

Biology teachers' conceptions and practices about health education in Rio de Janeiro

ABSTRACT

The objective was to understand the biology teachers' conceptions and practices regarding Health Education and to reflect on their perspectives for health promotion in schools. The research was qualitative and semi-structured interviews were conducted with six teachers from four schools in the state of Rio de Janeiro, located in the municipality of São Gonçalo, in 2023 and 2024. Content analysis was used, based on categories of conceptions and practices in health. The analysis indicated that the most frequently cited words in the teachers' responses were health (14), well-being (7), mental (7), and physical (5). Elements of the biomedical perspective were evident in the statements of five teachers, and in the account of one teacher there approximated the socio-ecological trend. Two teachers reported, in their biology teaching practices, historically constructed aspects with Health Programs in the school curriculum. The teachers used different teaching methods to develop activities on health in schools, such as lectures, projects, school events, and discussions. The analysis of health approaches indicated biomedical, behavioral, and hygienist trends in teaching practices, as they prioritize themes and approaches related to human anatomical and physiological dysfunctions, food and nutrition education, and STIs, justifying the hegemonic health discourses in schools.

KEYWORDS: science education; high school, teachers' practices; health.

Concepções e práticas de professores de biologia sobre educação em saúde no Rio de Janeiro

RESUMO

O objetivo foi compreender concepções e práticas de professores de Biologia sobre a Educação em Saúde e refletir sobre suas perspectivas para a promoção da saúde na escola. A pesquisa teve natureza qualitativa e foram realizadas entrevistas semiestruturadas com seis docentes de quatro escolas da rede estadual do Rio de Janeiro, localizadas no município de São Gonçalo, em 2023 e 2024. Foi utilizada a técnica de análise de conteúdo, com categorias sobre concepções e práticas em saúde. A análise indicou que as palavras mais citadas nas respostas dos docentes foram: saúde (14), bem-estar (7), mental (7) e físico (5). Foram evidenciados elementos da perspectiva biomédica nos depoimentos de cinco professores, e no relato de uma professora houve uma aproximação da tendência socioecológica. Dois professores relataram, em suas práticas de ensino de Biologia, aspectos historicamente construídos com Programas de Saúde no currículo escolar. Os professores utilizavam diferentes modalidades didáticas para desenvolver atividades sobre saúde na escola, como aula expositiva, projeto, eventos escolares e discussão. A análise das abordagens em saúde indicou as tendências biomédica, comportamental e higienista nas práticas docentes, priorizando temas e enfoques relacionados às disfunções anatofisiológicas humanas, educação alimentar e nutricional e IST, justificando os discursos hegemônicos em saúde na escola.

PALAVRAS-CHAVE: ensino de ciências; ensino médio; prática docente; saúde.

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INTRODUCTION

In constructing the concept of health, its incorporation into the educational field has undergone distinct perspectives throughout Brazil's historical constitution. During the colonial period, with the arrival of the Jesuits in Brazilian lands, there was an educational ideology focused on hygiene and the discipline of the body to achieve relief for the soul. With health under the control of religious institutions, there was a conception that care and hygiene habits were aimed at minimizing the ailments affecting the human body. However, from a magical-religious perspective, health during this historical period was associated with the reduction of disease and religious manifestations, in which such ailments were linked to the concept of sin committed by the faithful who professed the faith disseminated by the Jesuits.

Education at the time was used to exert dominance over marginalized classes without investing in bodily care, which was viewed as a tool for labor on the land to achieve eternal life. Antunes et al. (1999, p. 167) indicate that health actions were developed based on charity, highlighting activities "[...] aimed at alleviating the souls of the sick and some hygiene care, such as treating wounds; preparing teas, foods; washing clothes and the environment." Even though these practices fell short of what is understood as health today, they were associated with minimizing deaths and aiding the recovery of individuals presenting some physiological imbalance (Venturi, 2018), which later came to be termed disease. Such measures persisted for approximately three hundred years until there was a change in conception in Brazil.

The model aimed at the wealthier classes of society endured for a long time, but from the second half of the 19th century, there was a shift in rationality regarding the problems that weakened health, leading to planned and expanded activities for other segments of society. This moment coincided with the emergence of scientific rationality, which at the time proposed the suppression or elimination of diseases; in other words, thinking during this period was more focused on disease than on health. Hygienic education was based on prescribed orders and coercive measures that imposed sanitary forces grounded in the authoritarianism of the State.

