regression.	Relative risk for not visiting dentists higher in people from low SES.	Results of subjective questions not explained.	Recent data should be analysed as SES factors and living conditions have considerably changed.
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Table 2: Risk of bias Quality Assessment based on Newcastle Ottawa Scale

Author; Year	Representative of sample	Sample size	Ascertainment of exposure	Non respondents	Comparability	Assessment of outcome	Statistical test	Summary Score
Piotrowska DE et al; 2018	**	*	*	*	*	*	*	8
Somkotra T et al; 2011	**	*	*	*	*	*	*	8
S Fotedar et al; 2013	*	*	*	NR	*	*	*	6

Ostenberg T et al; 1998	*	*	**	NR	*	**	*	8
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CONCLUSION

Income inequality has been seen in perpetuating health disparities through its effects on **the** provision of healthcare. Inaccessibility to dental care is a major problem when it comes to people from low socioeconomic status. Using this structured review, we can see less number of studies have been conducted correlating socioeconomic status and unmet dental treatment needs so it can be implied that more studies on such ground should be done in various parts of India as well as the world to understand the severity of the health disparities. This poses special challenges not only for the healthcare system, but also for informal healthcare outside the professional health system, as well as for the social security systems and the welfare state.

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CONFLICT OF INTEREST

There is no conflict of interest.

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