

Concepts of health and illness among students and teachers from public schools: A survey in Belo Horizonte, Minas Gerais State, Brazil

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Considering the important role of the school in the formation of concepts and as a co-factor responsible for the development of attitudes, it is relevant to investigate what teachers and students think about health and illness. This information enables the verification of trends in health education at school, with a real possibility of understanding the multicausal determination of health and of stimulating health promotion and disease prevention. On this basis, a study was carried out on the health concepts of teachers and students at four elementary schools in the outskirts of Belo Horizonte, where the authors developed a health education program. The data analysis for the answers given by teachers and students showed an emphasis on the biological and physiological aspects of health in their concepts. The most frequent response of the teachers referred to health as "physical, bodily and organic equilibrium" (61.0%). Among students, the predominant idea of health was the possibility of performing activities (76.8% for 3rd and 4th grade students, and 41.2% for the 1st and 2nd grade ones), characterized by lists of actions or rules for maintaining health or avoiding illness. One third of the sample associated health with positive feelings and/or sensations. The data demonstrated an agreement of answers between the sampled investigated and North American schoolchildren, in contrast to those by the students from Rio de Janeiro, a fact linked to the historical and sociocultural characteristics of each place. The data also indicated that the majority of the students has a good level of cognitive development, broadening the possibility of working on more complex notions of health and illness, since the teachers can construct broader concepts of greater significance for their own life and the life of the students, which requires their better formation/information.

Considerando o importante papel da escola enquanto formadora de conceitos e co-responsável pelo desenvolvimento de atitudes, torna-se relevante investigar o que pensam professores e alunos sobre saúde e doença. Tal conhecimento permite verificar a orientação da educação em saúde, a qual, na escola, pode representar uma real possibilidade de compreender a determinação multicausal da saúde e estimular a sua promoção, assim como de prevenir doenças. Nesse sentido, foram investigados os conceitos de saúde de professores e alunos de quatro escolas de 1º grau da periferia de Belo Horizonte, onde os autores avaliaram a implantação de um programa de educação em saúde. A análise dos dados demonstrou a predominância de aspectos biológicos e orgânicos, nos conceitos apresentados tanto por professores, quanto pelos alunos. A resposta mais frequente dos professores refere-se à saúde como equilíbrio físico, corporal e orgânico (61,0%).

Quanto aos alunos, a saúde é tida como possibilidade de exercer atividades (76,8% para 3ª e 4ª séries e 41,2% para 1ª e 2ª séries) caracterizada por listas de ações e regras para manter a saúde e evitar adoecer. Um terço da amostra associou saúde a sensações ou sentimentos positivos (39,0% para 3ª e 4ª séries e 38,7% para 1ª e 2ª séries). A comparação dos dados com resultados da literatura, mostra maior semelhança de respostas com estudantes americanos do que com estudantes cariocas, o que é discutido quanto a aspectos sócio-culturais de cada região. Os dados indicam que boa parte dos alunos se encontram avançados quanto ao desenvolvimento cognitivo, sendo possível aos educadores estimularem a construção de conceitos mais abrangentes em relação à saúde, desde que os professores ultrapassem a constatada visão fragmentada sobre saúde e doença, o que requer maior investimento na formação dos mesmos.

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Attention to health and the development of attitudes and behaviors which promote wellbeing and prevent illness depend on complex processes, among them concept formation and the acquisition of correct information in the health area, as pointed out by Bedworth and Bedworth (1).

In view of the role of the school which, in addition to the family, actively participates in the formation of concepts and development of attitudes by students, 1st to 4th grade elementary school teachers are particularly important as the persons responsible for health education during this stage. It is the responsibility of these educators to have command of the basic concepts in this area and to adapt learning and educational principles to the circumstances of their context.

