

CHILDREN'S CONCEPTIONS OF HEALTH, ILLNESS, DEATH AND THE ANATOMY OF THE HUMAN BODY

Iva ŽALOUĐÍKOVÁ

***Abstract:** This paper focuses on children's naïve, spontaneous conceptions and perceptions of the terms health, illness and death and their perceptions of the anatomy of the human body as important starting points for health education for children at the first level of primary school. It presents research on this issue conducted by authors in the Czech Republic and abroad, and the author's own investigation into conceptions of health and illness among children at the first level of primary schools in the Brno area. It also provides a comparison of scientific theories and children's perceptions and emphasises the necessity of understanding children's naïve conceptions in order for the teacher to induce conceptual change in the educational process.*

***Keywords:** children's conceptions of health and illness, children's conceptions of death, anatomical conceptions, health education*

Introduction

A number of fields, such as clinical psychology, social medicine, clinical branches of medicine, pedagogical psychology, developmental psychology, cognitive psychology, and specialist didactics, have taken an interest in the **subjective interpretation of phenomena such as health and illness, death, life, health support, disease prevention, parts of the body, the human organs, etc.** since the nineteen seventies and eighties.

The older current of research into the subjective conception of health and illness was generally performed by doctors and psychologists, and investigated the patient's perceptions and beliefs about illness, tending to place the emphasis on the **affektive aspect**. **The younger current**, which has largely adopted the implicit theory of illness, has focused to a greater extent on the **cognitive aspect of the issue**. Research was initially devoted to explaining why patients do not co-operate with doctors and why they fail to observe their instructions during treatment. The reasons for this may have been the subjectively perceived seriousness of their medical state and the danger posed by it, and their subjective perception of the sensitivity and vulnerability of the organism.

The subject later began to interest educators, principally in terms of the search for an appropriate didactic approach to such phenomena as health, illness and death, and even photosynthesis, the air, galvanic cells, ecosystems and so on, i.e. issues falling largely within the natural sciences.

Why has the level of interest among specialists in people's subjective opinions increased in recent decades; why are they concerned with what we now refer to as pre-conceptions or conceptions of health and illness and the intellectual representation of health and illness? The answer is clear. They help doctors take an appropriate approach to the patient and to more effective treatment of the patient. They give teachers an insight into the pupil's interpretation of the concept, on the basis of which they can then act more effectively within the educational process.

It has been shown that the **subjective perception of health and illness** has a fundamental influence on the behaviour of the given person in respect of his or her own health. It would seem to act as a "filter", which lets only certain information through. It attributes an individual seriousness to this information, which in turn influences their personal approach to it. It supports the protective mechanisms of the individual in respect of external attempts to implement change, it admits only certain schemata, accepts only certain causes, sometimes rejecting the medically serious consequences of inappropriate behaviour that endangers the health, etc. (Mareš 1993). Similarly, it influences the acceptance of new information relating to health provided by the media or by school teaching, both in programmes of primary prevention and as part of the general curriculum.

Many foreign studies confirm the fact that the subjective understanding of the concepts of health and illness goes through certain phases or stages corresponding to Piaget's stages of cognitive development (the pre-logical, concrete and abstract stages). Conceptions of health differ according to age and the cultural and social framework of the society in which the child lives. E.g. Pridmore, Bendelow (1995) a study of 100 children in Botswana aged 9–10, and in the UK (100 children) Oakley, Bendelow (University of London) using the Draw-and-Write method. Also the study by Piko and Bak (2006) University of Szeged, determining the perceptions of children (aged 8–11) about health and illness in Hungary, David Schonfeld et al., New Haven, Yale University (2001) drew up and tested a curriculum of oncological education for K-6 children (elementary school = level 1 and nursery school). His study discovered an understanding of the causes of certain diseases and their subsequent comparison, these being the common cold, AIDS and cancer. Another study by Chin and Schonfeld (1998) considered developmental reasoning of the causes of cancer and its prevention.

Children's views about health (illness) form a complexly structured entity, the core of which is the child's internal representation of health. These are the individual views, ideas, perceptions and beliefs of non-specialists about what is health and illness. They are private, unscientific and naïve theories (Mareš 1993, p. 38). The terminology here is inconsistent (see table 1). Certain authors present information about the development of the child's perceptions of its own body, of life, death, illness and health, etc.

Table 1: Terms used for conceptions of health and illness (Mareš 1993, page 40)

English term	Czech equivalent
Mental representation of health and illness	Mentální reprezentace zdraví a nemoci
Conceptions of health and illness	Pojetí zdraví a nemoci
Individual thoughts about health and illness	Individuální názory na zdraví a nemoc
Illness cognition	Poznávání nemoci
Illness representation	Reprezentování nemoci
Implicit theory of illness	Implicitní teorie nemoci
Implicit models of illness	Implicitní modely nemoci
Illness schemata	Výkladová schémata
Understanding of illness	Porozumění nemoci
Patient's illness beliefs	Pacientova přesvědčení o nemoci
Patient's health beliefs	Pacientova přesvědčení o zdraví
People's health appraisals	Hodnocení zdraví (běžnými) lidmi

Children form personal views of health and various illnesses, and these views change as they develop. Adults, however, also reshape their perceptions over the course of time, throughout their entire lives indeed. People's personal views are not always set in stone or elaborated in a sophisticated manner. They may range from vague perceptions to idiosyncratic views, though these are always based on their own experience. These lay opinions may differ considerably, from the naïve perceptions of children and entirely erroneous views to a scientific knowledge of health and illness. Subjective conceptions (mental representations) are extraordinarily stable and resistant to change by health professionals or teachers.

