

## HEALTH EDUCATION FOR CHILDREN IN THE CONTROL OF SCHISTOSOMIASIS

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*Health education for children is an important measure in the control of schistosomiasis especially considering the characteristics of the disease during childhood, such as high prevalence, high percent of treatment resistance, high rates of egg elimination and high level of reinfection, as reported in studies conducted in endemic areas. All of these facts indicate that children play a role in the maintenance and transmission of schistosomiasis. Historically in Brazil, Health Education concerning the major Brazilian endemics consists of a kind of vertical, interventionist and temporary action. An alternative would be to create a permanent health education process by assigning health education teachers to elementary schools. This would require expansion and improvement of teacher training and the development of programs taking into account: 1) the cognitive aspects of the child, the child's perception of reality and of the health/illness process; 2) the adaptation of instruction means and materials to the age group; 3) a "pedagogy of liberation" approach emphasizing the possibility of transforming life conditions since schistosomiasis is related to the lack of public services such as basic sanitation and clean domestic water supply.*

### *A short history of health education in Brazil*

When discussing health education for children it is necessary to take into account the sociopolitical and economic context within which such a program is to be set up and which conditions its orientation, the technical questions related to the understanding of the cognitive development of children, to the medical-scientific command of health and pathology, to progress in pedagogy, to the training of educators, and to available instruction conditions and materials.

Historically, health education reflects the configuration that society identifies in relation to a certain way of producing and, by being included in school health, is subordinate to the role of school, within the social context. As pointed out by Lima (1985), according to Gramsci, elementary school "corresponds to an introduction to hegemonic common sense, to a divulgation of the fundamental principles of the philosophy that guides the dominant class". Therefore, school is normative by establishing a common sense that the direction of the dominant class is "natural" and "right". The health area is developed in the same

direction. Lima (1985) refers to the development of public hygiene in capitalist societies as the result of a threat to the very existence of the dominant class when high rates of morbidity and mortality undermine the development of material forces of production.

From this perspective, Matida et al. (1985) analyzed the factors that influenced Health Education in Brazil since its first expression as "hygiene education" in the second half of the 19th century (bacterial revolution), with emphasis on the biological determinants of disease and neglecting social factors, on to the creation of Public Health in the twenties, which was called "Sanitary Education" and was based on prevention, to the ideology of community participation in the fifties, to the stress on technical aspects in the sixties and to the questioning and search for alternatives in the seventies and eighties.

In capitalist societies, the concept of disease is vinculated to a medical-clinical vision, as a biological process of each individual, a fact that deprives it of its social character, thus removing the responsibility of the state for the citizens. However, since the end of the sixties, the debate on the character of disease has been defined (Laurell, 1982). The social nature of disease has been evidenced by the characteristic

manner of falling ill and dying of human groups, leading to an ecological concepts that sees disease as a disequilibrium in the interaction between a being and his environment.

In Brazil, the historical and social character of disease was first apparent at the beginning of the century (Luz, 1978), when mass diseases such as malaria, schistosomiasis, Chagas' disease, tuberculosis, leprosy, and malnutrition, among others, became important in the nosologic picture of the country. However, even if an awareness of social responsibility in the health disease process exists, the present health situation of the Brazilian population reveals the abandonment of the social sector on the part of the successive governments, the intensification of endemic diseases, the irreducibility of diseases that can be avoided by immunization, the precarious type of health care available to rural and urban peripheral populations, fraud and misapplication of public funds in the sector which lead to chaos in health services, as denounced at the Eighth National Health Conference (1987).

Thus, it is necessary that some successful experiences and alternative paths suggested by some theoreticians be considered in order to establish more effective practices. One of these experiences, such as the "Integral Health Program of Pamplona Alta" (Lima, Peru), stands out as an effective program in which "health is viewed as the ability to face and modify the conditions that generate a situation of infrahuman life and disease, a fact that is closely related to the levels of organization that the population can obtain from this struggle" (Lobo, 1984).

#### *Health Education in the first level Schools in Brazil*

Health Education was made a compulsory subject for elementary and secondary schools by article 7 of law 5.692/71, with the objective to emphasize basic health and hygiene knowledge and practice. The law itself establishes that the subject should be learned primarily through actions rather than through explanations (paragraph 2.264/74).

