Children’s perceptions of health and illness: images and lay concepts in preadolescence

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Abstract

Despite a growing body of research into children’s concepts of illness, many basic questions still remain. This study aims to describe 8- to 11-year olds’ lay beliefs of health, illness, health promotion and disease prevention. Children responded to open-ended questions about health and illness by drawing and writing their responses. Two primary schools of two small towns of Békés County, Hungary, were invited to participate. The sample consisted of 128 primary school students (57% males and 43% females), one class from each of Grades 3, 4 and 5 within each location. Consistent with previous findings, the children of this sample have considerable knowledge about health, illness and disease risks. In addition, they seem health conscious and hold positive attitudes toward health and health promotion. Many respondents demonstrated a biomedical approach to health. At the same time, holistic views of health were also common. Children’s past experiences (e.g. trivial infections) may play an important role in their concepts of disease causation. Ideas about health promotion were especially varied, with a few children describing complex guidelines.

Introduction

Lay concepts of health and illness give additional important information to the biomedical models [1]. The literature of lay beliefs suggests that these concepts significantly affect a population’s health and illness behaviors, health consciousness and risk perceptions [2, 3]. Lay and biomedical theories often specify different causes for common illnesses. This process has serious implications for illness management as well as for health promotion and disease prevention [4–7]. Therefore, a growing emphasis is now being placed on detecting lay beliefs of health, disease and risks.

Lay concepts of health go beyond the biomedical models which define health as a lack of disease or illness [3, 8]. The World Health Organization (WHO) defines health as a state of complete physical, mental and social well being, and not merely the absence of disease or infirmity [9]. This definition calls attention to the fact that health is a complex and multidimensional concept. In addition, the WHO added some new insights into health in 1984, which emphasize that health is the extent to which an individual or a group is able to change or cope with the environment [10]. This model suggests an ecological perspective, i.e. health is a state of equilibrium/harmony between the physical, biological and social environments [11]. Not surprisingly, lay beliefs of health are usually closer to this approach, emphasizing the holistic aspects and dynamic features of health [3].

Criteria of health perceptions and health beliefs vary across the lifespan [12]. While middle-aged or elderly persons tend to evaluate their own health based on the presence of chronic illness or
self-limiting health problems, children and youth tend to use psychosocial health, psychological well being and health-related behaviors, such as sports activity, as criteria [13]. This is because most children and adolescents are free of serious physical illness, yet they may experience and report considerable psychosomatic and psychological distress symptomatology.

Exploring children’s understanding of health and illness is a special challenge for researchers. Information on children’s knowledge may help health professionals develop age-appropriate explanations of illness and preventive health programs [14]. Previous studies suggest that children’s concepts of health and illness are complex and their understanding of health problems undergoes significant developmental changes based on their cognitive competence [15, 16]. This is particularly important in terms of understanding causal processes in childhood [17]. For example, research among hospitalized children has found that sometimes they may perceive their illness as a punishment due to their past misbehavior [18]. When children do not understand the main purpose of a medical procedure, they may perceive it as a negative and useless activity. In addition, young children’s lay concepts are more likely to be based on their own past experiences as compared with older children and adults [19].

Although there is a growing body of research into children’s concepts of illness [20], understanding their concepts of health and health promotion is a relatively under-investigated research topic. Understanding young children’s thinking about health and illness may be particularly important since it is easier to establish positive health attitudes than change negative ones later [21]. Young children may have more positive health attitudes than older children [22]. Health education programs may build on preadolescent children’s negative attitudes toward health risk behaviors, such as smoking or drinking, well before the peer pressure appears in adolescence [23, 24]. For health education programs to be effective, they must involve an accurate understanding of the beliefs and knowledge about health-related issues of the target group.

