THEMES AND DEBATES

Dental caries and dental practice: a new approach from a collective health perspective

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Introduction

Dental caries is the main oral public health problem worldwide, since it affects most of the world´s population and, so far, traditional approaches to the disease have not been sufficient. Different conceptions of health, agents of disease and means of intervention have been constructed to explain this problem. So far, the most accepted version - adopted in the 19th century - is based on several factors, the most relevant being microorganisms that thrive in an environment suitable to the development of dental caries. This conceptualization has allowed the issue to be understood as a biological process, thus endowing it with immediate validity while, at the same time, relegating its social dimension to a secondary position. Hence, dental professionals are forced to continue treating the consequences of disease instead of addressing its determinants and promoting health.

This fragmented vision of health, from which current health intervention proposals stem, generally overlooks the field of social interactions in which people live and reproduce themselves socially and historically. Thus, it ignores the role of socioeconomic and cultural contexts as determinant spaces that exert influence over oral microorganisms.

It is difficult to expect a decrease in the incidence of dental caries through the interventions that stem from this conception of oral health, so why continue along this path? One could start from the premise of doing something different as an alternative to this problem, and as an inclusive need to overcome the direct object of clinical dentistry and build an object with the incorporation of the historical-social character of the disease. An alternative approach would take into account the socio-historical character of the disease, basing its conceptualization and methods on collective health, and overcoming the reduction of dental health to limited technical interventions.

The purpose of the following essay is to provide paradigmatic references that depart from the predominant Cartesian logic, shedding light on a new perspective on the determinants of dental caries.

Reference points for understanding and acting differently

The practice of dentistry became established in the global north towards the 19th century, starting in Europe. By the 20th century, it was backed by the hegemony of the United States [1]. With more than a century of existence it has, however, failed at controlling dental caries, which is considered a public health problem with a prevalence of more than 70% worldwide. There are many possible answers, with different degrees of depth and breadth. For example, there is the sociological level, in which living conditions and social determinants cause inequalities between social groups and individuals. There is also the level of personal choices or lifestyles, which can be seen as mediated

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by social insertion, thus endowing the oral health of people with symbolic meanings according to their position in society. Lastly, there is a focus on the lifestyle of people as an individual attribute and as a direct determinant, an issue that has raised interest in recent years [2]. It is possible to propose an answer by explaining what has been done so far, which has not successfully addressed the problem.
Two components are key to understanding the issue at hand: economic structure and medicine. While each has a different scope and dimension, they exhibit mutual correspondence and influence: the former serves to explain the social and historical processes that generate conditions, devices, structures, human behaviors, among others, that outline the existence of the latter in all societies [3].

In today's predominantly capitalist societies, medicine is a prominent technique of social control, and is simultaneously related to the process of economic production through the generation of demand and production of inputs, products and services for its operation, thus becoming a dynamic element in the production of goods and merchandise and being itself a market for medical services, within the process of capital accumulation [4,5]; this process in general is neither direct nor automatic, it operates within and through multiple mediations and processes, both autonomous and complementary, all coinciding in the same logic. Menéndez argues that the capitalist view of health in the 19th century embraced a biologicist, individualistic, ahistorical, and asocial approach, with a tendency to medicalize problems and with a clear attachment to health and disease as a commodity [6, 7]. The emergence and consolidation of the hegemonic biomedical model is the result of the capitalist production process and is the normative device for medicine in the first place, radiating its influence and characteristics towards other professional health spaces. Dental practice thus shares features of the hegemonic medical model, reinterpreting them in relation its object of study, practice, and training [8]. Thus, the patient is seen as an individual isolated from his social reality [9]. In this sense, the treatment for dental caries is restorative and mutilatory, carried out in the clinical space - mainly in private practice offices – with a high cost defined by the market, where the subject is reduced to a passive receptor of a dental service with high biotechnical content. Clinical medicine has had a partial and limited success in resolving individual disease since the beginning of the 20th century. The public health approach has conceptualized health-disease by reducing it to the phenomenal and individualized plane of etiological causality, maintaining structural features of the hegemonic medical model, focusing its action from the perspective of the State, privileging the interests of capitalist societies, and assuming the probabilistic attitude of achieving punctual and gradual improvements [10]. Thus, it is difficult to find alternative solutions to the problem of caries, since the methods to combat it essentially focus on the individual, and only use complementary collective actions such as dissemination of toothbrushing techniques or fluoridation of salt. This highlights some of the limitations of public health, which, despite conceptual and technical reformulations, still has limitations in solving this problem. Some possibilities for transformation are: to move away from the centrality of the biological in the study of infectious diseases and incorporate other levels of analysis and conceptual understanding; to avoid depending on the incorporation of new technologies in dental practice, because that reduces its collective and social scope; to expand its actions to the general population without depending on the economic capacity of groups with high purchasing power. For this reason, public policies and public dental care services must use statistical information as a substrate for more efficient and effective actions that include technical and social interventions which can have a real impact on the epidemiological profile, and not only serve as justifications for budgetary resources with political uses that have limited benefit to the population [11].