However, as pointed out by Matida et al. (1985), "health teaching in schools has been limited to the transmission of a set of disarticulated, out-of-context information of health

and hygiene". Teaching is based on a restricted health concept, which is seen as the absence of disease and separate from social reality. Thus, emphasis is placed on the transmission of knowledge about the names of the diseases and the causative agents, with no understanding of, and no attempt to transform the life conditions that give origin to disease. The above authors state that "in a school that prevents the social organization of pupils, that favors individual work, competition rather than cooperation and solidarity, that values silence and subservience – health teaching is the concealment of reality".

Taking as an example elementary school, in which health education is part of the Science curriculum, the analysis of this document of SME, Rio de Janeiro (1980) reveals that the topics belonging to the item "Health Defense" represent only 11% of the total content, are not articulated with one another and even less so with other items in the program, such as "diet" and "ecology". As analyzed by Rozemberg (1987), the compartmentalization of this information leads to fragmented understanding, with the creation of independent concepts concerning a single reality. For example, the notions of external procedures for health defense (relationship with the environment) seem to be completely separate from notions of internal procedures for organic defense and resistance to infection (diet). In this respect, the proposal for the teaching of Science and health in particular is not contributing to the correct understanding on the part of the child of the dynamic equilibrium that must be established between the external and internal means in the maintenance of health and of life itself.

Another limiting factor is the small number of weekly hours actually devoted to the teaching of Science (about 2:30 hours, which are reduced by delays and by the absence or by the dispersive activities of the teacher). As reported by Carraher et al. (1985), the teachers copy the programs of the textbooks adopted, teaching is based on the transmission of information and on the belief that "learning is memorizing". The picture is further complicated by the fact that Science textbooks used in elementary school usually have only one chapter on health (the last in the series), and the delays occurring during the school year prevent reaching this mark (Schall et al., 1987). Carraher et al. (1985) underscore the need to

replace content with activities to be developed, but point out the difficulties of this operational approach within the observed context, since this change would require knowledge of child development on the part of the teacher.

Valla & Melo (1986) state that it is in public school that children have one of their first opportunities to discuss health but warn that existing programs do not treat important subjects such as pollution and the effects of pesticides and their causes. They emphasize that when viruses, microbes and germs are approached in school the discussion cannot be limited to biological aspects, but should include the living and working conditions of the population which favor the entry of these microorganisms into the body. Thus Lima (1985) proposed the possibility of health pedagogy not to teach what health is, but to teach how health can be maintained, conquered or lost in relation to the possible ways of life, something that school programs should reflect in their planning and in the practice of health education.

#### *Importance of Health Education for children in the control of schistosomiasis*

The prevalence of schistosomiasis is related to the living conditions of populations and is associated with the lack of basic sanitation, of piped water and of leisure options, and with working relationship that favor transmission. Furthermore, prophylaxis and treatment are limited by the lack of a vaccine, by a considerable percentage of resistance to the drugs used for treatment, and by a still limited biological and chemical control of mollusks, which is specific and temporary. Thus, it is necessary to use multiple strategies, including health education, which has been reformulated along time. A change in attitude has been observed after a long period of time during which health education was based on vertical intervention without taking into consideration how the population perceived the disease or the wisdom of the communities themselves. Programs currently being set up emphasize the importance of participation on the part of the population, with an attempt at joint planning in terms of methodology and selection of technical resources appropriate for the target population.

Epidemiologic studies carried out in Brazil on schistosomiasis have shown a high prevalence