Previous studies have already reported on children’s lay concepts of the meaning of health and health-related activities. For example, a recent study from Kenya reports on primary schoolchildren’s concepts of health and illness [25]. Among others, the following categories were identified in terms of health: being happy, being active, feeling good, the lack of pain and health-promoting activities, particularly such hygienic issues as clean food or personal hygiene. Both biomedical and psychosocial aspects of health were mentioned. Earlier, Pridmore and Bendelow [26] identified the following major categories of ‘anything the children thought keep them healthy’: diet/healthy food, fruits and vegetables, sport and exercise, hygiene, not smoking and sleeping. Among ‘unhealthy things’, the English children mentioned smoking, unhealthy diet, environmental pollution, alcohol, medicine and violence. Similar to this study, Oakley et al. [27] reported a wide range of healthy (e.g. books or nice home beyond the usual factors like vitamins, healthy food, sport and hygiene) and unhealthy (e.g. being homeless or bombs beyond the usual factors like unhealthy lifestyle) factors in daily life both verbally and by drawings. Another study from Brazil found more cross-cultural similarities than differences in children’s concepts of health and illness [28]. In other studies on smoking as a health-related factor, primary schoolchildren expressed strong negative attitudes toward smoking [24], and even children aged between 4 and 7 years had some understanding of the health problems that passive smoking posed to themselves [22].

Children’s beliefs of health risks may be particularly important in terms of health promotion and health education. Their belief system of health risks is developed through their own past experiences, that is most of the illnesses that affect children involve infection. As previous studies have found, contagion and contamination are likely to be the disease processes most familiar to young children [19, 20, 29]. As a consequence, many of them believe diseases caused by ‘folk agents’ (e.g. cold air) to be contagious, that is folk agents may be operating independent of germs [30]. Therefore, they perceive some ‘cleaning rituals’ as general
rules in disease prevention. Later, parallel with an increase of their knowledge and experiences, the role of health-related behaviors in disease causation becomes more evident for them [21].

Assessing children’s concepts of health presents a special challenge. There is generally concern that children may know more than they are able to say. Therefore, there is a need for a special technique for collecting information from children taking into account their special skills and cognitive abilities. Using children’s drawings, in conjunction with writing (i.e. the draw-and-write technique), can be a powerful method of exploring children’s lay concepts of health [26].

The study reported here describes 8- to 11-year olds’ lay beliefs of health, illness, health promotion and disease prevention. Thus, the present study extends existing research by broadening the focus from examining lay concepts of health and illness. We also aim to provide qualitative information on children’s health concepts to help develop age-appropriate interventions. Therefore, the main goal of the present qualitative research is to detect 8- to 11-year old children’s lay concepts of health, illness and risks by using a technique which has already been well accepted and applied at the international level. To the best of our knowledge, there are no studies that have investigated children’s lay beliefs of health in Hungary. It is well known that the health status of the Hungarian population is one of the worst in Europe, even within Eastern Europe. This phenomenon was found to be rooted in Hungarian people’s unhealthy lifestyle (e.g. high frequency of smoking and unhealthy diet) and the low level of health consciousness during the socialist period [31]. These lifestyle patterns can be identified among adolescents as well despite the fact that recently there is a growing emphasis on health issues for children and youth [23]. Therefore, we hypothesize that children from Hungary may differ from other children in health consciousness and health literacy due to the social and cultural contexts.

Hopefully, this study provides a good basis for an effective intervention model for health promotion to maintain health attitudes and to prevent harmful lifestyle patterns in the critical preadolescent period.

### Study design

#### Sample

Data were collected from two samples of children aged 8–11. The goal was to select a sample of children average in terms of socioeconomic background and health literacy. Two primary schools of two small towns of Békés County, Hungary (Békés and Köröstarcsa), were invited to participate on the basis of personal contact. Both schools agreed to participate in the study. All the children aged 8–11 who were present in the selected classes on the days the research was carried out provided data. The sample consisted of 128 primary school students (57% males and 43% females), one class from each of Grades 3, 4 and 5 within each location. Although this sample is not representative of schoolchildren in Hungary, it well represents Hungarian children aged between 8 and 11 years living in small towns. In this phase of such a research, however, we intended to test the method and yield useful information, rather than to produce strictly generalizable data.