In Brazil, a sanitary police was established that intervened in the habits of individuals with actions "[...] based on the discourse of hygiene, which disregarded the relationships between disease and living conditions – the imposition of norms and measures of sanitation considered scientific by technicians and bureaucrats predominated" (Silva et al., 2010). The relationship among culture, society, and living conditions was ignored by the elite discourse, indicating that health policies and pedagogy were controlled by the bourgeoisie, which provided privileged information to a small segment of the population. The popular class was deemed ignorant for lacking knowledge regarding disease control measures; therefore, before coercive measures were adopted, brief guidance on health measures was provided, as the authorities of the time considered the popular classes incapable of understanding the scientific basis behind health practices (Venturi, 2018; Silva et al., 2010; Schall, 2005). The need to expand knowledge among parts of society about the occurrence of diseases arose to control epidemics and clean the ports, as the country was undergoing a period of increasing contamination from yellow

fever, smallpox, and other ailments that affected the country's economic activity (Venturi, 2018).

At the beginning of the 20th century, the consolidation of scientific rationality occurred, and health began to be understood from a biomedical perspective, reducing the concept of health to the absence of diseases and contributing to a reductionist conception. Hygienic education gave way to sanitary education due to the crisis scenario caused by the Spanish flu pandemic in the country. Oswaldo Cruz began to promote educational actions in health, aiming to contribute to public health policy, highlighting scientific knowledge about the process of illness while supporting efforts to control epidemic outbreaks of the time. In 1923, Carlos Chagas led the sanitary reform in the country, creating the National Department of Health, linked to the Ministry of Health. During this period, other health centers were established in the Federal Capital that "[...] constituted within public health as the place where sanitary actions should take place" (Silva et al., 2010, p. 2542). According to Ballester (2017, p. 222), medical rationality entered schools with the objective of "[...] taking control of inspection and guidance from a hygienic point of view"; however, it aimed to replace the brevity of hygienic campaigns with educational methods and preventive proposals at both individual and collective levels. Venturi (2018) reflects on this new model of thinking about education and health models.

The attempt to change perspective was not very successful, as the school began to reproduce the coercive model of sanitary actions with the regulation and normalization of students' habits. It can be inferred that health in the behavioral model began to gain space in formal education. In 1946, the World Health Organization (WHO) expanded the concept of health, emphasizing complete physical, mental, and social well-being, in addition to opposing the negative conception of health that had been preached until then; however, such a proposition began to be accepted in 1948. From the 1950s onwards, a new designation emerged for educational health measures, now referred to as health education, considering "[...] social intervention, informing and planning ways to modify behaviors and generate social changes" (Silva et al., 2010, p. 2544) in response to health issues in an attempt to reach restricted and marginalized social areas to understand health education measures.

According to Venturi (2018, p. 54), health education "[...] persisted based on a biomedical model that has a reductionist view of health, centered on the anatomical and physiological aspects of health-disease processes." Health education of that time inherited aspects of the old hygienist education in schools and in the behavior of students, which had as its principle "[...] to inform about health topics, to form eating habits, and to influence people's conduct for the benefit of their health" (Ballester, 2017, p. 224). Such a model preserved coercive actions, no longer through police imposition, but through the behavioral control of individuals involved in the educational processes of that historical period.

From the 1960s onwards, educational activities related to health gained a new designation and became known as Health Education (HE). It is worth noting that even with the change of nomenclature, "[...] the activities continued to focus on behavior change and prescriptive and preventive measures, similar to those adopted previously" (Venturi, 2018, p. 55). Although at the time this designation

existed, what became known as HE distanced itself from the proposition of Mohr (2002), as the author suggests that this concept be used to

[...] designate activities as part of the school curriculum, which have a defined pedagogical intention, related to the teaching-learning of some subject or theme related to individual or collective health. The qualifier of defined pedagogical intention is necessary, as it characterizes that the activity was planned and organized deliberately, with the aim of teaching something to someone (Mohr, 2002, p. 38).

Even diverging from the current conception of HE, Hortênsia de Hollanda brings forth an important historical milestone for the period. The researcher began extensive work in the mid-1960s on the relationships among society, environment, and health, with an emphasis on community participation. Even though the preventive and behavioral perspective was prevalent at that moment, Hollanda brought significant changes by involving the community, developing health activities based on contextualization, moving from individuality to actions from a collective perspective; in her works, one observes the opening of "[...] space for transformative practices that took into account cultural, environmental, and social aspects, proposing educational processes in health that were much more democratic, critical, and embedded in the context of citizenship" (Diniz et al., 2010).