It is fundamental to find out what public elementary school teachers and students think about health and how they express health practice, in order to create health education programs, with a survey of various alternative concepts, preconceived notions and ideologies at the basis of health practice. Furthermore, as pointed out by Gochman (2), a better knowledge of the organization of several beliefs about health at different ages favors the planning of programs which will be adequate for the various age ranges in terms of more effective contents and practice. In this respect, interviews and questionnaires were utilized to investigate the concepts of health and illness among teachers and students from 4 elementary schools located in the outskirts of Belo Horizonte, where the authors are setting up a health education program mainly directed to the control of helminthic diseases and, more specifically, of schistosomiasis, a disease which is endemic in the region studied.

The questions placed to students were conceived in different forms, considering the Piaget cognitive stages of child development.

Previous studies (3,4) have demonstrated that both teachers and students from Rio de Janeiro elementary schools have a concept of health and illness predominantly related to biological and organic aspects, reflecting the inertia of elementary education and its distance from recent advances of knowledge in the health area. It is of fundamental importance for children to broaden their understanding of the relations between health and their way of life at this stage of their school education. They should perceive that their wellbeing is directly related to the forms of social organization, with health being the result of conditions related to "diet, housing, income, environment, work, transportation, employment, leisure, freedom, access to land ownership, and access to health services", as pointed out by Minayo (5).

According to Katz (6), health as learned in Medical Schools is different from the concepts taught at Social Assistance and Sociology Institutes. The author questions that "health cannot be looked at from the conceptual viewpoint of a single field since it is produced by a gamut of knowledge ranging from medicine to politics and most of the problems arising in this area depend on the fields of economics and education." The author emphasizes the definition of health, which should integrate the somatic, psychic and social domains, which cannot be separated.

In agreement with the point of view of the authors mentioned above, the objective of the present study was to discuss the health concept in elementary schools in order to develop a broader and more critical knowledge, with priority given to preventive aspects which should guide the educational action of the teaching network.

Population studied

From 1988 to 1991 a health education project was conducted at 4 municipal schools located in the outskirts of Belo Horizonte ("Prefeito Luiz de Souza Lima", "Professora Helena Abdala", "Professor Aires de Mata Machado", and "Antonio Mourão Guimarães" municipal schools). The schools were selected on the basis of studies of prevalence of parasitic infections among schoolchildren by the "René Rachou" Research Center, FIOCRUZ, as described by Schall et al (7).

Two of these schools are located in the Gorduras Region, northeast of Belo Horizonte with a high prevalence of schistosomiasis and other helminthic diseases, and the others in the Jatobá Valley and in Barreiro de Cima, in the west of that city, with lower prevalences of these diseases, described in detail by Schall et al (7).

The study included an investigation of the health education program conducted in the schools, the teachers' knowledge, opinions and attitudes of teachers and students about health/illness and an evaluation of a new educational strategy implemented. The first step of the project was an extensive survey including teachers and students, on what they know and think about health and illness, which is analyzed in the present article. Some aspects of this investigation were presented by Schall et al (7) and Gomes dos Santos et al (8).

Sample interviewed

It was done in an attempt to include all the teachers from the four schools in the interviews about health and illness concepts, totalling 110 persons.

Lots were drawn to select 40 students at each school, according to a table of random numbers. The students from each grade were selected and interviewed, totalling 80 children in 1st and 2nd grades and 82 in 3rd and 4th grades.

Procedure and methodology

The children were interviewed individually by researchers through open questions. One kind of questions was utilized for 1st and 2nd grades and another for 3rd and 4th grades, according to the cognitive level characteristic of each age as suggested by Piaget's cognitive stages of child development.

Interviewers were previously trained, in order to homogenize the interview procedure. Permission to be included in the research was obtained from all interviewed subjects.

The interview started with an attempt to establish a rap-

port in order to attenuate the students' shyness and inhibition. The questions were then placed and the answers recorded on a paper divided vertically in the middle. The answers were recorded on the left side of the paper, the right side being set apart to record the students' questions and the interview answers to these questions in order to evaluate possible variations from the standard interview, as well as the necessary alterations in the structure of some questions. The teachers answered a written questionnaire.