Children's conceptions of illness

The authors Bibace and Walsh (1980) **investigated the development of children's conceptions of illness** in relation to the ontogenesis of causal relations. They found six developmental categories of explanations of illness. These are consistent with Piaget's principal stages in the cognitive development of children.

Piaget's stages:

- 1) the pre-operational /pre-logical stage: 2–6 years of age – causes of illness based on own experience, one aspect as the phenomenon
- 2) concrete operational: 7–10 years of age – sees the phenomenon from more than one viewpoint, understands more dimensions to a given situation, less egocentric, uses elementary logical operations to resolve problems
- 3) formal operational: from 11 years of age – uses abstract thought

This is extremely valuable to paediatricians in communication with child patients, and also for educators in strategies in health education. A child's perception and understanding of illness is closely associated with its cognitive development, based on the ontogenesis of causal deduction, the reasoning of causes.

• The authors Bibace and Walsh, (1980, page 914) describe three stages:

Stage 1 – pre-logical (pre-operational) thought (2–6 years): encompasses:

- a) phenomenon – the child sees the causes of illness in a specific external phenomenon, and is unable to explain it (What causes a cold? The sun, but I don't know how).
- b) infection – the cause of an illness is to be found in an object, in people, it is magical, unexplainable.

Stage 2 – concrete logical operations (7–10 years): differentiates “I and the world” more strongly, the child is able to differentiate between what is an internal cause and what is an external cause, differentiates between the cause of an illness and the way in which the illness manifests itself, and uses two characteristic explanations:

- a) contamination – the child can differentiate between the cause and the illness. The cause is seen as lying in a person, object or external activity with the qualitative aspect “bad, dangerous, threatening”. Sees the cause of the illness in physical contact or participation in a dangerous activity.
- b) internalisation – older children place the illness inside the body, while the cause may be external. Children state that the illness is happening inside them. They confuse the internal organs.

Stage 3 – formal logical operations (from 11 years): differentiates between the internal and external world, places the cause of an illness in the body and differentiates causes:

- a) physiological – the causes of illness lie in the internal structure of the body, one of the body's organs not functioning.
- b) psychological – explanation of the causes and course of the illness, explains illness as an internal physiological process, may also find psychological causes. Understands that thinking and experiencing may also influence the functioning of the body. A change in the degree of personal control appears here, taking in emotional support. These phases correspond to Piaget's stages of cognitive development.

● According to D. Schonfeld (1999) children generally go through **a number of phases in the understanding of the causes of illness**. The explanations reached by **extremely young children** tend towards **egocentric and magical thinking**. They understand illness as a form of punishment for real or imaginary acts (“I didn't behave nicely to my brother, and he became ill and had to go to hospital.”). Even adults often have a tendency to think in this way when a loved one becomes ill. Children offer causes of illness as **circular answers**, frequently **phenomenological explanations**. This means that they consider a certain aspect or phenomenon as the cause of the illness, for example “You've got a cold because your nose is running”. They attribute the cause of various events to unrelated phenomena merely because they appear at the same time. “Our electricity was cut off yesterday, and I woke up this morning with a cold.” **At a preschool or early school age**, children begin to develop a more precise understanding of physical illness. **They understand that diseases are caused by microbes, and that people can catch them from one another**. They still have a problem, however, in differentiating between infectious and non-infectious illnesses. Children gradually become able to give specific explanations for the causes of illnesses.

In the next phase, children understand illness in such a way **that microbes have to get inside the body and perform a particular activity**. They still do not have a clear

grasp of the causes of illnesses. **They often mix various causes up**, for example “You can get leukaemia if someone coughs on you”. Children are capable of differentiating between a number of illnesses. **They are able to name the specific causes of illnesses**. “If the cells are damaged by excessive sunbathing or tobacco smoke, it can cause cancer”. **In the final phase**, children (and adults) **prioritise reasoning of the causes and development of a disease**. “When the damaged cells form a tumour, they can affect the healthy cells and cause a disease.”

Children’s conceptions of health

Children’s conceptions of health have been investigated by Mareš (2003). He states six aspects on which diagnostics should be based and which accentuate the cognitive approach. These are:

- 1) The identification of health – determining what children understand by this
- 2) Health consequences – determining short-term and long-term consequences
- 3) The temporal dimension – estimating the temporal aspect of health, the dynamics of change
- 4) Causal attribution – the subjective vision of causes
- 5) The strategy of action – individual action used
- 6) The meaning of health to children – children’s arguments in favour of health

While there has been relatively little research relating to health, there has been more focusing on the conception of diseases such as the common cold, AIDS (Schonfeld 1999) and cancer (Chin et al. 1998, Oakley et al. 1995), and on death (Lonetto 1980) and life itself (Doulik 2003).