Consent was at the discretion of the head teachers who considered the research material suitable for inclusion in the normal curriculum. Regarding the consent procedures, letters requesting parental consent to the children’s participation were sent home with the children. In addition, the children were asked for consent before research sessions if they wished to take part in the project. There were no refusals, although the classroom settings would have made it difficult for children to refuse. All in all, most of them said they had enjoyed participating in the project. It was stressed that the research was not a test and that no marks were going to be given. Confidentiality was also emphasized. Interviews were conducted during the second half of 2003. In each class, the researcher was given free access to the whole class for a period of 45 min. Evaluations and classifications of responses were carried out by the same researcher to ensure reliability.

#### Methods

The draw-and-write technique asked children to draw pictures and write a response in accordance to
specific instructions read aloud in the classroom by
the researcher. This method may be viewed as a
child-centered approach that enables children to
express their opinions at their own levels. Drawing
has proved to be an effective method to get a deeper
insight into children’s belief systems. That is,
drawing provides an insight into children’s thinking
at different levels of cognitive development [26,
32]. Although the method is widely used in re-
search, we should also note here that there have
been (methodological, analytical and ethical) cri-
tiques on the draw-and-write technique [33, 34].
Among others, it has been argued that this method
does not reflect the processes involved in the con-
struction of data. In addition, there are concerns
over interpretations of drawings as primary data.
However, together with the written information,
they even serve as a valuable resource of children’s
health concepts [25, 26].

The children were given pre-prepared sheets of
paper (questionnaires) which contained several
simple questions, such as ‘Are you a boy (1) or a
girl (2)?’ or ‘How old are you?’ Questions re-
garding children’s lay beliefs of health, health pro-
motion and disease prevention were the following.

- What is the meaning of health for you?
- Do you know what makes you ill?
- What are you doing to keep healthy?
- What are you doing not to be ill?

Although occasionally children get information on
health issues in schools, no previous lessons were
given to them on the specific questions studied here.
Responses might be given in written form and/or
as drawings. The written answers and drawings
were discussed with the children to ascertain their
meanings. Rather than being used in a ‘diagnostic’
sense, the use of children’s drawing and writing is a
simple way of exploring their beliefs.

Results

Children’s lay concepts of health

The first question asked children to give a descrip-
tion of health in their own words and/or draw

anything which represents health for them. Most
children expressed a sophisticated definition of
health which may be divided into two basic groups:
biomedical and holistic (close to the WHO defini-
tion). Biomedical and holistic concepts of health
appeared with near-equal frequency, although
many responses include both types (biomedical:
28%, holistic: 27%, both: 20%). This means that
of the children who had biomedical views of
health, 20% also added some psychosocial and
multidimensional views. There were no statist-
cal differences in the responses by gender or age
($P > 0.05$ by chi-square test).

Some examples of the biomedical health con-
cepts are as follows:

- I do not have a headache (8-year-old girl)
- We are living a long life (9-year-old boy)
- I do not have to take any medicines (9-year-old
  boy)
- I am not ill and do not have a pain at all (9-year-
  old boy)
- I am strong and healthy (9-year-old boy)
- I do not have to go to see the doctor (9-year-old
  boy)
- The word ‘health’ has a meaning for me that
  I am not ill (11-year-old boy)

Within the biomedical concepts, some of them ex-
press the children’s past experiences of infections:

- When I am healthy I do not have a running nose,
  a bad cough or a high temperature or chicken-
  pox and I do not sneeze (9-year-old girl)
- Health means thoroughly cleaning your body
  (10-year-old girl)
- Health is not having any bacteria in your body
  (11-year-old girl)

Some examples of the holistic health concepts are
as follows:

- Bodily and psychological well-being and being
  joyful (11-year-old boy)
When I am healthy, this means that I am happy (11-year-old girl)

Health has a meaning for me like well-being, happiness, joy. Health is a human strength. (11-year-old girl)

The following health beliefs particularly emphasize the social dimension of health:

If I am healthy I go to school and I enjoy the company of my friends and classmates (10-year-old girl)

