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ARTICLE REVIEW

Socioeconomic factors related to caries occurrence in children: systematic review of the literature

Factores socioeconómicos relacionados a la aparición de caries en niños: revisión sistemática de la literatura

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ABSTRACT

Introduction: social determinants lead to health inequities that influence the appearance of diseases such as dental caries, a disease of high prevalence and considered to be of a chronic-infectious nature. Dental caries in children is a health problem that involves high health care costs for dental rehabilitation.
Objectives: to determine the influence of socioeconomic factors on the appearance of caries in children.
Methods: a review of the literature was carried out by means of a search for information in the SciELO, Scopus and PubMed/MedLine databases. The PRIMSA guide was used to prepare the report. Fifteen articles were selected for the development of the present study.
Results: 15 articles were identified that met the screening process and the inclusion and exclusion criteria. Articles with cross-sectional design predominated (11); China was the most studied setting (n=7). The most studied age group was children five years of age or younger. Only three studies found no relationship between socioeconomic factors and the presence of caries.
Conclusion: socioeconomic factors have a direct influence on the appearance of caries in children. Low income, low schooling, unemployment and low social class were associated with the presence of caries in children. In addition, low family responsibility and low access to health services were risk factors for the development of caries.

Keywords: Dental Caries; Socioeconomic Factors; Child; Preventive Dentistry; Health Expenditures.

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RESUMEN

Introducción: los determinantes sociales conducen a las inequidades sanitarias lo cual influyen en la aparición de enfermedades tales como la caries dental, enfermedad de alta prevalencia y considerada de carácter crónico-infeccioso. La caries dental en la población infantil es un problema de salud que compromete gastos sanitarios elevados para la rehabilitación dental.
Objetivos: determinar la influencia de los factores socioeconómicos con la aparición de caries en niños.
Métodos: se realizó una revisión bibliográfica mediante una búsqueda de información en las bases de dato SciELO, Scopus y PubMed/MedLine. Para la elaboración del informe se empleó la guía PRIMSA. Se seleccionaron 15 artículos para el desarrollo de la presente.
Resultados: se identificaron 15 artículos que cumplieron con el proceso de cribado, y los criterios de inclusión y exclusión. Predominaron los artículos con diseño transversal (11); China fue el entorno más estudiado (n=7). El grupo etario más estudiado fue el de niños con cinco años de edad o menos. Solo tres estudios no encontraron relación entre los factores socioeconómicos y la presencia de caries.
Conclusión: los factores socioeconómicos influyen de manera directa en la aparición de caries en niños. Los ingresos económicos bajos, la baja escolaridad, el desempleo y ser de la clase social baja de asociaron a la presencia de caries en los hijos. Además, la responsabilidad familiar baja, y el bajo acceso a los Servicios de Salud constituyeron factores de riesgo para el desarrollo de caries.

Palabras clave: Caries Dental; Factores Socioeconómicos; Niño; Odontología Preventiva; Gastos En Salud.

INTRODUCTION

Social determinants lead to health inequities that influence the emergence of diseases such as dental caries, a highly prevalent and considered a chronic-infectious condition. Dental caries in the pediatric population is a health problem that entails high healthcare expenses for dental rehabilitation.

Various studies have shown the existence of a relationship between socioeconomic factors and the occurrence of dental caries. Factors such as social class,[1] family educational level, head of household occupation, person in charge of family maintenance, family burden,[2] economic income, [3] and access to health services have,[4] been described in the literature.

Lack of awareness of oral health prevention measures leads to the persistence of diseases with high prevalence, highlighting social and economic inequality. In low- and middle-income countries, this is exacerbated due to low investment in prevention, resulting in the impact on the most vulnerable social groups.[5]

The cost of dental treatments in industrialized countries accounts for 5 to 10 percent of healthcare expenditure, resources that are challenging to provide for developing countries. This investment can be avoided by applying preventive models and health promotion.[6,7]

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The prevalence of oral diseases continues to increase primarily due to insufficient exposure to fluoride, the availability and affordability of sugary foods, and insufficient access to oral health care services in the community.[8]

Current dental models, focused on high-tech treatment, with minimal efforts in prevention, limit the access of people with lower purchasing power to dental services.[5]

Therefore, the development of educational strategies that promote the level of knowledge of the general population, but mainly directed at parents, regarding good oral health habits,[9] is of great importance. This research was conducted with the aim of determining the influence of socioeconomic factors on the occurrence of caries in children.