Mareš (2003) investigated children’s conception of health. 120 school pupils took part, and the free written answers method was used. He created an original typology for conceptions of health:

- Ignorance – I do not know what health is
- Tautology – health is when someone is healthy
- The absence of illness – the opposite of health
- Something valuable or precious
- Something natural, pleasant – biological, mental or social well-being
- The result of endeavour – one should take care of oneself

The most frequent methods of determining the subjective conception of health and illness include a semi-structured interview, a questionnaire, the commenting of presented images, the verbal resolution of model situations, and real behaviour in a natural or laboratory situation and its substantiation.

- A conception of health according to Piko and Bak (2006)
The authors conducted a piece of research in which two primary schools in two small

Hungarian towns (Békés and Köröstarcsa) took part. The total sample was made up of 128 children, of which 57 % were boys and 43 % girls, with a target group of children aged 8–11, pupils in years 3, 4 and 5. The children were asked to draw and write what health and illness meant to them and how to prevent illness. Most of the children expressed a sophisticated definition of health, which can be divided into two basic groups – biomedical and holistic. These two definitions appeared at a comparable frequency, although many answers contained both types (biomedical 28 %, holistic 27 %, both types 20 %). This means that 20 % of the children who expressed a biomedical view of health also expressed a psychosocial and multidimensional viewpoint. There were no statistical differences in terms of gender or age in the answers given. This study shows that not merely adults, but also children of school age have a tendency to consider health as a complex biological, psychological, social and spiritual conception of this phenomenon. It is clear that, in addition to a biomedical conception, these pupils also tend to incline towards a holistic conception of health in a similar way to that defined by the World Health Organisation (WHO). They also emphasise the importance of a healthy environment, a healthy lifestyle, and the importance of an understanding of health to the life of the given person, which is particularly evident among older pupils. Biomedical viewpoints and the issue of smoking were stated more frequently by younger pupils.

Mareš (1993, page 43) states a number of aspects to the subjective conception of health and illness:

- The number of persons who hold a given conception
 - individual
 - group (e.g. by diagnosis, method of treatment, etc.)
 - population (large groups of people, representing an entire population)
- Developmental and age aspects
(corresponding approximately to Piaget’s developmental stages)
- Socio-cultural aspects
(pronounced views of health and illness may be conditioned by cultural or religious beliefs)
Younger children may be strongly influenced by families and contemporaries.

Diagnostics of the subjective conception of illness and health may help in looking into the patient’s/pupil’s way of thinking, into the child’s reasoning about health and illness. They help explain peculiar behaviour on the part of the patient and the patient’s response to illness and treatment. They also help the teacher in finding a way of acting on the pupil, choosing teaching methods, and explaining concepts to the pupil while taking advantage of his or her life experience to date.

Children’s conceptions of death

Many teachers are afraid of discussing death with children because of the negative emotions this may arouse in the children. It is important for teachers who teach health education to be prepared for the various kinds of questions that children may ask, not merely about health and illness, but also about death and dying, since death is a natural part of life.

Children often have incorrect and confused information about death that is influenced by their own experience. They are often confronted by situations in which the leading protagonist on television, in films, videogames, fairytales and other stories for children dies and then comes back to life. Death appears to be magical and determined by fate. A brave and clever hero is capable of overcoming extraordinary obstacles, and even death, in spite of car crashes, bullets and various other dangers.

- According to D. Schonfeld (1999) it is important to provide children with the following information:
 - Death is irreversible
 - The vital functions cease when one dies
 - There are clear causes of the death of living organisms
 - Death is unavoidable

Initially, **in the early phases**, children's view of death is construed by their magical and egocentric thinking. Children often do not understand why people die, and do not understand the real reasons for death. They also often **think that death can be avoided and is reversible**. Children think that toys and dolls are living. **They do not understand all the physical differences between life and death**, and are often afraid that their dead relatives are hungry or in pain.

At the age of 5–7 they are capable of understanding death as something final and as the unavoidable end for everything living. Just like adults, however, their own death is a more problematic issue to comprehend. It is difficult to accept that one's experience of the physical world may come to an end. At this stage children are extremely interested in the physical details of death. At this age children also begin to take an interest in spiritual and religious matters: "What happens to the soul when the body dies?"

- Lonetto (1980) investigated the **child's representation of death** with the help of drawings, and states that the child's conception of death changes, develops and matures. The child's cognitive abilities mature, though social influences and, most importantly, its own experience of death also play a part here. He points out that the child's view of death develops in a similar way to speech, and is subject to similar processes. The development of a child's conception of death is part of its overall cognitive development, and not simply a function of age. Lonetto describes a number of stages:

Stage 1 – Children aged 3–5 are confronted with the death of animals or death in the family. The preschool child sees death as **reversible, as sleep and awakening**. Its fear of death is the **fear of separation from its parents**. Fear and anxiety of death are derived from separation from their mother. Up to the age of 5, children perceive death as **life under different conditions**. They also see death as the consequence of time passing and of ageing.