At the end of the 1990s, in the National Curriculum Parameters (NCP), health was considered one of the transversal themes, permeating all subjects of basic education (Brasil, 1998). This document identifies attempts to conceptualize the term "health" and proposes dialogue on health issues in the school curriculum. Such an aspect was shown to be influenced by Opinion No. 2.264/74, by revisiting the conception of habits and attitudes to be adopted to confront the physiological vulnerabilities that compromise individuals' health. The proposal to be developed and the conception present in the document are presented in an antagonistic manner, as the ideas of prevention, risks, and harms reinforce the conception of health based on biomedical actions and the approach of the health-disease dichotomy (Sousa et al., 2019); therefore, the document does not identify proposals and actions committed to critical-reflexive aspects regarding health issues. The NCP of Health revisited the expression "Health Education" (Brasil, 1998), a term that emphasized self-care through behaviors deemed healthy, as a fixed goal to be achieved through "ready" information, without the citizens' participation in educational processes that propose planned didactic-pedagogical strategies, which weave reflections and re-significations about the theme of health (Sousa et al., 2019; Mohr, 2002).

Teaching aimed at behavioral change remained in effect (Venturi, 2018), characterizing a school health context that essentially reintroduces medical practices that reproduce the biomedical discourse, emphasizing the dichotomy between health and disease, and highlighting the physiological vulnerabilities of the human organism. In the early 2000s, Mohr (2002) revisited the term Health Education proposed in the 1960s and defended the thesis that Health Education is centered on the educational act, with a view to didactic-pedagogical contribution, whose emphasis is translated in the "[...] most promising didactic meaning for activity in school: a theme from which numerous knowledge, originating from different areas, can be developed" (Mohr, 2002, p. 44). The author proposed the analytical categories of banking, Health Education, and constructivist Health Education, defining them as follows:

Banking Health Education – [...] the content of the message emitted would be learned directly and unequivocally by the sender [...] the problem of learning and acquiring knowledge is automatic and is limited to the exposure of information to an individual in need of it.

Constructivist Health Education – [...] the teacher's action is not limited to the simple clear, systematic, and repetitive emission of any content. The teacher strives to promote strategies that allow the student to interact with knowledge so that its processing occurs internally (Mohr, 2002, p. 40).

In the National Common Curricular Base (BNCC), enacted in 2018, there was no mention of health-related themes. In the second segment of elementary education, health is concentrated in the 7th grade, revisiting the behavioral and care approach to risks and harms to health through the dissemination of diseases, proposing the eradication of illnesses as prescribed in the following fragment:

[...] to argue about the importance of vaccination for public health, based on information about how the vaccine acts in the body and the historical role of vaccination for the maintenance of individual and collective health and for the eradication of diseases (Brasil, 2018).

In high school, the conception proposed by the WHO was revisited, bringing the perspective of caring for physical well-being and adding the psycho-emotional and social aspects, in addition to foreseeing the need for actions aimed at promoting health, as described in the following excerpt: "[...] to identify, analyze, and discuss vulnerabilities linked to the experiences and contemporary challenges to which youth are exposed, considering the physical, psycho-emotional, and social aspects, in order to develop and disseminate actions for the prevention and promotion of health and well-being" (Brasil, 2018). For Mohr (2002), health promotion is a broader concept that encompasses Health Education and other actions that help problematize health-related themes. However, the author signals the need for practices committed to pedagogical actions, without confusing concepts or proposing purely behavioral actions.

Thus, in this article, the perspective that dialogues with Mohr's proposal (2002) is adopted, in which Health Education is understood as the possibility of teaching, through and from a specific health theme, in order to mobilize knowledge and practices that translate into everyday experiences, contributing to effective learning in the school environment.

As a research question, the aim was to understand how Biology teachers conceptualize health and what their practices are in health education in high schools in the state schools of Rio de Janeiro. The hypothesis was that the biomedical perspective of health would be prevalent, emphasizing organicist and biologicist aspects, with a focus on descriptions of biological processes and structures. The objective was to understand the conceptions and practices of Biology teachers in Health Education at the high school level in school settings in the state of Rio de Janeiro, and to reflect on their perspectives on health.