All answers from the sample were organized into categories in order to obtain a quantitative analysis about the way teachers and students describe health and the cognitive elements they use in their description of health. Each category was defined in an operational way, so as to ensure the objectivity of the analysis. In order to define the categories, not only the answers' contents but also their form, were taken into consideration, so that both their meaning and richness were not lost.

Any answer given by each person could be included in more than one category, if there was more than one kind of idea presented in it. Thus, the total number of answers could exceed the total number of subjects interviewed.

In order to explain the categorization process, it is important to exemplify each step of the work. All the answers were listed. Then, each answer was analyzed and divided into categories if there was more than one idea presented in it. All the categories were defined operationally. Some categories were divided into subcategories, as described by Schall et al (3,7).

Health and illness and health care concepts among teachers

When the health concepts presented by the teachers were analyzed, they were assigned to 13 categories (Table 1), particularly outstanding among them the idea of health as "being in good condition in terms of functioning of the body, harmony, equilibrium and wellbeing" (80.0%). Other frequent categories referred to health as "physical, bodily and organic equilibrium" (61.0%) or intellectual and mental equilibrium (47.3%), or yet "emotional and psychological equilibrium" (15.4%). Only 7.3% of the teachers referred to the social aspects of health (Table 1).

With respect to health care attitudes and behaviors, the responses of the teachers were classified into 17 categories (Table 1). Proper nutrition (diet - Table 1) was the item most often mentioned (61.0%), followed by reference to "treatment" (41.8%). Among other frequently cited actions were personal hygiene (25.4%), sleep, rest and respiration (19.1%), a small percentage having included leisure and recreation (9.1%). As to physical preventive actions, avoidance (15.4% - preventive actions for avoidance - Table 1) was more frequently mentioned than performance (3.6% - physical preventive actions - Table 1)

The replies of teachers to the question "what is illness?" were divided into 11 categories (Table 2), with emphasis on the ideas linked to "disturbances in the function of the body"

Table 1 - "What is health?" and "How do you care for your own health?" among 110 teachers from four public schools in the outskirts of Belo Horizonte/MG.

<i>What is health?</i>		
<i>Categories</i>	<i>No</i>	<i>(%)</i>
Good functioning conditions:		
1. Harmony, equilibrium, wellbeing	88	(80.0)
2. Physical, bodily and organic	67	(61.0)
3. Intellectual and mental	52	(47.3)
4. Social	08	(7.3)
5. Emotional and psychological	17	(15.4)
6. Health as care	03	(2.7)
7. Disposition and energy	14	(12.7)
8. Absence of illness	04	(3.6)
9. Health as value	08	(7.3)
10. Health as "resistance"	01	(0.9)
11. Health as satisfaction of basic needs	01	(0.9)
12. Health as a condition for activity, for a normal life	01	(0.9)
13. Difficulty of expression and lack of response	07	(6.4)
<i>How does he/she practice health care?</i>		
1. General physical care	09	(8.2)
2. Diet (proper nutrition)	67	(61.0)
3. Personal hygiene	28	(25.4)
4. Preservation of the appearance	05	(4.5)
5. Diet and/or housing	07	(6.4)
6. Sleep, rest, respiration	21	(19.1)
7. Physical activity	11	(10.0)
8. Physical preventive actions	04	(3.6)
9. Preventive actions for avoidance	17	(15.4)
10. Treatment	46	(41.8)
11. Leisure and recreation	10	(9.1)
12. Absence of care and negligence actions	06	(5.4)
13. Maintaining a healthy life, equilibrium, and physical, mental, emotional and biological harmony	05	(4.5)
14. To occupy a good position in a normal life style	01	(0.9)
15. With great care	01	(0.9)
16. Reading about health care	01	(0.9)
17. Does not know, and blank	06	(5.4)
Subjects in one category	36	(32.7)
Subjects in more than one category	74	(67.3)

Table 2 - Opinions about "What is illness?" among 110 teachers and 82 3rd and 4th grade students from public schools in the outskirts of Belo Horizonte/MG.