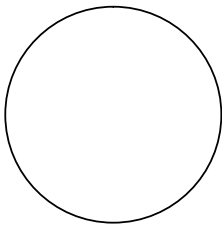
Stage 2 – Children aged 6–8 personify death. Children often see death as a **male figure**, sometimes a female figure, but never as a child. They understand death as **separation and isolation**, and associate it with old age and illness. Gradually they understand

that everyone dies, though death still has no personal significance to them. They are more interested in ceremonies such as funerals and burials. People that die cannot move, talk, breath, see or eat – they are buried. It is the end of life on earth. People go to heaven after death – children form a spiritual understanding. The archetype of death is associated with the dark, with water, sleep, emptiness, shapelessness, personification – death is masculine to them. It is associated with sadness, fear, punishment and aggression.

Stage 3 – 9–12 is the age at which children slowly become separated from their parents and attached to their contemporaries. Piaget describes this period as a period of concrete operations, the beginning of abstract thought. The child understands time and space, understands the past. Death is externalised into the form of a skeleton or a ghost. **A cognitive turning point occurs at the age of 9, when death is understood as universal, final and unavoidable. Death is one of the laws of life.** Death becomes a personal matter. The child understands that it will also die one day, and death attains a personal and universal status. At the age of 11, death becomes more abstract and gradually loses its association with people, animals or a specific image. **Children accept the inevitability of death, the fact that it cannot be avoided. Old and young alike may die.** They are troubled by the pain caused by death. They find it hard to accept the death of their mother, though they will accept the death of a grandparent. They long for a pain-free death. A conviction in their own death appears, though it remains something distant for them, something that comes with old age.

A child's conception of death changes and finds its origin in magic power, in the cyclically repeating exchangeability of life and death. Younger children have a cyclical view of death. Birth changes into death and death into birth. This process forms a circle. **Adults and children from the age of around 9 see death in a linear manner as birth – beginning and death – end.**

the conception of death among
younger children



the conception of death among older
children and adults



The projection of the circle is a straight line – the line of life. At the age of 9–12 children abandon animist-magical thought in favour of logical-causal thought. This shift in their thinking is accompanied by an understanding of the nature of external time. Their view of death approaches the view held by adults. When the child comes to the conclusion that death and ageing are unavoidable and universal, they approach the attitude taken by adults. It is essential to talk to children about death, since the reality is less forbidding than their fantasies. It is appropriate to talk to children openly about everything and to let them ask questions.

Children’s conception of the anatomical organs

How do children understand the arrangement of their bodies? Which internal organs do they know? How do they see them? These are questions that many researchers have tried to answer in their studies. Vyskočilová (2005) tries to explain how children’s understanding of the individual organ systems changes over time in reference to studies by the authors Munari and Filippini et al. (1976), who conducted research with 635 children aged 5–13 from Switzerland and Italy. The children were given the task of drawing and describing **what their bodies look like inside**. An interview was then conducted with each child. Young children were found to have difficulty drawing their own body and the organs inside the body. The youngest children, of the age of 5, draw the internal organs scattered throughout the body, and even outside the body. They always depicted the heart and the navel. Internal and external parts of the body appear systematically in the same drawing. A specific gender was depicted in a small number of drawings. Boys depicted a specific gender more often than girls, and almost exclusively the male gender. Girls, in contrast, depicted both genders. Munari, Filippini et al. also state the organs drawn by children. Their investigation evaluated only those organs that were placed in the right place and correctly named (not necessarily in their precise anatomical position, but depiction of the location of one organ in respect of another as a sufficient indicator of comprehension).

- 1) The organ drawn most frequently was **the heart** (65.5 %). It is also the only organ drawn correctly by 5-year-old children. It is never drawn in the wrong place. This is perhaps because they can feel their heartbeat, which makes its localisation easier – children can feel it working for themselves. Children generally (though not always) consider the heart to be the most important organ in the body and associate it with life. If the heart does not work properly, then the person dies or “works badly” – the person is ill.
- 2) Children then drew **the brain**, one of the quietest organs – present in 49 % of cases. Its depiction increases with age. It is never placed anywhere else than in the head.
- 3) Another organ frequently depicted are **the lungs**, shown in a third of pictures.

The frequency with which the individual organs are depicted

Organ	relative frequency of depiction (%)
Heart	65.5
Brain	49.0
Lungs	28.0
Liver	26.9
Stomach	19.4
Oesophagus	15.9
Spleen	11.6
Bladder	7.9
Bronchial tubes	4.4

Children are not able to see the body as a system until the age of 10–11. Children place the various parts in relation to one another gradually, the synthesis of a certain quantity of different elements is difficult for them.

Drawn first:

- 1) The vascular system – tubes that are interconnected and drawn throughout the body.
- 2) The digestive system – appears most often at around the age of 9. Depictions including a mouth connected with an oesophagus, stomach, intestines, rectum and outlet are considered correct.
- 3) The respiratory system appears more prominently at around the age of 9.
- 4) The skeletal system is depicted least frequently, and at a later age.

The depiction of individual systems

The vascular system	13.1 %
The digestive system	9.5 %
The respiratory system	7.4 %
The skeletal system	6.5 %

We can say in conclusion that the principal organs most frequently represented are the heart and the brain. The bodily system most frequently drawn is the circulatory system, while the skeletal system is the system drawn least frequently and at a later age. Bodily systems are drawn in only a third of cases. This finding is important to didactics for elementary teaching and the natural sciences at the first level of primary school. Vyskočilová has drawn up a didactic treatment of a number of topics for textbooks for elementary teaching and natural sciences at the first level of primary school in the Czech Republic on the basis of this finding.