in the 6 to 20 year range (Pellon & Teixeira, 1953; Cotta & Andrade, 1967; Paulini et al., 1967; Vinha, 1968; Castro-Filho & Silveira, 1979; Coura et al., 1983). The importance of the juvenile segment of the population is such that the 7 to 14 year age range has been adopted as the operational parameter for control activities in places where SUCAM (Superintendence of Public Health Campaigns) investigates prevalence in Brazil (Castro Filho & Silveira, 1979). Furthermore, it has been reported that children and teenagers have greater percentages of resistance to treatment and greater elimination of *Schistosoma mansoni* eggs, which overlap with adult rates (Rey, 1956; Katz et al., 1978, 1980; Costa et al., 1980). It should be pointed out that children in this age range have not fully acquired good hygiene habits, and that rivers, lakes, canals etc. are intensely sought out, especially in economically deprived areas where few leisure options are available. These factors contribute to the disease, as shown by studies on the transmission rates of schistosomiasis among children aged 10 years or less (Pessoa & Amorim, 1957; Pesigan et al., 1958; Conceição & Coura, 1978; Meneses & Coura, 1979). Thus, both habits and physiology contribute to the active participation of children in the maintenance of the transmission cycle of the disease. Castro Filho & Silveira (1979) reported that, when a population is treated collectively, 80% of persistent cases are children aged less than 14 years, and that in this age range the 90% rate of cure 45 days after medication decreases to 40% 365 days after medication. These facts demonstrate the importance of developing an adequate and continuous educational process for children and teenagers. In addition, as demonstrated by Werner & Bowers (1985), children act as links with their families and the community by retransmitting their knowledge and generating change. In turn, an educational program included in the schools has a better guarantee of continuity and consistency, since education simply related to campaigns is of a transitory nature, uses a mass approach and therefore is of little effectiveness.

In general, what occurs in Brazil with respect to infecto-parasitic diseases, is a type of immediatistic educational alternative, which is offered during epidemics or through transitory governmental action. There is no planned, persevering, prophylactic or continued education. As pointed out by Coutinho & Pimont

(1981) in a study of the aspects of health education undertaken by PECE (Special Program of Schistosomiasis Control of the Health Department), "the failure of health education is due to the inoperative condition of acquired knowledge in terms of changes in very old and sedimented living practices, such as those that involve the risk of contamination (bathing in rivers, fishing etc.)". The "message" in this case will appear "useless" since the individuals have no available alternatives for these habits.

Thus, for an educational program to be successful, it is necessary to take into account the reality of the persons to be educated, their habits, their beliefs and their cognitive peculiarities, interests, and motivations. Since the target population consists of children and teenagers, it is necessary to know about their cognitive development, their intuitive concepts about health and disease, their perception of reality, so that no dissonance, conflict or inoperance of the information will arise.

Furthermore, for the process to be permanent, and not only of an interventionist nature, it should be incorporated into a system such as the school, with the teacher representing an advisor and not someone from outside the community who comes to bring information. On the other hand, the educational work should also be political in the sense that "learning about health is learning to live"\* and therefore technical information should be associated with discussion on the way of life and rights of citizens and with action and revindication aimed at obtaining fully functioning public services.

#### *Cognitive development of children and health education*

According to Gochman (1971) "If health educators knew more about the 'organization' of various health beliefs at different ages, they might plan programs with optimally effective content and timing". The importance of identifying students' conceptual knowledge and beliefs and the use of this information in plan-

ning the materials and strategies for learning was also pointed out by Novak (1977).

Kalmins & Love (1982) emphasized that researches on children's health beliefs from the cognitive development perspective, had demonstrated that the quality of children's thoughts about health changes as a function of cognitive development. In this way, the study of Bibace & Walsh (1980) described three major types of explanation consonant with Piagetian stages of cognitive development. The authors found two kinds of prelogical explanation of illness; phenomism and contagion, that reflect children being overly swayed by the immediacy of some aspects of their perceptual experience. The concrete logical reasoning is manifested in children between 7-10 years of age and reflects an accentuation of differentiation between what is internal and what is external to the self. The authors also pointed out two explanations of illness characteristic of this age group as: contamination, and internalization. From these results the authors commented that children's books on illness most often are based on adult's construction of how children must think about such phenomena rather than on empirical data revealing how children actually think. They also observed that educational materials are usually written without taking into consideration specific variations in understanding among children at different levels of cognitive development. Researchers who had investigated the formation of health concepts suggested that the understanding of children's health concepts is prerequisite for health education programs for children. Blos (1978) has affirmed that it is necessary for adults to comprehend how children think so that they can elicit information about children's way of thinking and correct any wrong conclusions.

It is important to take into consideration that no evidence was found that the acquired knowledge may be translated into health behavior actions among children. Rothman & Byrne (1982) pointed out that the experience of health educators have been that the knowledge of health or health practices can be increased but the translation of such knowledge into attitude and behavior has been difficult and mostly unsuccessful.