In general, this set of aspects points to the need to overcome the delimitation of the object of dentistry in its biomedical understanding and reconstruct it in its social-historical character [12], consequently resizing and reconfiguring the practice and training of the profession. For example, the almost direct association with sugar consumption has become the dominant way to explain caries and to hold the individual responsible for its consumption, as a personal choice, regardless of the social conditions of existence. But is it possible to demonstrate the socio-historical character of caries? Within the different biologicist conceptualizations of caries,

the great majority coincide in considering sugar intake as a necessary cause, together with the presence and proliferation of microorganisms for the development of caries, ignoring other superimposed forms of explanation, such as macro-economic and social determinants of direct and individual consumption of sugar.
To unravel, at least partially, some of the processes that can explain individual sugar consumption beyond personal habits, we can start from the organization of the production of material goods as a macro process that affects social life. During the industrial revolution, people migrated to big cities to work in urban centers where factories were installed to produce manufactured goods. This new model of human labor force participation under a mass production scheme generated precarious working conditions with great personal shortages in the work environment, forcing people to work long hours with extended schedules and extremely low wages. In this context, sugar acquired a central place to provide the necessary caloric intake at a reduced price for men and women - including infants - working in the new manufacturing units. Sugar production expanded both locally and through exports from the colonies of the colonial powers, where the production of sugarcane and its derivatives - mainly sugar - was also subjected to an extractivist process controlled by a semi-feudal scheme with a capitalist logic. Consequently, sugar also became an increasingly abundant and affordable commodity for large groups of the population, leaving its position and its use as a luxury good and object of symbolic power of the ruling classes, to become massively traded and consumed, boosting its economic benefits [13]. Sugar expanded its uses, rapidly becoming a basic product of the food industry and a daily input in the food consumption of the working classes, a process that has not diminished over time, with high economic benefits for the industries derived from and linked to this product.

This historical perspective allows us to understand the process by which sugar has become a consumption product important for maximizing profit, with negative effects on people's health. The historical analysis sheds light on a problem the explanation of which cannot be circumscribed to a cause-effect relationship nor to personal choice or preference of consumption and lifestyle. On the contrary, it can be observed that, strictly speaking, it is the consumption of a type of product originated and promoted from the needs of capital accumulation by the industries and companies that produce, distribute and market direct products or derivatives containing large quantities of sugar. This process conceals the needs and economic interests and capital gains of a very limited sector of the population, expressing them as if they were the needs of society as a whole [12].

In the case of dentistry, contemporary dental practice has not had a significant impact in reducing caries. There are some exceptions that have managed to reconfigure the practice, such as the case of the Baby-Clinic of the State University of Londrina in Brazil, whose transformative proposal unites the education given by those closest to the children (mothers and pediatricians), with prevention and curative intervention in children, starting the care around 4 to 6 months of life and following up until 30 months of age [14].

The clinic seeks to maintain health before disease prevention by working on risk factors based on indicators obtained from the clinical history, clinical evaluation, and supplementary evaluations. These actions were reflected in the values found at the beginning, in the first year, where the caries rate reached 12%, which was subsequently reduced to 3.2% [14].
After the installation and development of the Baby-clinic in Londrina and the dissemination of the first results, the experience was transferred to the public sector. It began with the installation of the baby program at the Usina Siderúrgica Nacional and later in the city of Cambé, as well as in some Brazilian universities, presenting excellent results [14]. The previous experience evidences many limitations in dental intervention at the individual level; therefore, it is necessary to explore other paths outside the restricted framework.

From an epistemological view that differs from the functionalist notion of health-illness, collective health incorporates the historical and social determination of the collective production of health-illness states, as well as transformative actions and the strategic critique of State interventions. Therefore, health becomes a social product, determined by socioeconomic, cultural,

symbolic, and environmental conditions; living and working conditions; community influences and social support; individual factors and lifestyle, as well as biological and genetic factors [15, 16]. Placing oral health within the perspective of collective health makes it possible to think of new conceptions that go beyond the individualistic and biological understanding of caries, and to introduce new categories of analysis at other levels in order to articulate Health-Disease-Attention-Care Processes (PSEAC).

In an articulated approach of macro and micro dimensions of social and biological processes, theories and analytical methodologies can be incorporated in relation to social conditions - such as social inequality - as a fundamental axis for the understanding of disease and the possibility of social interventions. This category, in its analytical process, requires, in turn, the incorporation of other categories - such as social determination and intersectionality - as components of the social dimension. This, in turn, enables the analysis to return to PSEAC its complex and multidimensional character, encompassing constituent and explanatory structural processes and simultaneously becoming the basis for building social and individual practices [17, 18]. Inequality between social classes, genders, and ethnicities translates into difficulties in guaranteeing, among many others, the right to oral health [19]. Social inequality, then, allows us to identify a complex, circular process, through people with unequal insertion in society present conditions of greater social, economic, and cultural vulnerability. This forms a pattern in which poverty leads to sustaining and increasing sugar consumption in food intake, reduces or restricts the use of elements for oral hygiene and limits access to dental services. All of this becomes combined and articulated over time to increase the probability of having cavities, to the detriment of oral health and general health.