Conceptions of health and illness – an investigation among children aged 7–12

We also wanted to discover what is the conception of health and illness among children in the age range 7–12. Our research was conducted at 6 primary schools in the South Moravian Region. We asked ourselves what awareness children have of health and illness, what they do for their health, and how they understand the prevention of illness. Our research was inspired by the Hungarian study by Piko and Bak (2006), in which the authors used the Draw and Write method, which is, according to the available sources (Oakley 1995, Pridmore, Bendelow 1995) an effective method for pupils of this age, leading to determination of children's preconceptions of health and illness. The aim of the research was to determine children's preconceptions and conceptions about health and illness.

Methods used, research sample

Six entire primary schools in the South Moravian Region took part in the research investigation. The selection served for the purposes of this research only, and included

those schools that agreed to the research. A total of 243 respondents took part. The number of boys and girls was about the same – 49 % boys and 51 % girls aged 7–12.

A qualitative methodology was used in the research investigation in the collection and analysis of data. We used the **“Draw and Write” method and individual semi-structured interviews**. Qualitative research was used here to focus on details and explain the causes of illness and the conception of health. A number of foreign studies provided us with methodological inspiration, in particular: Bibace and Walsh (1980), Ellen, Perrin et al. (1981), Backett and Alexander (1991), Wetton and McWhirter (1995), Oakley, Bendelow et al (1995), Pridmore and Bendelow (1995), Newton, Collins et al (1997), Onyango-Ouma, Aagaard-Hansen, et al (2004), Piko and Bak (2006). The Czech and Slovak authors who inspired us were Pupala, Osuská (1997) and Korcová (2006), who studied conceptions about the human digestive system among children aged 5–14 using drawings and interviews.

We endeavoured to increase the validity of the research using the **triangulation method**:

1. drawing
2. writing
3. oral comments/explanation of the conception of the given phenomenon – semi-structured interview

Research design

Qualitative methodology

Sample	Data collection	Methods	Results
children aged 7–12 years 1–6 of primary school	March 2006 to June 2007	drawing	preconceptions of the concept health and illness health support and the prevention of illness
special sample group		writing	
entire primary school		individual semi-structured interview with open entries	change to preconception of health, illness with age

Results

Analysis was performed on the responses obtained from the drawing, writing and oral comments of each individual child. In processing qualitative data, we used content analysis with the help of the open coding technique with the structuring of data into category systems (Hendl 2005, p. 247). During analysis, we first attempted to create transcripts of responses that made a certain sense. While going through the data we assigned codes to individual responses. We then grouped codes assigned to similar meanings

into categories of a more abstract and universal nature, proceeding from the specific to the more general. We assigned codes to nouns, such as healthy nutrition, sufficient exercise, the absence of illness, etc., according to which we categorised the responses given. In creating these categories, we also strived to differentiate them clearly from one another.

A) The category health

We based our analysis on models of health as defined by the WHO. A biomedical approach to health is known to have appeared most frequently initially. It later began to be joined by social and ecological views of health. We used the WHO definition to create three categories of models of health: biomedical, psychosocial and holistic. Our aim was to determine whether children's perceptions correspond to this approach. Children, and younger children in particular, tend to describe health from the viewpoint of the negation of illness ("I am healthy when nothing hurts.") or from the viewpoint of mental well-being and behaviour aimed at promoting good health such as sport and exercise. In analysing their drawings and individual interviews we assigned the children's perceptions of health to one of three models.

The coding and **characterisation of categories of models of health:**

- **The biomedical model** – health as the absence of illness and pain, behaviour targeted towards promoting physical health (correct nutrition, exercise)
- **The psychosocial model** – health as mental and social well-being (I am cheerful, happy, with my family, friends, I can go to school)
- **The holistic model** – a combination of the biomedical and psychosocial models, a multidimensional model, an abstract view of health, health as a value (nothing hurts and I am cheerful, I play sport, I go out with my friends, to school)

The results of this analysis of the children's drawings and interviews with the individual children were recorded in tables and supplemented with diagrams and the children's own drawings.

Examples of responses characterising **the biomedical view of health:**

Answer to the question: What does health mean to you?

▶ "For me, the word health means that I am not ill, when I don't have to blow my nose a lot, when I don't cough a lot, when I don't have a temperature, when I don't have any broken bones, when I don't have a sore throat." (a 10-year-old boy)

▶ "Being healthy means that my body temperature is less than 37.4 °C, when I feel fine, when nothing hurts." (a 12-year-old boy)

The children explain the term health in the form of the negation of illness, which is extremely common among children. It is much simpler for a child to describe illness than health. It is more obvious to them, and is also a reflection of their own experience of illness.

▶ "Being healthy is when you don't have any bacteria in your body and don't cough or have a cold. But sometimes you can cough even when you're not ill." (a 9-year-old boy)

Here health is interpreted as the absence of micro-organisms.

▶ "For me health means that I eat apples." (a 8-year-old boy)

Children describe health in connection with proper nutrition, sport, not smoking, etc.