All the studies recommend the necessity of beginning health education in earlier grades in order to obtain some improvement. Gochman

\* Programa de Expansão e Melhoria do Ensino - PREMEN/Ministério de Educação e Cultura/Secretaria de Ensino do 1º e 2º Graus - SEPS/Fundação Nacional de Material Escolar - FENAME, 1981. *Saúde como compreensão de vida*. Rio de Janeiro/RJ.

(1971) demonstrated that a general concept of health may be too abstract for the young child to grasp. According to him, "because specific illness or accidents (for example, cut fingers and colds) are concrete, tangible components of the child's experience, they are more readily integrated into his perceptual system. "He pointed out that longitudinal research has confirmed the stability of a person's expectancies of illnesses and accidents, then attempts to change the level of a perceived vulnerability conceivably might begin far earlier in the person's life. This affirmative can be reinforced if it is considered the relatively lower degree of consistency observed in children under ten years as commented by Gochman (1972) and then, they might be more receptive than older ones to educational programs designed to change these experiences. The author recommended that health education programs for children in the fourth grade or below oriented to a variety of specific diseases or health difficulties might be more effective than programs geared to a concept of health as something above or beyond the absence of disease.

From these perspectives, the project "Ciranda da Saúde" has been developed to survey the present status of health education in both public and private first level schools of some areas of Brazil, specially considering the schistosomiasis disease. Emphasis has been given to teacher's and student's concepts of health and illness for the development of health education materials proper to first level schools, as it is described in the last item of this article.

#### *Considerations about the methods of communication and instructional materials*

According to Oliveira (1979) the instructional materials or media should be physical instruments that enable the transmission of necessary stimulus to the learning process in order to reinforce orientation and to make easy and effective the teaching/learning process. Thus, the properness of the materials and media, to the target population is of the most importance to reach these goals.

A recent analysis made by the "Program for Appropriate Technology in Health - PATH" (1987), demonstrated that the traditional media (such as dance, textile art, story telling, folk theater) may have significant advantages

over the modern media as they are familiar, credible and accessible to rural people and can be used in integrated health communication programs. This analysis points out the development of appropriate communication strategies using traditional media that requires careful evaluation of the individual life conditions rather than the application of set procedures.

In order to implement a communication project, it should be considered the kind of approach ("information campaign", "extension work", "community work development" or "popular education") or a mix of approaches that can be more appropriate to the specific situation after investigating the characteristics of audience, message and medium.

In order to know the intended audience, it is important to ask the members about their life conditions and beliefs and/or to develop observational studies not only to confirm the information but also to detect additional behaviors that are relevant to the program. The understanding of populations' beliefs about health and illness is a requirement to develop and make more effective messages within the cultural and situational context of the target population. In relation to the medium, the most important characteristic to achieve is its ability to attract and appeal the intended audience. An example of such message is a dental hygiene program in Mexico in which was used puppetry to attract children (Directions, 1987). As it is pointed out by the Directions, "analysis of the intended audience, message and available media provide insight to program managers who must determine an effective combination of the three". The first step in order to implement any communication project is the field testing, a kind of "pretest", that enables to choose which strategies are appropriated and to revise them as necessary. Special emphasis should be given to evaluate the effectiveness and the impact of the program. In this way, it is recommended the use of the "control measures".

#### *An experimental proposal of health education for children - The Project "Ciranda da Saúde"*

This project began in 1983, with some research about schistosomiasis in an area in Rio considered endemic. Medical examinations of a sample of first level children in this area showed that some were at risk (Schall et al., 1984). No

information about this particular disease was given to the students in the schools. In fact, the teachers did not have any basic knowledge about it and did not even know about the existence of schistosomiasis in the area (Schall et al., 1987).

Besides this, there was obvious lack of appropriate health education materials for young children and then, it was decided to develop some, aimed specifically at this age group. The proposal was to develop materials which would:

1 – Be easily understood according to the cognitive characteristics of the age group and their intuitive concepts about health and illness (Boruchovitch et al., 1987); 2 – Focus on the relevant behavior to the acquisition of diseases; 3 – Arouse the children's curiosity in their environment and motivate them to action.

Therefore the aim of the proposed materials was to guarantee the children's right of getting to know their environment by giving them the opportunity to participate in a process of positive change if they are willing to do so.

To make the information more interesting to the students, it was decided on a story format as a device to attain the following objectives: 1) have students identifying themselves with the characters; 2) make them relate it to their own experience; 3) encourage them toward action.