RESEARCH METHODOLOGY

This study is characterized by a qualitative approach, as its guiding principle was to identify "[...] the universe of human production that can be summarized in

the world of relationships, representations, and intentionality" (Minayo, 2019, p. 21) concerning aspects related to Health Education. The qualitative approach aims to understand the interactions between subjects and their worldviews in order to comprehend aspects of reality that, at times, cannot be limited to translation into numbers, but rather focus on the explanation and understanding of the relationships established between subjects regarding a specific research object (Gerhardt & Silveira, 2009, p. 32). Thus, the investigation focused on the search for meanings and significances regarding the health conceptions of teachers who taught the school subject of Biology in 2023 and 2024.

The study was approved by the Research Ethics Committee of the Oswaldo Cruz Institute (CEP-IOC), under substantiated opinion number 5,656,784, with CAAE number 60779822.5.0000.5248. The research was conducted in four state public schools in the municipality of São Gonçalo, Rio de Janeiro, during 2023 and 2024. As these are high schools, teachers who taught Biology were selected, since this curricular component traditionally has connections to the field of health. The research theme and objectives were presented to the school administration. The school administration signed the Institutional Consent Term (TAI), and those teachers who expressed interest in participating signed the Free and Informed Consent Term (TCLE) and the authorization term for the use of image and sound. To maintain the confidentiality of the participating teachers' identities, an alphanumeric code was used to distinguish the responses of the six interviewed teachers (Minayo, 2019).

The data collection instrument was the interview, which is characterized as "[...] a conversation between two people initiated by the interviewer and always within a purpose" (Minayo, 2019, p. 15). The use of the interview is justified by its ability to reach a small group of participants, as this instrument aims to delve into a specific subject and is therefore sufficient to obtain relevant data on that topic (Gil, 2021). The interview script sought to explore issues related to teachers' conceptions and practices in health in high school education. The choice was made to use a semi-structured interview, which allows the interviewee to respond to questions without being restricted to previously formulated ones (Minayo, 2019), thereby establishing a dialogue with the researcher.

The interviews were conducted via the *Google Meet* platform, allowing the teachers' voices to be recorded. Such a method brings the interviewer and the interviewee closer together, enriching the speech and attitudes that can be revisited later, as the recording is saved and available on *Google Drive*. Furthermore, it does not require the participant to deviate from their daily routines (Santhiago & Magalhães, 2020).

After transcribing the interviews and subsequently reading the teachers' statements, unitarization was carried out to create analysis categories that grouped similar data defined by criteria developed by the researcher (Moraes, 1999). According to Bardin (2016, p. 134), the unit of record can be defined based on words, phrases, and themes, among others, allowing the researcher to code a "[...] segment of content considered a basic unit, aiming at categorization and frequency counting." The author proposes that for each unit of record there should be a correspondence in the unit of context, that is, allowing for the understanding and coding of the basic unit in such a way as to correspond "[...] to the segment of the message, whose dimensions [...] are optimal for comprehending the exact

meaning of the unit of record" (Bardin, 2016, p. 137). The application of this technique sought to (re)recognize the meanings of health that mobilize knowledge and practices in the work of teachers who teach the school subject Biology offered in high school.

The analytical treatment of the interviewed teachers' health conceptions was conducted following Venturi (2018). The author systematized the conceptions of health according to historical approaches (Table 1).

Table 1

Historical trends regarding conceptions of health.

Historical trends	Meaning
Hygienist	It refers to the care of the body in order to prevent organic dysfunctions and/or contamination by microbes, disregarding sociocultural issues and social determinants of health.
Biomedical	It refers to the approach related to the functionality of the human organism, emphasizing the health-disease dichotomy, without considering other determinants that affect the physiology of systems.
Behavioral	It refers to the approach that is based on changing individuals' behavior, usually influenced by health campaigns aimed at guiding and preventing harm to the body.
Socioecological	It refers to the critical-reflective approach regarding the dimensions and determinants that influence health status, whether individual or collective, broadening the discussions about the contexts and realities in which individuals are embedded.

Source: Adapted from Venturi (2018).