Examples of responses characterising **the psychosocial view of health:**

▶ “I am cheerful and happy, I feel fine, I can do sport or go out with my friends, I can go to school or the cinema...” (a 12-year-old girl)

▶ “For me being healthy means playing catch with my friend.” (an 8-year-old girl)

▶ “When I am healthy, I am happy and cheerful, and I am in a good mood.” (a 12-year-old girl)

Examples of responses characterising **the holistic (multidimensional) view of health:**

▶ “It means being normal and doing all the things that a healthy person does. I can go out, go swimming, play volleyball, go to school and my hobby groups. I don’t have to lie in bed. I’m not ill, nothing hurts and I can enjoy my freedom.” (a 12-year-old girl)

▶ “Nothing hurts, I go out with my friends, go to school, go for a walk in the forest to get some fresh air, I can play sport and enjoy life.” (a 12-year-old boy)

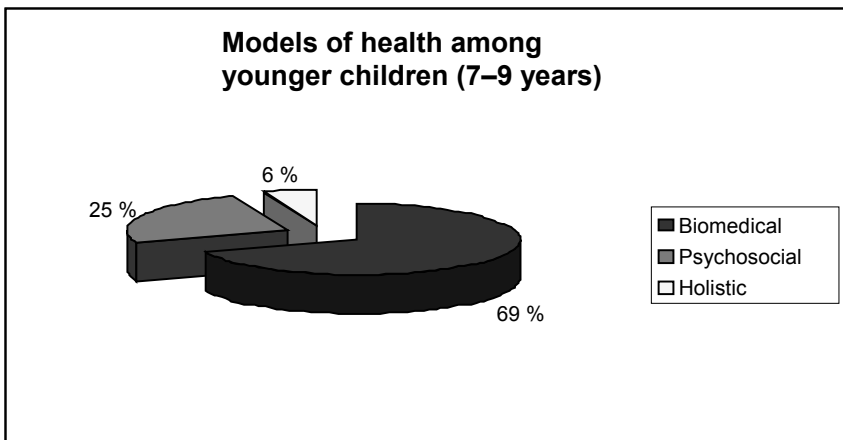


Diagram 1: Models of health among younger children (%)

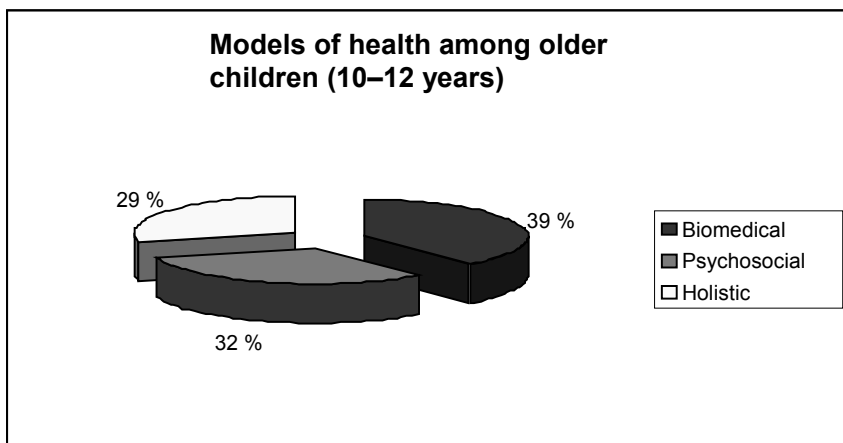


Diagram 2: Models of health among older children (%)

An overview and description of categories of health:

We found many various interpretations and subjective perceptions of the term health while processing the results of our research. We created further categories of health that expressed children's perceptions, interpretations and preconceptions of health by means of content analysis and coding. The aim was to refine the category system and penetrate deeper into the scope of children's perceptions of health. We sorted the children's viewpoints into ten categories in our subsequent analysis.

The responses given by each pupil could be included in more than one category, as an individual child may have characterised health as, for example, both the absence of micro-organisms and the negation of illness, and eating enough fruit and vegetables, etc. The children expressed their conceptions of health most frequently in their drawings in terms of **healthy nutrition** (around 30 % of children). People are healthy when they have a sufficient intake of vitamins, drink enough water, eat regularly, eat enough fruit and vegetables, etc. This was followed by the perception of health as the **possibility of and ability to exercise** and play sports (20–25 %). Another category frequently mentioned was health as **the absence of illness, the negation of illness** (20–25 %). Around a quarter of children gave a psychosocial substantiation – I am healthy **when I am happy, when I'm in a good mood**. Less frequent views were the expression of health as the **absence of limitation** (10 %) and health in the category of micro-organisms, personal hygiene, health as a value, the environment, not smoking and not drinking alcohol (less than 10 %).

Girls often expressed their own experience of doctors and illness in their drawings (see figure 8). They were more likely to draw an image of **healthy nutrition** (such as fruit, honey, vegetables), which is presented to them as beneficial to the health. They may be more interested in nutrition and diet as such, being influenced by the cultural stereotype (their mothers being responsible for the family diet). Some **boys** applied their **technical interest in machinery** in their drawings of both health and illness. When the topic of hospitals was raised, they described in greater detail the individual instruments that can help people be healthy. Motifs of fruit and vegetables also appeared in boys' drawings, though frequently in connection with mechanical equipment – a lorry taking fruit and vegetables to the shop, a tractor driving from the fields with healthy products. They applied their feeling for and interest in technology, and often forgot that they were drawing “health”, and became immersed in drawing tractors and various other vehicles that, it's true, are carrying healthy products, though their lorries and tractors were frequently drawn extremely precisely to the tiniest detail. Sports matches and various other sports activities were also frequent topics.