Within the holistic views, many of the children express a rather abstract concept of the relationship between life and health, for example:

Health is an asset, a resource for life (10-year-old boy)

Health is the most important aspect of life for everybody and if you do not make your best to maintain it your life may change for the worse (11-year-old boy)

Health is the most important thing to maintain your life (11-year-old boy)

Likewise, within the holistic concepts, some of them emphasize the positive role of the environment:

Health means that I am walking under the open air (10-year-old girl)

Health means something like the natural environment (11-year-old girl)

In addition to the groupings of either biomedical or holistic definitions, some of the elements of healthy lifestyle may also be noted. Although there were no differences by gender ($P > 0.05$), older children describe different forms of substance use more often (9% of Grade 4, 15% of Grade 4 and 19% of Grade 5 students; $P < 0.01$ by chi-square test). In many cases, the children view health behavior as intimately connected to life activities. Most frequently, they mention sport as an important element of healthy lifestyle. Some examples are as follows:

Healthy ... when someone takes regular sports activity, eats healthy food and feels O.K. (8-year-old boy)

Healthy ... someone who is not ill, takes sports regularly and eats a lot of fruit (11-year-old girl)

Health means a lot of vegetables, fruit, relaxation, sport and washing (9-year-old girl)

Figures 1 and 2 show some examples of children’s drawings representing health concepts. Figure 1 displays some trees, bushes and a butterfly as symbols of nature in health representations. Figure 2 shows others types of health representations, namely, a joyful girl with healthy internal organs, toothbrush and paste and fruit.

**Children’s lay concepts of illness**

When asked to describe causes of illness, most children describe processes of contagion and contamination. Folk agents from the environment such as ‘bad air’ were also frequent. Some examples of the children’s lay beliefs of illness are as follows:

When it is too cold I can get a flu (10-year-old boy)

![Fig. 1. Lay concept of health I. Trees, bushes and butterfly as symbols of nature in health concepts.](image-url)
I can get ill when I have an icy drink (9-year-old boy)

I can get ill from bacteria or when one of my classmates comes to school and he/she is ill (10-year-old girl)

From bacteria which cannot be caught by the white blood cells and they can come into the organism (10-year-old boy)

From the small bacteria ... when I do not wash my hand before eating or do not wash the vegetables and carrots ... and the contaminated air (11-year-old girl)

Virus or bacterium circulating in the air ... and also from other persons or dogs (11-year-old boy)

The cat’s hair (8-year-old girl)

Some of the children particularly emphasize the role of environmental factors in disease causation:

From exhaust fumes or contaminated air ... from chimneys. I can’t stand the cigarette smoke either (10-year-old boy)

When the air is too cold or the food I am eating is too cold. Smoke also makes me sick (9-year-old boy)

The sudden change of climate (11-year-old boy)

Gasoline and the polluted air (8-year-old boy)

When we are in a big city and breathing the cars’ exhaust fumes. These are harmful for our body. Cigarettes are also harmful (10-year-old girl)

We may be ill from the polluted environment and bacteria when there is a dirty place. When plants are removed (11-year-old girl)

In this population, preadolescent children usually avoid harmful habits like cigarettes or alcohol. Many of these children cite these risky behaviors as causing illness:

You can get ill when you drink alcohol and take illicit drugs and smoke cigarettes (10-year-old girl)

When you do not eat enough fruit or you are not engaged in sports (11-year-old boy)

Lots of chips and spicy food, hamburgers (9-year-old girl)

Figures 3–6 show the children’s lay beliefs, particularly their views of disease causation. More drawings were provided in reply to the question about illness causation than to the question asking for a definition of health. This indicates that children may not have the appropriate verbal knowledge to express their views. Figure 3 presents a typical case of chickenpox and a possible mode of its transmission. Figure 4 displays the drawings of cancer as symbols of disease. Figure 5 again presents a typical mode of the transmission of microorganisms. In the background, however, the exhaust fumes of a car may also be seen. Figure 6 displays a representation of the connection of different types of risks, namely, environmental pollution and smoking. This figure suggests that smokers tend to make more pollution. And finally, the last figure (Fig. 7) shows several forms of disease-causing agents such as contaminated water, a car, a fox and the deep water of a lake.
Children’s lay concepts of health promotion and disease prevention