In a complementary direction, critical epidemiology also provides a valuable analytical substrate through the category of social reproduction of the workforce and social control through health services [20]. The first involves establishing the links between the social reproduction of capital through the valorization process. Participation in the labor force is understood as the physical capacity to manipulate, drive, and transform productive inputs into valued objects for exchange in the market. It is important to maintain the worker's physical capacity to avoid any damage or alteration, physical or psychological that reduces or affects their work capacity, which has effects on costs and on the production process itself, impacting capital. Therefore, avoiding and, whenever appropriate, returning the worker to his or her job as soon as possible, is a direct necessity for the owner of the means of production. In this logic, the interventions of health professionals are significant to ensure the least discontinuous process, mainly indirectly, in the conservation and return of workers to their job. This involves the provision of direct services, individual or collective, present in society as an organized response in State institutions or in private services provided by the market. In both cases, it is the demand of the affected subjects that generates care options, both for wide availability with access to social security institutions or restricted by direct payment to private providers [21].

Dental care can then be understood in this way, without fulfilling a direct and visible function for capital in the reproduction and conservation of the use value of the labor force, because possible damage to oral health generally does not prevent the participation of the individual at work, and only becomes important when injuries or disability due to pain can impact the time of the productive day. Correlatively, the act of technical intervention of the professional as an expression of dental practice has little immediate weight for the survival of the majority social groups. Therefore, the productive and social life of these groups is slightly altered without necessarily showing great concern for the prevention and maintenance of the stomatognathic apparatus. If this individual involvement is experienced daily, then the lack of pressure on the State for the implementation of actions aimed at this field [21] can be explained, in individual and collective interventions that go beyond organic interventions such as fluoridation. An example of an alternative approach would be intervention in the production and marketing of food products with high sugar content.

Geographical or territorial epidemiology constitutes another category in collective health that is useful

to reformulate the understanding of processes resulting from social integration in the space of life and work. It posits rethinking the interpretation and study of the geographical environment to overcome the static, passive, sometimes environmentalist vision as a condition of the health-disease process [22, 23]. That vision is conceptually derived from public health through the model of the ecological triad, in which the physical environment expands to include notions of the social life of people and social groups. This is reconfigured in collective health to generate an understanding of health-disease as a result of social relations and as product of social reproduction in its socio-spatial conformation. Thus, the social segregation of space, its social resources, environmental conditions, and access to public services and businesses, are at the root of human behavior and, with this, express the unequal distribution of epidemiological processes. The socio-territory is a necessary conceptual reference to understand the logic of the distribution of health services, the lack or concentration of health professionals in areas of private practice. For example, in medicine or dentistry, the social and geographical space behaves as a fixed, receptive, anonymous entity, but it is fundamentally determined by social and economic factors such as the laws of the market in the supply and demand of dental actions. The highest concentration of dental professionals is observed in places where the wealthiest classes and strata are located, with the ability to purchase services aimed at maintaining the functionality and aesthetic value of the stomatognathic apparatus [21].

Final reflections

By locating the situation of oral health - and in particular dental caries- as the greatest oral health problem from the perspective of collective health, the narrow vision provided by traditional approaches in their biochemical and organic understanding is avoided, thus allowing for much more comprehensive and complex understandings of its expression and its causes. Without omitting the role of the biochemical process between polysaccharides and the presence of microorganisms that do not act pathologically under conditions of low sugar consumption, it is important to recognize that the mediating element is behavior. An alternative view of the issue, as has been explained, is the social determination of access to carbohydrates and the material conditions of life and work that determine this consumption. In this view, personal lifestyle choices become outweighed by the determinations of economic production, which lead to the consumption of a food good that becomes a commodity and therefore an object of exchange for the generation of economic profit.

Additionally, the exploitative working conditions of capitalist production explain the need to consume low-cost caloric sources with high energy value. Thus, we can see how this pattern was established in early phases of the industrialization of the product and expansion of consumption, later becoming normalized. This high or excessive consumption largely explains the presence of cavities as the major health problem it represents today.

Another component that is important to reconfiguring the understanding of this problem from the perspective of collective health is professional dental practice. Professionals serve individuals in a unique way that is derived from a mainly commercial dental practice in a private liberal care model, which is socially and territorially distributed based on the users' ability to pay, thus enhancing social inequalities in oral health.

A new approach to dentistry is required. A dialectical, multidimensional process within a counterhegemonic perspective, which explores other dimensions of its existence as a health problem and as a social practice.

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