Linked to content analysis, Word Clouds (WC) were used as a methodological strategy, defined as graphic resources used to identify, describe, and analyze the frequencies of words that appear in the messages elaborated by the research participants, leading the researcher to examine cores of meaning in the texts constructed after the analysis of the collected data. According to Vasconcellos-Silva and Araújo-Jorge (2019, p. 49), the use of WCs offers the research conceptual frameworks that will be appropriated "[...] for the synthesis, systematization, and enriched understanding of a set of ideas that could support propositions." Furthermore, such a methodological resource aims to emphasize the most relevant terms for the analysis; however, it is necessary to "[...] filter numerals, prepositions, articles, pronouns, among other grammatical elements of limited semiotic value." The construction of the NP was generated by publicly accessible algorithms from websites specialized (wordart.com) that scale the size of words according to their frequency in the text (Vasconcellos-Silva & Araújo-Jorge, 2019). From the identification of the most frequent words, considered to be of greater relevance, a movement of return to the text was made in order to group them according to their discursive contexts into categories of meaning.

RESULTS AND DISCUSSION

The interviews were transcribed and analyzed to understand conceptions and practices in health. Initially, the profiles of the teachers who participated in the interview were identified, focusing on their teaching experience and involvement in the school subject of Biology, as well as their initial and ongoing training. Engaging with the methodological design described earlier and applying content analysis, it was possible to subdivide the analytical units based on the following thematic axes (Table 2):

Table 2

Categories of analysis regarding conceptions and practices in health.

Categories	Context Units
Conception of health	It refers to conceptions of health developed by the teachers.
School activities and events	It refers to didactic-pedagogical practices and resources developed and/or utilized by the teachers for teaching themes in health.

Source: Own authorship (2024).

Health is a polysemous term, and defining it can sometimes be quite challenging. This can be observed in the accounts of the interviewed teachers, who express their conceptions of the term health. The first question in the interview script sought to identify how the teachers define the term "health". In general terms, it was possible to identify that these teachers establish meanings associated with the term health that approximate the organicist conception, centered on the absence of disease, the biologicist conception, and, in some cases, the concept proposed by the WHO. On the other hand, there were teachers who transcended this view of health. Even as they brought proximity to the WHO concept, they expanded its meaning by attributing other meanings to it. The analysis also showed that there are conceptions that distance health from the hegemonic concept, particularly regarding leisure, good interpersonal relationships, appreciation of mental health, and self-care.

As previously described in the methodology, the transcription of the teachers' responses resulted in text that, when compiled and inserted into an online software tool, allowed the construction of a word cloud to evaluate the terms that stood out most in the interviewed teachers' reports. Thus, visualizing the most relevant words in their reports related to health contributed to a general analysis and, *a posteriori*, the separation of these responses into degrees of proximity and/or divergence from each other. The Word Cloud below shows the terms that stood out the most in the teachers' responses (Figure 1):

Figure 1

Word Cloud regarding the conception of health of the interviewed teachers.



Source: Own authorship (2024).

The presented Word Cloud highlights the term "health," which was explicitly mentioned 14 times in the teachers' responses. However, this high number may have been influenced by the repetition of the word as the teachers responded to the question, such as: "For me, health is [...]" in their responses. Thus, beyond this term, the conceptions about health showed that the words that appeared most frequently in the reports of the teachers were "well-being," "mental," both of which were mentioned seven times, and "physical," which was revealed five times in the teachers' responses.

Based on the highlighted terms, and returning to the text of the transcription, the analysis indicated aspects related to the conception of health. Teachers P2-IECN and P3-IECN make direct reference to part of the health concept proposed by the WHO, such as: "[...] complete physical, mental, and social well-being and not merely the absence of disease and infirmity" (WHO, 1946, p. 1), highlighting organicist and biologicist aspects in their conceptions, as emphasized in the following excerpts selected from the transcriptions of their responses:

For me, health is the overall physical, mental, and social well-being of the individual (P2-IECN).

For me, health is based on the concept of the World Health Organization, the WHO, which is physical, mental, and social well-being (P3-IECN).

The conceptions of these teachers aligned with a concept dating back to 1946, a historical moment with a strong influence of hygienist and behaviorist standards. Thus, by approaching this conception of health, these teachers disregarded other relevant variables for understanding the concept of health, such as social determinants of health that directly influence the well-being of a social group (Buss & Pellegrini-Filho, 2007).

Regarding P1-IECN's response, the analysis revealed that this teacher also utilizes the WHO concept; however, she expands on it by introducing elements that are urgent to consider in the 21st century. By incorporating basic sanitation,

this teacher exceeded the definition set by the other teachers and also proposed a debate on health and environmental issues. This form of expression was received with a certain degree of surprise, as it is common for teachers to seek to explain health based on the biomedical model and centered on the absence of diseases, without relating it to other conditioning factors:

I define it as mental, physical, and environmental well-being; with good basic sanitation conditions, that is, a balance (P1-IECN).