Using a story format, not only health messages are presented but it also favors students to perform free play situations. The teacher can explore their students' ideas about the characters they meet in the story within an atmosphere of participation, freedom and creativity. Thus, the material can have both informal and formal function and also be integrated throughout several subjects in the curriculum.

The project was divided in three stages and the Solomon's procedure (Matheson et al., 1974) has been used to test the effectiveness of the instructional materials. The first stage consisting of a pre-test was designed to survey the knowledge of teachers and students about schistosomiasis and other parasitic diseases in both public and private schools of Rio de Janeiro. Special statistical techniques of sampling were used to give maximum representativeness to the sample. Information so far

obtained through questionnaires and interviews with teachers and first level students was analysed and compared with the knowledge obtained in the post-test applied after the use of the new materials. The same treatment was given to a control-group in which the information was transmitted by traditional materials.

The new materials developed include: i) six illustrated booklets – the collection "Ciranda da Saúde", in which the technical information is conveyed on a literary form adequate for children from 7 to 12 years of age (Schall et al., 1987). The subjects of these books were selected from the most important problems of health that affect the Brazilian children such as dental caries, lice infestation, Chagas' disease, yellow fever, worms in general and schistosomiasis in particular; ii) leaflets containing more detailed information about the subjects treated in each book; iii) a guide-book aimed at providing the teachers with relevant information on the principles of health education.

The efficacy of the materials has been evaluated statistically indicating that the materials and methods used have improved significantly the students' knowledge about concepts and primary care of schistosomiasis and other health matters. Besides this, students who have learned through "Ciranda da Saúde" gave more social messages in their answers than the students from the control group (Schall et al., 1987).

In relation to schistosomiasis' materials, similar results were also observed in a study using the same material in Ceará-Mirim (RN), an endemic area of this disease in North East of Brazil (Santos et al., 1985). A more detailed study has started with first level students in an endemic focus of schistosomiasis of Belo Horizonte, Minas Gerais State, Brazil, in order to observe the possibility of behavior's change motivated by the learning process and resulting in a decreased prevalence.

#### DISCUSSION

Although the first results indicate that the material is achieving its purpose, for this strategy to be successful, teachers have to be trained. A teacher training course on health education is necessary, not only to guide the use of the collection, but also to give basic information about health matters, relationship

between teachers and students, pedagogical methods using artistic and cultural resources, etc. After each unit, teachers will practice how to teach about health by using different kinds of creative activities such as: games, story telling, dramatization, puppet shows, excursions and art craft techniques, all related with the health problems of the school community.

Since the main goal of health education is to promote behavior changes or to develop preventive attitudes, the learning in this area has to be more affective. According to Rogers (1969), we are becoming more conscious of the importance of the affective development and the need to orient its growth in the schools. The emotional aspects of the students cannot be ignored, and the schools may be able to perform an important task in this sense. It is obvious that there is an affective learning in the schools, but a great part of this learning is casual to the school's objectives since it does not belong to the curriculum. Unfortunately, even with all the resources existent in the learning field, much of the learning process at the schools is still based on listening, reading, memorizing, repeating and forgetting.

Through the use of the collection "Ciranda da Saúde" the learning process can be more practical, pleasant and collective. The possibility of the students identifying themselves with the characters may be considered a form to promote associations with human contents. These associations are positive and provide emotional supports for other challenges.

As it was mentioned before, it is important to point that health education in this way has to be a permanent process in the school.

The present aim of the project "Ciranda da Saúde" is to obtain together with the authorities of the Official Education Departments that each school belonging to the project may have specific teacher trained in health education. This teacher will coordinate the activities and orientate the other teachers of the school in order to improve a more practical and operational health education. This health educator can discover some students that can be trained to help him in the process and motivate the other students to action. He may also promote group discussions with the students families and communities associations in order to amplify his work and the prevention measures, as, for

example, changing the water contact pattern in schistosomiasis case. Furthermore, a health educator has also a very important role to develop in a country that the proportion of children that are out of the school is so high. In this case, the health education of each school can identify people from the community that can be appropriately trained to reach children not attending school by a home visiting, for example. For those purposes it is important the active participation of research and universities centres and Departments of Education in an integrate, coordinate and multi-disciplinary work.

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