METHODS

A systematic literature review was conducted at the Autonomous Regional University de Los Andes in September 2022, regarding the influence of socioeconomic factors on the occurrence of caries in children. The study structure parameters were based on the PRISMA statement.

A search formula was used to obtain records using the terms "socioeconomic factors," "dental caries," and "children." The SciELO, Scopus, and PubMed/MedLine databases were explored. The search was filtered for the period 2017–2022 and the languages Spanish, English, and Portuguese.

The initial selection was based on the title and abstract of the articles. The inclusion of relevant articles was based on study parameters (caries in children aged zero to 12 years and its relationship with socioeconomic factors), the main variable (socioeconomic factors), and the dependent variable (caries) (fig. 1).

For data synthesis, the following parameters were selected: author, year, study location, study design, population age, number of participants (N), socioeconomic factors, caries, and other relevant data for this review.

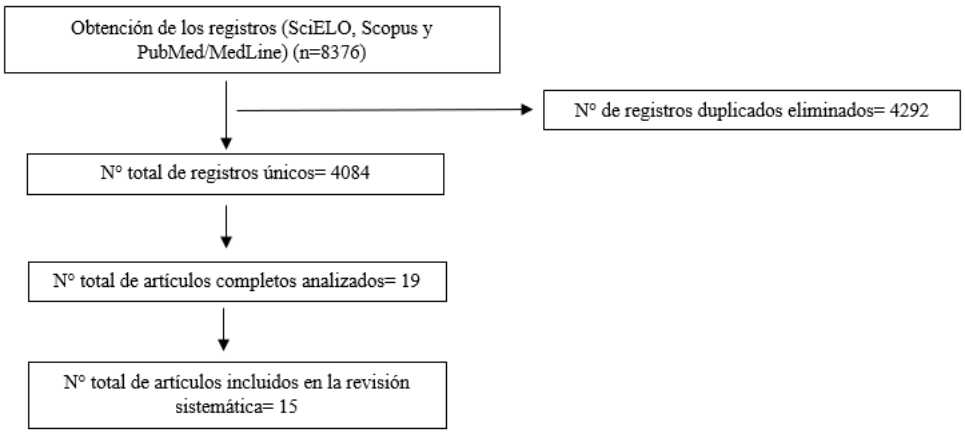

Fig. 1 Flow chart for the selection of works to be included in the study.

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RESULTS

The 15 reviewed articles met the inclusion criteria, as well as time and language filters. Cross-sectional studies predominated (n=11). The studies were conducted in Peru,[2,9] Mexico,[1,4] Colombia,[10] Chile, [11] Tanzania, [12] China,[3,13,14,15,16,17,18] and the United States.[19] The most studied population was children aged 5 years or younger (n=11). Table 1 summarizes the main results.

Table 1. Characteristics of the analyzed studies.

Author	Country	Study Location	Study Design	Age	N	Socioeconomic Factors	Relationship with Caries Occurrence
Hernández et al.[1]	México	Nuevo León, México	Correlational, Analytical Study	6 years	259	High social class (p>0.05) Middle social class (p>0.05) Low social class (p<0.05)	Low social class was related to the presence of caries
Aquino et al.[2]	Perú	Province of Huancayo, Junín, Peru	Observational, Cross-Sectional, Descriptive Study	12 years	604	Illiterate parents (p<0.001) Occupation (Independent Low family responsibility (p<0.001)	Significant relationship with education level, occupation, and family responsibility
Liu et al.[3]	China	Xiangyun, China	Cross-Sectional Study	3 to 5 years	1280	Intermediate or lower education level (p<0.05) Low economic income (p<0.05)	Significant relationship with parents' education level and economic income
Corchuelo Ojeda et al.[4]	México	Valle del Cauca, México	Cross-Sectional Study	2 to 5 years	982	Health access: Social security, contributory regime (p<0.01)	Significant relationship, private health access as a protective factor
Pérez et al.[9]	Perú	Ventanilla District, Peru	Cross-Sectional, Observational Study	3 to 5 years	79	Parents' education level (p<0.05)	Significant relationship with education level
Diaz et al.[10]	Colombia	Cartagena, Colombia	Descriptive Cross-Sectional Study	2 to 5 years	630	Parents' education level (p>0.05) Economic income (p>0.05) Number of siblings (p>0.05)	No significant relationship with parents' education level, economic income, and number of siblings
Gonzáles et al.[11]	Chile	Southern Chile	Retrospective Study	Under 6 years	44	Middle-high social stratum (p>0.05) Lower-middle social stratum (p>0.05) Worker stratum (p>0.05)	No significant relationship between social classes
Ndekero et al. [12]	Tanzania	Kisarawe, Tanzania	Cross-Sectional Study	3 to 5 years	831	Unemployed mother (p<0.05)	Significant relationship with mother's occupation
Shen et al.[13]	China	Liaoning, China	Descriptive Study	4 years	772	Low economic income (p<0.05)	Significant relationship with economic income
Li et al.[14]	China	Xinjiang, China	Cross-Sectional Study	3 to 5 years	1727	Parents with no or primary education (p<0.001)	Significant relationship with parents'