Based on the analysis of the reports, it was also verified that there is a strong influence of medical-scientific rationality and the Hippocratic model, which sought to explain the state of health of human beings through the balance between bodily fluids, psychological aspects, and social factors (Canguilhem, 2019; Czeresnia et al., 2013; Almeida-Filho, 2011; Scliar, 2007). On the other hand, P1-IECN transcended the traditional and hegemonic concept of health by committing to aspects related to environmental issues; thus, even though the conception constructed has a strong relationship with biomedical aspects, it signals a concern with the aggravation of environmental risks and the need to promote critical reflections between human and environmental health, thereby showing relationships with the socio-ecological trend of health (Venturi, 2018; Martins et al., 2012). Zordan et al. (2025) discuss the importance of the debate on health related to the theme of basic sanitation, which has emerged as one of the problems faced by populations in various countries over the last few decades, as its absence affects the quality of life of millions of individuals in Brazil and worldwide. The authors highlight that such an approach enables the establishment of dialogue on the incidence of health hazards, particularly among populations with low socioeconomic status, thereby emphasizing the importance of the debate on Health Education related to socio-environmental issues.

The analysis of the report from Professor P5-CEMBC indicated that his conception was close to the WHO's health concept and focused on the absence of disease as a way to define health. At another moment, the same professor stated that health is not merely the absence of disease; however, he emphasizes the proper functioning of the organism and the attempt to minimize aggravations in individuals' health status. In this way, conceptual plurality was identified in the construction of the concept of health by this professor: in the first instance, he stated that it is permeated by the absence of disease, whereas in the second instance, his conception refutes the first. In the account of P6-CEPLHP, she presented aspects corresponding with P5-CEMBC, which reinforces the functioning of the organism in the pursuit of ensuring the maintenance of life, in addition to the necessity of valuing mental health, especially in current times:

I generally begin with the idea of the absence of diseases and emphasize to them [the students] the importance of physical and mental well-being. Especially with this post-pandemic generation, mental well-being is a very important matter (P5-CEMBC – First instance).

[...] I tell them that they need to be well physically, and this "well" is not merely being free of disease, but their body and mind must be functioning well. It is very common nowadays to see problems such as depression and anxiety, and minimizing this is to ensure the well-being that we refer to as health (P5-CEMBC – Second instance).

Health is not solely related to the biological aspect, but also to the psychological aspect, especially in the post-pandemic period [...] It is about ensuring the maintenance of quality of life and mental health (P6-CEPLHP).

The reports from the mentioned professors evidenced the need for self-care and the appreciation of aspects related to mental health. Both cited the post-pandemic period of Covid-19 as an aggravating factor that culminated in disorders such as anxiety and depression. Associating the absence of disease with health reinforces the biomedical view while emphasizing a negative conception of health that excludes the risks and aggravations that can influence the healthy state of the human organism (Almeida Filho, 2011). In view of the predominance of the concept of health as "well-being," Czeresnia et al. (2013, p. 13) affirm that "[...] there is no perfect health or absolute well-being," as disturbances and illnesses are constants in different forms of life, which can provoke changes in health states. It implicitly verified the idea of morphophysiological functionality, as well as the demarcation of the dichotomy between health and disease, since, by ensuring that there is "good" functioning of the body, it will not be afflicted by the multiple existing diseases, as predicted in the historical trend of the biomedical conception of health (Venturi, 2018).

The conception of health presented in the discourse of Professor P4-CEPOSS differs from that of the other interviewed professors, as she asserts that this state is not solely related to the absence of disease but to other dimensions that may influence aspects of human life. For this teacher, health is related to a balance among biological factors, self-care, mental health, and social aspects, as she asserts that health also permeates the positive relationships established between distinct individuals:

Health is not merely the absence of disease; being healthy means having health in all aspects of your life, whether in your relationship with your family or in your professional relationships; being mentally healthy, having leisure time, and having moments for oneself. Having leisure is essential for our health, especially in today's world [...] I define health as [...] being in balance with everything, whether with the people who are part of your relationships or with yourself (P4-CEPOSS).