<i>What is illness?</i>				
<i>Categories</i>	<i>Teachers</i>		<i>Students</i>	
	<i>No.</i>	<i>(%)</i>	<i>No.</i>	<i>(%)</i>
Attribution of affects	01	(0.9)	20	(24.4)
Attribution of names	06	(5.4)	12	(14.6)
Sensation	16	(14.5)	08	(9.7)
Neglectful actions	00	-	07	(8.5)
Precautions	00	-	01	(1.2)
Absence of health	04	(3.6)	00	-
Antecedents and consequences	06	(5.4)	16	(19.5)
Causality ideas	09	(8.2)	09	(11.0)
Disturbances in the function of the body	55	(50.0)	02	(2.4)
Does not know and/or blank	12	(10.9)	02	(2.4)
Redundant or distorted	01	(0.9)	08	(9.7)

(50.0%), followed by “sensations” (symptoms) resulting from illness (14.5%). The category “does not know” and blank responses reached 10.9%, demonstrating difficulty in formulating the concept.

Concepts and attitudes of the students

The answers of the students to the questions: “what is it like to be healthy?” (1st and 2nd grades) or “what does it mean to you to be healthy?” (3rd and 4th grades) were divided into 11 categories (Table 3). Most of the 1st and 2nd grade students did not reply to the question (63.7%), or stated that they did not know (18.7%), or yet gave distorted answers (5.0%), making up a total of 87.4%. The remaining students (12.6%) related health to not being ill (1.2%), to the possibility of engaging in different activities (5.0%), to positive feelings (2.5%), and to the availability of food (2.5%). In contrast, most of the 3rd and 4th grade students associated being healthy with the possibility of engaging in different activities (76.8%) or with positive feelings (39.0%), with no occurrence of blank responses or of the “does not know” category.

To the question “do you think you are healthy?”, most of the 1st and 2nd grade students responded positively or said that they thought so (59 = 73%); 13 (16.3%) answered negatively or stated that they did not think so, and 8 (10.0%) stated that they did not know.

The replies to questions about the actions to be taken for health care were divided into 5 categories (Table 4), with emphasis on physical care actions among which predominated eating (52.5%), personal hygiene (20.4%) and precautions taken to avoid or to expose oneself to risk situations such as “not to go out into the rain”, “to wear a jacket in cold weather”, “not to walk barefoot” (12.3%). The use of treatment was mentioned by 13.0% of the students, and leisure activities and social actions were infrequent (4.9% and 6.8%, respectively; Table 4).

Table 3 - Opinions about “What is it like to be healthy?” and “What does it mean to be healthy?” among 162 1st to 4th grade students from four public schools in the outskirts of Belo Horizonte/MG.

Categories	Grades			
	1st and 2nd		3rd and 4th	
	No.	(%)	No.	(%)
1. Possibility of performing activities	04	(5.0)	63	(76.8)
2. Avoiding inadequate behaviors	00	-	04	(4.9)
3. Not falling ill	01	(1.2)	03	(3.4)
4. Value/qualities	00	-	05	(6.1)
5. Availability leisure	00	-	01	(1.2)
6. Availability food	02	(2.5)	01	(1.2)
7. Positive characteristics and feelings	02	(2.5)	32	(39.0)
8. The will/desire to do things	00	-	02	(2.4)
9. Notion about care with body	00	-	06	(7.2)
10. Notion about care with health	00	-	01	(1.2)
11. I don't know	15	(18.7)	00	-
Blank	51	(63.7)	00	-
Distorted	04	(5.0)	11	(13.4)

Table 4 - Replies by 162 1st to 4th grade students from four public schools in the outskirts of Belo Horizonte/MG to the question “How do you take care of your own health?”