Similar to the lay concepts of health, children’s opinions of health promotion and disease prevention reflect various approaches. Most children emphasize healthy lifestyle as a main resource for maintaining health and preventing the onset of disease. A wide variety of specific behaviors were mentioned, e.g. sports activity, nutrition as well as avoidance of harmful habits:

Healthy nutrition, regular food taking, a lot of fruit and vegetables, less pork, a lot of diary products, avoiding from eating chips and sweet food and contaminated food (10-year-old girl)

Relaxation and sleeping a lot (10-year-old boy)

Having chat and game with my friends and regular sports (10-year-old girl)

Some of the children emphasize the cleaning rituals and other rules aiming at preventing the transmission of an infection or avoiding colds:

Physical activity in the open air, taking up warm clothes (10-year-old boy)

Thorough washing, cleaning your teeth, taking regular bath and avoidance of going to dirty places (9-year-old boy)

Preadolescent children emphasize sports activity as an active preventive health behavior. Since most of them live in a suburban (i.e. small town)
neighborhood, they have safe environments for walking and outdoor activities. For these children, open air and moving often go together:

To avoid disease, I tend to move a lot in the open air (11-year-old girl)
I take sport, sleep a lot and play games in the open air (8-year-old girl)
I usually ride my bicycle or go on foot (9-year-old girl)
I do a lot of jogging or, in summer, I usually take canoe (9-year-old boy)

For many of them, these health behavior patterns overlap. Some examples are as follows:

I play football or basketball, try to eat healthy food and clean my teeth at least two times a day, I also take a bath in the evening (10-year-old boy)

Some children referred to appropriate illness behavior or active preventive health behaviors to avoid illness:

Taking prescribed medications (9-year-old boy)
To avoid illness means for me that I should visit the doctor when I feel ill (10-year-old girl)

Taking vitamins and Béres drops (11-year-old boy)

Healthy environment also plays an important role in children’s concepts of health promotion and disease prevention. For many of them, health behavior and pro-environmental behavior go together:

I try to lead a healthy life, avoid the environment and do not make any pollution (11-year-old girl)
I am in the open air whenever I can do, I usually ride my bicycle and do not contaminate myself and the environment (11-year-old girl)
I try to persuade my parents not to smoke. I hate the smoke of cigarettes and can hardly breathe (10-year-old girl)
I do not go to places where the air is not clean (8-year-old boy)
I do not drop rubbish in the streets and collect rubbish when I notice (11-year-old girl)

Finally, an example of a complex concept of health promotion and disease prevention is as follows:

I suggest that you should move a lot, relax a lot, eat healthy food, do not eat lots of sugar or salt, eat lots of fruit and vegetables, diary
products, avoid fatty meat, alcohol, cigarettes and illicit drugs (10-year-old girl)

Figures 8 and 9 present some of the children’s ideas about the activities of health promotion and disease prevention. Figure 8 displays an athlete engaged in weightlifting. Figure 9 presents some other offered activities, namely, playing table tennis, boxing, sleeping and tooth care.

Discussion

The main goal of the present study has been to describe qualitative research into lay concepts of health, illness and risks in a sample of Hungarian 8- to 11-year old children. We have applied the draw-and-write technique to collect data, an effective method for eliciting health concepts in this age group [24, 26, 27]. As it has been found in previous studies, children have considerable knowledge about health, illness and disease risks. In addition, they seem health conscious and express positive attitudes toward health and health promotion. It seems to be that cross-cultural similarities in children’s health concepts are more important than differences [28]. Thus, our hypothesis that Hungarian children might differ from their western (or other cultural) counterparts in terms of health consciousness and health literacy has not been confirmed. Besides the dominant similarities, however, some differences have been identified as well.