The analysis of the highlighted excerpt revealed an expansion of the conception of health, as the teacher did not centralize her discourse solely on the absence of disease, but related other factors that, for her, are fundamental to ensuring an individual's state of health, aligning with the proposal of Cunha et al. (2023) when arguing about the importance of promoting critical-reflective dialogues grounded in the maintenance of well-being and the quality of individual and collective life. For this teacher, health is grounded in a practice of healthy living that tends to lead the individual to a balance, through individual and collective aspects, making the environment encompass the social – when referring to interpersonal relationships, psychological – when referring to the individual's mental health, and physical – when these dimensions do not impose limitations on the body (Almeida Filho & Andrade, 2009). Thus, by considering various aspects, the described account aligns with the socio-ecological trend (Venturi, 2018). Segundo Martins et al. (2015, p. 6), such an approach aims to overcome the biomedical conception that has historically been structured around individual aspects and disease; therefore, it seeks to understand health as "[...] a right, the conjunction of understanding and action

regarding socio-environmental aspects" and "[...] the more critical participation of citizens concerning the promotion of their health."

The analysis of the interviews revealed different conceptions of health in the participating teachers' accounts. While some presented conceptions close to the concept established by the WHO, others expanded the perspective and made correlations with social determinants and the individual's self-care. Therefore, understanding the different conceptions of educators that involve the concept of health is important for analyzing how these individuals materialize their teaching practices and how they select didactic-pedagogical materials to address different themes in school. The teachers who presented conceptions of health close to the concept established by the WHO align with the banking HE, as it is limited to the presentation of information without engaging in the problematization of health themes. On the other hand, those who expanded the concept of health and proposed dialogues with environmental and social aspects converged toward a constructivist HE, as they enabled learning through critical reflection on health topics (Mohr, 2002).

Regarding school activities and events about health, the testimonies analyzed included responses to the following question: "Do you develop/developed activities and/or projects at school with an emphasis on health-related themes?" "Please describe them," as they relate to the didactic-pedagogical resources used in class and contribute to broadening the discussion about health. When asked about the activities and/or projects developed on the theme of health, one teacher stated that she does not develop activities or projects that engage with this theme, emphasizing that her approach occurs only in the classroom, showing the relationship between Biology and health. The accounts of two teachers indicated that both conducted activities on health, identifying only the themes addressed:

[...] when I work on that part about living beings, I talk about viral diseases; in the Monera Kingdom, I discuss bacterial infections, and moving to protists, I work on protozoan diseases and then on helminthiases. I also discuss the ways to prevent these diseases, addressing issues that focus on the vector and etiological agent (P2-IECN).

Once, I worked on the issue of nutrition and discussed proper and balanced nutrition, where I requested that the students bring foods that could be reused, for example, banana peels, which can be fried or used to make sweets and cakes. I worked with an emphasis on nutritional reeducation, and it was very successful (P3-IECN).

Yes, I always seek to address some topic related to health in connection with the human body. I also speak about Health Programs and healthy eating (P6-CEPLHP).

Upon analyzing the reports from teachers P1-IECN and P6-CEPLHP, both develop a proposal articulated with classic themes about health, as they present to the students content focused on aspects related to the hegemonic model of health, that is, based on morphology, transmission, and prevention of pathogenic microorganisms, as indicated by the biomedical perspective in conjunction with health education. Such teachers reported, in their pedagogical practices, aspects that have been historically constructed and that have remained in the teaching of Biology since the formalization of Health Programs in the school curriculum (Brasil, 1974). The discourses of these teachers reinforced habits and attitudes based on strategies that, since the 1970s, have been considered pedagogical through the perspective of Health Education, aimed at improving the quality of life of the

collective and not just the individual; however, still maintaining the emphasis on content transmission (Venturi, 2018; Schall, 2005). The theme of healthy eating appeared in the testimonies of P3-IECN and P6-CEPLHP; however, in both cases, there was no clarification on how the development of the mentioned activities occurred. The analysis of their discourses indicated that they utilized expository classes to address the topic. According to Krasilchik (2008), the use of this didactic modality is centered on the figure of the teacher, as it serves to inform the students about the content, emphasizing the aspects that the teacher deems important to be taught and learned by the students.

The other teachers reported developing activities in dialogue with health, mainly through projects and school events. Teachers P1-IECN and P4-CEPOSS described the projects carried out at the school, utilizing different didactic approaches, involving the students in various stages of execution. Teacher P5-CEMBC reported that his participation in the activities occurred when the school proposed projects that related the theme of health to school content and/or monthly campaigns aimed at trying to minimize the harms caused to Public Health.