B) The category illness

In the second part, we focused on the conception of illness among children. We asked the children what causes them to become ill, and what are the possible causes of illness. The children stated a great many various causes of illnesses. Their responses were coded and divided into a number of categories.

The children's most frequent responses to the question “What makes you ill?” were unsuitable clothing, cold drinks, ice cream, etc., which were assigned to the category **catching cold (48.1 %)**. Almost half of the children in the group described illness

and its cause in this way. This conception of illness is clearly linked to the children’s own experience of illness. The category **smoking, drugs, alcohol (23.5 %)** was stated relatively frequently, being stated as a cause of illness by almost a quarter of the children, notably by older children (10–12 years), which also corresponds to their own experience, as this is the age at which children begin to experiment with drugs.

A fifth of the children in the group characterised illness and the causes of illness as the category the **presence of micro-organisms**, germs, bacteria and viruses (21.4 %). The category **transmission, infection (19.8 %)** is derived from the children’s own experience of common diseases – flu, tonsillitis. They often understand germs to be the cause of the transmission of illness and infection. If these two categories (which may express the same view of the cause of illness) are combined, then this category was seen to be the largest.

The children also produced drawings of people in bed with a broken arm or leg or other injury, etc. in the category **ill people (15.6 %)**. Everyone has experienced their body being ill at some time in their life, and has had their own experience of being ill, so this was something the children could relate to. **Poor nutrition (11.5 %)**, along with the harmful effects of an **unhealthy environment (4.4 %)**, appeared less often. Causes linked to the external environment, such as atmospheric pollution and other environmental causes linked to the environment in which the children live (which is not significantly affected by exhaust fumes) appeared less often. The category **inadequate hygiene (3.7 %)** was not greatly represented, and was stated more often by younger children, while the category **insufficient exercise (1.6 %)** appeared only sporadically. These categories could be grouped together as the category “other”.

A number of boys often incorporated motifs of war or fire-fighters at work, etc. in their drawings. They also portrayed the body’s fight with germs in their representation of illness and the causes of illness. They drew illness as a limitation, i.e. being unable to play sports, being confined to bed. Boys put their technical interests into their drawings. When motifs of hospitals appeared, they often gave a detailed representation of individual instruments that can help people be healthy, and drew ambulances, emergency services at work, fire engines, etc.

Table 3: Causes of illness according to the groups younger and older children (%)

Causes of illness categories	younger children	older children
Catching cold	44	52
Smoking, alcohol, drugs	7.5	39
Micro-organisms	22	21
Infection, transmission	21	18.7

Older children stated the category **smoking, drugs and alcohol** and the category **catching cold** more often than younger children. They stated **inadequate hygiene** significantly less often, however, than younger children (see diagram 8, table 10). It must, however, be added that the absolute frequency was extremely small and applies only to our group. The category **micro-organisms and infection** appeared at approximately the same frequency in both groups, which indicates that the entire group of children aged

7–12 has a similar assessment of the causes of illness in the form of micro-organisms and transmission, which corresponds to the results of foreign studies (Bibace, Walsh 1980).

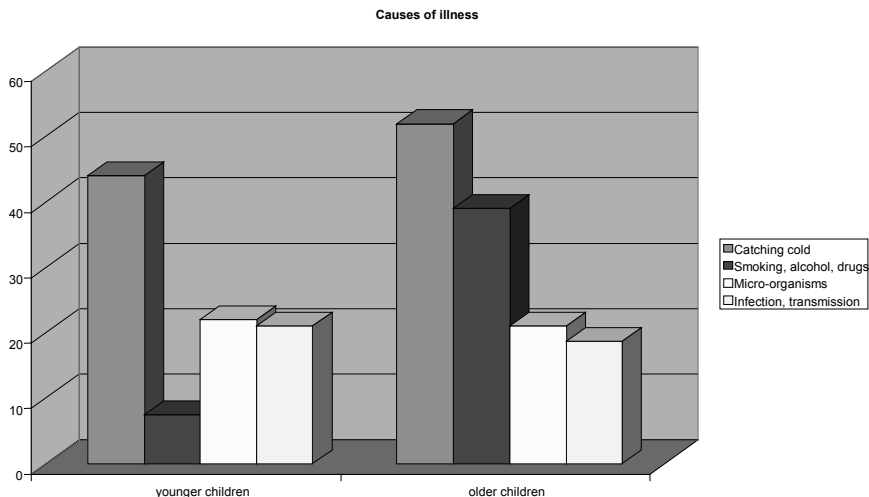


Diagram 3: The causes of illness in the groups younger and older children (%)

Younger children (the first and second years in our group) perceive illness as a physical state, and see the psychological aspect of health only with difficulty. This assessment could be made from the pictures in which the children depicted illness as germs in a form familiar to them from their surroundings. Subjects that were currently gaining media attention or were otherwise at the centre of their attention (bird flu, chickenpox affecting a number of children in their class, a flu epidemic) also appeared.