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						Low economic income (p<0.001)	education level and economic income
Zhu et al. [15]	China	Zhejiang, China	Cross-Sectional Study	3 to 5 years	2700	Parents' education level (p>0.05)	No significant relationship with parents' education level
Mei et al.[16]	China	Wenzhou, China	Prospective, Observational, Cross-Sectional Study	3 to 4 years	500	Low economic income (p<0.001)	Significant relationship with economic income
Zhou et al. [17]	China	Yunnan, China	Cross-Sectional Study	5 years	354	Parents' education level (p>0.05)	No significant relationship with parents' education level
Sun et al. [18]	China	Pekín, China	Cross-Sectional Study	5 years	9722	High parents' education level (p<0.001)	Significant relationship, protective factors: high parents' education level, medium-high economic income, and high economic income

DISCUSSION

Dental caries is a multifactorial disease, resulting from the convergence of various factors. However, in this research, the main focus was on socioeconomic factors.

Family attitude plays an indispensable role in children's education, as well as in establishing healthy habits and lifestyles. Especially in early stages of life, where children reside in the family full time. Therefore, factors such as parental/caregiver education play an important role in the oral health of their children. Different studies found a positive relationship between a lower educational level of parents and the presence of caries in their children,[2,3,9,14,18] while a higher level of education resulted in a protective factor in children's oral health.[19]

In most studies, a lower household income represented a higher risk of participants developing caries. Not only the low household income but also the economy of the social sector poses a risk of caries.[3,12,14,17] Access to health services and social security were identified as protective factors against caries.[18]

Not only does low household income represent a caries risk but also the economics of the social sector. Aquino et al. give as an example that the high presence of lesions associated with untreated dental caries exemplifies the lack and poor distribution of human resources and inputs in the countries".[2]

It is highlighted that the type of occupation of the person in charge of the household influences the risk of their children suffering from caries, showing that caregivers with an independent occupation (own business),[2] or unemployed,[12] are associated with the risk of caries.

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The social classes and strata are shown as a set of the above mentioned determinants, thus giving the levels of socioeconomic status.[11] Analyzing this issue, it was found that the lower the social level, the higher the significant relationship with the occurrence of caries.[1] Liu et al.,[3] indicate that families with a high socioeconomic level have better opportunities to get information and oral health advice in addition to having preferential access to health services.

In this regard, the research of Corchuelo Ojeda et al.,[4] showed that the contributory or social security system helps to reduce the prevalence of caries in children, thanks to the fact that this health coverage integrates access to dental treatment and prevention and promotion plans in all insured households, making access to health services a protective factor.

Some exceptions stand out with respect to the literature reviewed that did not reach a high level of significance, but are taken into account because of the information they provide for the topic under study. Among them is the fact that families of lower social class with low economic income regularly attended the dentist, however, half of this population presented class I caries. This is due, from the authors' perspective, to the access and consumption of less healthy but affordable foods for the household, such as sugary drinks and junk food. Likewise, the fact that parents are absent from the home due to their occupation as a way to obtain the means to achieve a better socioeconomic status, means that they rarely reside in the home, making it impossible for caregivers to supervise them during brushing[1]

CONCLUSIONS

Socioeconomic factors directly influence the occurrence of caries in children. Low economic income, low education, unemployment, and belonging to the lower social class were associated with the presence of caries in children. Additionally, low family responsibility and limited access to health services constituted risk factors for caries development.

Conflict of Interest
The authors declare no conflict of interest.

Authors' Contribution
All authors participated in the conceptualization, formal analysis, project administration, original draft writing, review writing, editing, and approval of the final manuscript.

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