I have indeed done so [...] with the classes of the Normal Course. I divided the classes into groups and we worked with films and interviews on topics such as teenage pregnancy, contraceptive methods, and issues regarding abortion. The projects were presented to the seventh-grade classes, as I also taught in elementary education. I have also done others, in which we addressed the hygiene of the population and also the sanitation of food. I really enjoy this aspect of health (P1-IECN).

Various themes were developed in projects and Science Fairs involving health. There was one year when I developed a Science Fair with the theme related to Sexual Education, addressing reproduction and STIs [...] I managed to carry out the project with two classes. In conclusion, I had a distinct focus on working on this theme with the parents and guardians who were present. I find it interesting to develop the theme of STIs due to the fact that my students are in the adolescent age group (P4-CEPOSS).

The school, especially in multidisciplinary projects, tends to develop. During the pandemic, these topics were emphasized quite a bit; now, they are somewhat less so, but we primarily developed them associated with monthly campaigns, such as Yellow September, Pink October, and Blue November. We communicated with them and used various resources such as videos, lectures, and posters. When we returned to in-person classes, we discussed this extensively with the students, always within multidisciplinary activities (P5-CEMBC).

With specific characteristics, likely to meet the demands and the audience of the schools where the activities took place, the implementation of projects and school events involving different students, segments, and modalities of education was identified. Teachers P1-IECN and P4-CEPOSS, despite naming them differently, shared similar approaches, as they developed activities related to Sexual Education. Sexual health is configured as one of the health approaches that appeared in the investigation of the state of the art, and therefore, Machado and Selles (2021) argue about the importance of the approach of Sexual Education in schools, as it presents pedagogical purposes and enables teaching students about scientific aspects involving anatomical, physiological, and biomedical knowledge regarding the body. The authors also describe other purposes that encompass "[...] the social issues involving sexual orientation, gender, and sexual violence [...] and the themes related to the subjectivity of students, such as self-care and affection" (Machado & Selles, 2021, p. 4).

Teacher P5-CEMBC articulated health content in public health advertising campaigns during the multidisciplinary projects developed at the school. Returning to the identification of the core meanings in this teacher's discourse, it was found that his narrative approaches the historical behavioral trend, as advertising campaigns contribute to guidance and prevention aimed at changing habits and behaviors; however, these actions occur at specific moments (Venturi, 2018). Mohr (2022) states that the HE developed in schools often confuses with health advertising campaigns, as the latter aims to minimize problems affecting Public Health through preventive or curative models of disease, without concern for cognitive elaborations and the development of students' autonomy through critical reflections on health topics.

The analysis revealed that teachers use different didactic modalities to develop health activities in the school. The didactic modality of expository lessons, depending on the adopted approach, may be linked to normative HE, which aims for instructive and/or technical actions; however, when planned, expository lessons effectively contribute to the understanding of concepts and processes related to the scientific field; on the other hand, modalities such as projects, school events, and discussions may be closer to reflective HE, as they favor the construction of knowledge through critical and reflective strategies, in addition to expanding the debate to psychosocial, emotional, cognitive, and environmental dimensions (Venturi, 2018; Mohr, 2002). According to Feitosa et al. (2021), the choice of didactic modalities that foster students' motivation and autonomy can contribute to decision-making and the development of critical thinking about the themes and content taught.

FINAL CONSIDERATIONS

The conceptions and practices of six Biology teachers regarding health education were analyzed. Regarding the concept of health, the interviewed teachers presented different perspectives, as some discourses approached the concept proposed by the WHO, which has been incorporated into society and materialized in educational resources and didactic-pedagogical materials. On the other hand, the analysis of the testimonial transcripts revealed expanded perspectives on this concept and others, incorporating notions of a critical and reflective approach to health by proposing dialogues with sociocultural issues. The health approach in the school environment demonstrated that educators maintain a biomedical, behavioral, and hygienist tendency in their pedagogical practices, as they prioritize themes and focuses related to human anatomical and physiological dysfunctions, food and nutritional education, and STIs, justifying the hegemonic discourses in health within the school environment.

The conceptions and didactic-pedagogical practices in health have advanced through dialogue with sociocultural and environmental issues; however, the biomedical approach, which has historically consolidated as a hegemonic perspective, remains dominant. Therefore, the importance of new investigations into the possibilities for articulation between the teaching of Biology and Health Education is emphasized, to understand how teachers develop their knowledge and mobilize understandings related to the field of health in the school environment.

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