Their drawings of illness demonstrated that this topic is easier for them to explain. The children were seen to have a more accurate idea of illness, and were better able to express it both in their drawings and verbally. The reason for this is clearly their own past experience with illnesses such as colds, flu and tonsillitis. Illness has also been studied by larger numbers of specialists, in particular doctors, psychologists and educators, and there were larger numbers of studies to refer to.

Conclusion

We discovered a wide scope of comprehension and popular perceptions of health and illness among the children in our study. Our group of 243 children expressed a large number of entirely unique views of health and illness, many of which have been presented in our study.

The conception of health among children was expressed in an understanding and a characterisation of being healthy. People are healthy when nothing hurts them, when they aren't ill. Health means when we eat healthily, when people can do sport, when they are happy and are in a good mood, when they have enough rest and relaxation, when they

can go out with their friends, etc. A biomedical model predominated in the view of health expressed by the group as a whole. A holistic conception of health was expressed more often by older children. This is extremely similar to the definition of health as given by the WHO. An attempt at an ecological approach to health can also be seen, with certain children emphasising the importance of the environment. The beginnings of a spiritual understanding of health were also to be seen in the responses given by the children. Our results indicate that not merely adults have a tendency to perceive health as a complex of biological, social, psychological and spiritual well-being, but children as well.

The conception of illness seen was extremely wide-ranging. The children in the group are aware of the fact that illness may be caused by many factors. Catching cold was the cause of illness seen most often by the children. This conception is clearly linked to the children's own experience of illness. The categories smoking, drugs, alcohol, and other dangerous substances and habits were stated relatively frequently, being given as the cause of illness primarily by older children, which also corresponds to their own experience, as children often begin to experiment with drugs at this age. A fifth of the children in the group characterised illness and the causes of illness as the presence of micro-organisms, germs, bacteria and viruses. At this age, children associate illness with transmission and infection, as can be seen from their responses associated with their own experience of common diseases such as flu, tonsillitis and jaundice.

Differences between boys and girls appeared in the fact that boys' drawings of both health and illness often displayed their technical interest in machinery. When their drawings showed hospitals, they often depicted in great detail various instruments that help people be healthy. Girls, on the other hand, often projected their own experience with doctors and illnesses in their drawings. They more often drew healthy nutrition, which is presented to them as being beneficial to the health, such as fruit, honey and vegetables. They are perhaps more interested in nutrition and diet in general in line with the cultural model of mothers being responsible for the family's nutrition.

Differences in perceptions of health were seen in the more frequent use of the biomedical conception among young children and the holistic model among older children. This corresponds to the conception of health as defined by the WHO. Another change was seen in the understanding of health as a value, where a small increase in the number of older children who see health in this way can be seen. This evidently corresponds to cognitive development and the incipient development of abstract thought. A change was also seen in the slight reduction to the number of older children in the characterisation of health as the category healthy nutrition in comparison with younger children.

Differences in perceptions of illness could be seen most clearly in the category smoking, drugs and alcohol, with older children stating this cause far more often than younger children. The same is true of the category catching cold. A further difference was seen in the category inadequate hygiene, with a fall in the frequency of such responses with age, i.e. older children stated this cause considerably less frequently.

We found that children of this age find it easier to express themselves about illness than about health. Children are more familiar with illness because it is more talked about both at home and outside the family, and because children have direct personal experience of it. They take health for granted at their age, and talk about health as the opposite of illness.

Practical recommendations

Our research showed what perceptions of health and illness are held by children in the early years of primary school. Parents, as the primary group, have the decisive influence on children of this age. The role of the school and extracurricular organisations is, however, also considerable. It is important that children are guided towards a healthy lifestyle in the future, and for health education at school to have a positive influence on children in this regard and act as a supplement to the basal influence of the family environment. It is appropriate for children of this age to be given the kind of models that will help them identify with habits of this kind into the future, and help to shape a healthy society with a respect for everything that supports health and a meaningful and satisfied life for each individual.

Our results indicate that programmes of primary prevention should be based on common preadolescent conceptions of health and illness, in order that children's perceptions of health and illness are influenced effectively. Health education must be specific, and reflect and take into account these specific child preconceptions of health and illness. Let's hope that this new generation of Czech children obtains adequate knowledge and appropriate attitudes and key skills for health, so that they can become an adult population that looks after its health.

DĚTSKÉ PŘEDSTAVY O FENOMÉNU ZDRAVÍ, NEMOC, SMRT, ANATOMIE LIDSKÉHO TĚLA

Abstrakt: Příspěvek se zaměřuje na dětské naivní, spontánní koncepce a představy pojmů zdraví, nemoc, smrt a představy o anatomii lidského těla jako na důležité výchozí aspekty výchovy ke zdraví u dětí primárního stupně ZŠ. Uvádí výzkumy zahraničních i českých autorů k této problematice a seznamuje s vlastním šetřením koncepcí zdraví a nemoci u dětí 1. stupně ZŠ v okolí Brna. Zaměřuje se na srovnání vědeckých teorií a dětských představ a nutnost znát tyto naivní koncepce dětí k navození konceptuální změny učitelem v edukačním procesu.

Klíčová slova: dětské koncepce zdraví a nemoci, dětské koncepce smrti, anatomické koncepce, výchova ke zdraví