For many of them, health may act as a positive resource for life. This is similar to what a study has reported in Kenya [25]. Beyond the biomedical approach to health, they express a strong holistic view of health, similar to the model as defined originally by the WHO [9]. In addition, children also emphasize equilibrium, harmony, a balance between themselves and their environment which may be viewed as an ecological approach to health promotion [8, 10, 11]. Our results suggest that not only adults tend to perceive health as a complex, biological, psychological, social and spiritual concept [3] but also children.

In children’s biomedical health concepts, past experiences may play a decisive role [19, 20, 29]. Since children of this age usually have experiences of trivial infection, the most salient aspect of health for them is the lack of bacteria or symptoms like cough or running nose. Moreover, in relation with disease causation, most of them mention contagion, contamination and other folk agents from the environment. This emphasis on infection is consistent with past findings from other populations of children [19, 20, 29]. Fewer children emphasize health-related behaviors (e.g. cigarette smoking, unhealthy food, drugs and alcohol) as health risks as compared with English children [27]. The role of these lifestyle factors in disease causation is likely to become more evident later in adolescence [21]. In addition, Hungarian children do not mention violence, being homeless or similar social factors among health determinants as compared with the English studies [26, 27].
Environmental factors of disease causation are mentioned many times, for example, exhaust fumes, air pollution and contaminated air. Surprisingly, cigarette smoking, that is passive smoking, seems to act as a form of ‘polluted air’ for them. Other studies also report on children’s strong negative attitudes toward smoking in this respect [22, 24]. Their drawings also reflect pro-environmental attitudes. Some of the children make connections between certain types of risks, such as smoking and air pollution by car. The natural environment is an important element of their health concept, suggesting that children of this age group express positive pro-environmental attitudes. This also means that pro-environmental attitudes and health consciousness are well connected [35]. Previous studies also report on the role of environment in children’s health concepts [26].

Children’s lay concepts of health promotion and disease prevention further support our idea that children are health conscious and express very positive attitudes toward health. First of all, they emphasize healthy lifestyle as a main resource for maintaining health and preventing the onset of disease similar to previous studies [25–27]. For example, they suggest, among others, relaxation and sleeping, regular sports activity in the open air, playing with friends, healthy nutrition and vitamins. It seems to be that in their concepts, open air and physical activity are interrelated. In addition, they also frequently mention cleaning rituals, emphasizing again the natural environment as a resource for health. The role of personal hygiene is also emphasized in previous studies [25, 26]. Some of the children have provided a complex guideline for health promotion and disease prevention.

These findings suggest that health education programs should build on preadolescent children’s lay knowledge and health consciousness. Our study has demonstrated that the draw-and-write technique has the potential to provide valuable insights into children’s health perceptions. Children should be invited to actively participate in the development of such a program. We should note here that there are also limitations. First of all, there are concerns relating to the over-interpretation of drawing. Indeed, this method is less appropriate for diagnostic purpose, but more for using drawings as a way of exploring children’s beliefs about health. In addition, this method is very sensitive for reflecting the diversity in children’s thinking, which is very useful in the practice of health education [26]. Another limitation of our study is the use of only qualitative processing without substantial quantitative data analysis. We should note here that the study is located within a specific cultural context; the findings may not be applicable to other countries or contexts. Therefore, further comparative work is needed to be undertaken on the issue.

In summary, to the best of our knowledge, there are no studies that have investigated children’s lay beliefs of health in Hungary. In this pilot phase, we must concentrate on the careful introduction of the draw-and-write technique and provide some basic analysis of such data. These findings provide a good basis for an effective intervention model for health promotion to maintain health consciousness in the preadolescent period. First of all, a longitudinal study must be conducted to construct individual profiles which reflect the developmental progression of children over time. Thus, in view of the emerging changes in health concepts, health education activities must be concrete and reflect these specific health concepts. Hopefully, this new generation of children may acquire the appropriate knowledge, attitudes and skills to become health-conscious adults in the Hungarian population.

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Conflict of interest statement

None declared.
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