How do you take care of your own health?		
Categories	No.	(%)
1. Physical care actions		
General	02	(1.2)
Diet	85	(52.5)
Personal hygiene	33	(20.4)
Care about own appearance	05	(3.1)
Diet and house	04	(2.5)
Sleep/rest/respiration	05	(3.1)
Physical activity	06	(3.7)
Physical prevention		
Doing	02	(1.2)
Avoiding	20	(12.3)
2. Treatment	21	(13.0)
3. Leisure and recreation	08	(4.9)
4. Social care actions	11	(6.8)
5. Absence of care/neglectful actions	01	(0.6)
Does not know/blank	14	(8.6)
Redundant/distorted	05	(3.1)
Subjects in one category	114	(70.4)
Subjects in more than one category	50	(30.9)

Regarding the characteristics of a healthy child, a question placed only to 1st and 2nd grade students, 17 categories were detected (Table 5), with a predominance of the idea related to the “possibility of carrying out activities” (41.2%) and of “positive characteristics and feelings” (30.7%) related to health. Again, there was a high frequency of replies such as “I don't know” (18.7%) or blank replies (11.2%) for this age range. In contrast, the characterization of a sick child showed less variation, with a total of 9 categories, with a predominance of ideas about causes and consequences of illness (54.0%), followed by the mention of negative “sensations” attributed to being ill (25.0%).

For the older students (3rd and 4th grades), the concept of illness (Table 2) is primarily related to negative sensations and feelings, such as those expressed by the “attribution of feelings” (24.4%), “attribution of names” (14.6%) and “sensation” (9.7%) categories, totalling 48.7% of the responses. Many replies did not present a concept of illness but referred to actions which provoke or derive from illness, as expressed in the “neglectful actions” (8.5%), and “antecedents and consequences” (19.5%) categories. Ideas which relate illness to what may cause it were also found, whether correct or absurd (11.0%).

The analysis of the health and illness concepts confirms the data previously obtained by Schall et al (3) and Boruchovitch et al (4), demonstrating a predominance of biological and organic aspects both among teachers and students. To the latter, the idea of health as the possibility of performing activities (76.8% for 3rd and 4th grade students, and 41.2% for 1st and 2nd grade students), characterized by lists of actions or rules of maintaining health or avoiding illness, is similar to the results obtained by Kalmins and Love (9), who associated this type of response with the stage of cognitive de-

velopment of the students, when concrete thought predominates. However, part of the 3rd and 4th grade sample (39.0%) and of the 1st and 2nd grade sample (38.7%) associated health with positive feelings and/or sensations, a fact that, according to Ausubel et al (10), by requiring the understanding of the idea of status, represents an advance in the level of cognitive development, indicating a transition from concrete to abstract reasoning. With respect to the concept of illness, there was also a prevalence of ideas of negative sensations and causal relations between actions which provoke illness and its consequences (54.0% in the antecedents and consequences category), demonstrating the cognitive competence of more advanced periods when we consider the Piaget stages of development (11). These data agree with the statement of Novak (12) that 1st and 2nd grade children are much more capable of acquiring and using concepts than admitted by many educators, thus increasing the possibility of working on more complex notions such as health and illness during these periods. On the other hand, the difficulty in replying to the question: "what is it like to be healthy?" on the part of 1st and 2nd grade children, expressed by a majority of absence of response or response of the "I don't know" type, suggests a question which is not well understood because it refers to an "abstract state". When the same children were asked "what is a healthy child like?", i.e., when a concrete subject was included in the question, only 29.9% of the 82.4% who did not answer the previous question failed to respond to this one (Table 3 x Table 5).

With respect to health care, both teachers and students predominantly emphasized eating, as also reported by Rachis (13) for North American schoolchildren. In contrast, Rio de Janeiro teachers and schoolchildren gave a higher percentage of responses regarding hygiene (4), especially personal hygiene, which exceeded those of eating, a fact related by the authors to the emphasis placed on hygiene rules and habits in the Rio de Janeiro curriculum and the textbooks used. It should be pointed out that Rio de Janeiro is a city where body culture and appearance are highly valued, a fact linked to the historical and cultural characteristics of the city. In contrast, Belo Horizonte, and in particular, the region studied is strongly influenced by agriculture and by food production, a fact that may have affected the value attributed to this aspect by the population studied. It is interesting to note the agreement between teachers and students regarding emphasis on both food priority (Belo Horizonte sample) and personal hygiene (Rio de Janeiro sample), supporting the assumption of identical concepts within the school and therefore reinforcing the role of the school in the acquisition of concepts. This evidence supports the idea that concepts are socially constructed (14), reflecting certain values existing at a given historical time.

Considering the above data and the reaffirmed role of the school in the formation of concepts, it is a source of concern to note the fragmentation of the health concept on the part of teachers, who predominantly associate it with biological and organic aspects, reflecting a distance from the theoretical-scientific advances in the health area. Thus, the teachers' ideas still reflect the positivist emphasis placed on

Table 5 - Opinion about "What is a healthy child like?" and "What is a sick child like?" among 1st and 2nd grade students (N=80) from four schools in the outskirts of Belo Horizonte/MG.

<i>What is a healthy child like?</i>		
<i>Categories</i>	<i>No.</i>	<i>(%)</i>
Personal problems	04	(5.0)
Possibility of performing activities	33	(41.2)
Respect (for parents, teachers, uncles, etc.)	03	(3.7)
Avoiding inadequate behaviors	03	(3.7)
Taking medicines/not going to the doctor	06	(7.5)
Not falling ill	05	(6.2)
Value/qualities	03	(3.7)
Availability		
Leisure	00	-
Food	04	(5.0)
Positive characteristics and feelings	31	(38.7)
Will/desire to do things	01	(1.2)
Notions about care	03	(3.7)
Not falling ill	01	(3.2)
What stays still	02	(2.5)
What has life	02	(2.5)
I don't know	15	(18.7)
Blank	09	(11.2)
Distorted	07	(8.7)
<i>What is a sick child like?</i>		
Attribution of affects	06	(7.5)
Attribution of names	08	(10.0)
Sensation	20	(25.0)
Neglectful actions	06	(7.5)
Precautions	08	(10.0)
Absence of health	02	(2.5)
Antecedents and consequences	43	(54.4)
Causality ideas	01	(1.2)
Disturbances in the function of the body	03	(3.7)

the biological causality of illness, with no incorporation of the social and psychological aspects which have long been present in the practice and discourse of this field of knowledge. The fact that the "treatment" category was the second most frequently mentioned in terms of health care, confirms the emphasis placed by teachers on the curative, rather than the preventive, action, reflecting the Brazilian health care system which is directed towards patient care much more than towards health promotion.

According to Capra (15) biological mechanisms receive excessive emphasis in professional training and the psychosocial aspects "are not sufficiently discussed in medical schools...", indicating that the Cartesian paradigm is responsible for the difficulty in "understanding how mind and body mutually interact." The author cites the arguments proposed by Szasz (16), who "condemns the notion of illness as something which attacks people without any relationship to their personality, life style, system of beliefs, and social environment."

It is necessary to rethink the health-illness concept present within the school context so as to approach the multiple aspects involved. In this respect, valuable contributions have been made by the theories of cognitive development and by the social sciences. The teachers need a space for the updating of basic notions about health and for critical reflection.

tion on beliefs and practices in the classroom, taking into account the fact that concepts are constructed from the exchange of knowledge which occurs in the teaching-learning process. Thus, the school can develop health education programs which will offer the students an opportunity to construct broader concepts of greater significance for their own life, the awareness that health is a right. ■

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