The Health of the Roma People in Central and Eastern Europe

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I. Introduction

This document is based on the conclusions reached by means of the qualitative research analysis carried out by the group of researchers and experts within the framework of the collaboration among beneficiaries of the EU Public Health program MEHO and other national Slovak research programs.

"It is impossible to imagine a more complete fusion with nature than that of the Gypsy", said Franz Liszt, one of the most prolific piano composers of the 19th century. To a certain extent, this phrase is still relevant today as some groups of the Romani people are still hesitant to surrender their unconventional life-styles and tend to reject the socio-political and cultural structures of the Western civilization. While the Romanies in the Eastern Europe and Central Asia are largely settled, some in the Western Europe continue to pursue a nomadic lifestyle. One of the reasons for this dichotomy is the division of the Romanies into subgroups. One of these subgroups of the Romani people is the Roma population, which lives primarily in the Central and Eastern Europe, as well as in the Balkans and Western Anatolia (Turkey). Before we proceed, it needs to be emphasized that the object of this public health study are the Roma people of Central and Eastern Europe (further as CEE), and not the Romani people in general (Bernasovsky and Bernasovska, 1999). Another term "Traveler" or "Gypsy Traveler" reflects the nomenclatures adopted by various groups commonly thoughts as being linked to Gypsy communities, whether or not they are or were nomadic. The term is used particularly in Ireland and U.K. (Acton 1998; Acton and Klimova, 2001; Bhopal, 2007).

Thus, this comprehensive monograph is a qualitative research study together with literature review of the health status of the selected groups of Roma population in the CEE region. It presents the development of indicators and parameters which are currently used by scientific MEHO team to monitor the health status of the Roma minority in the CEE as a part of the larger EU Public health MEHO (Migrant and Ethnic Health Observatory project founded by the European Union - www.meho.eu.com).

It focuses on three critical health areas for which Roma ethnic specific data are already collected, analyzed and compared with existing literature sources - namely:

- reproductive health
- cardiovascular diseases and growth
- infectious diseases

Most of the research studies have been conducted in the Eastern Slovakia, because at the present time the Eastern Slovakian Roma population represents a relatively isolated ethnic group and thus provides a unique opportunity to study the health and health indicators of Roma population and the interplay between genetic factors and exogenous factors (socioeconomic status - SES - and environment) including their impact on the overall health status of the Roma population. This study group can be therefore considered a *de facto* independent variable.

The collection of Roma data needs the organization of direct cross-sectional study ("ad hoc" study) with a lot of efforts from the scientific team; which is one of the reasons why it is almost impossible to receive external datasets. The other reason for difficulties in obtaining external datasets is very sensitive question of determining Roma ethnicity during data collection and in research dataset (Zeman et al., 2003; Schaaf, 2007).

II. Origins of the Romani People

The **Romani** (also known as **Romany, Romanies, Roma, Gypsies** or *Romane*) is an ethnic group living pre-dominantly in Europe, who is generally believed to have originated in central India. Due to the absence of any written history, the origin and early history of the Romani people was long an enigma, although the Indian origin was suggested on linguistic grounds as early as the end of the 18th century. Currently, both linguistic and genetic evidence strongly indicate that the Romani originated from the Indian subcontinent with their subsequent emigration from India towards the northwest in the 11th century. By the 14th century, the Romani had arrived in Europe reaching Balkans via migration from Byzantine Empire. Although the Romani are widely dispersed around the world with their most recent diasporas in Americas and, to a lesser extent, in other parts of the world, their largest concentrated populations are in Europe, especially the Roma of Central and Eastern Europe (Hancock, 2002; Encyclopedia Britannica, 2008). A short description of Romani people in Europe is included in Appendix I of this monograph.

The **Roma** people (also known as Gypsies), which is the object of this study, is the subgroup of the Romani people, who settled down in Central and Eastern Europe, as well as in the Balkans and Western Anatolia after 15th century. These countries, mainly the ones from the former Eastern bloc, have substantial populations of Roma. However, due to the long history of ethnic cleansing and xenophobia against the Roman combined with Roma's minority non-conventional life–style, the level of their integration into the society remains rather limited to a small extent. The Roma population in the CEE region tends to be marginalized, living in depressed squatter communities and isolated ghetto-like settlements (called Roma settlements or shanty towns), and suffering with high employment and sub-standard, inadequate health care (Willems, 1997; Bellman, 1998; Bernasovsky and Bernasovska, 1999).

III. A Brief History of the Romani People

The history of the Romani can be considered as one of misery, persecution and discrimination. The Roma - Gypsies are a close-knit communal people who have a shared background, but are scattered throughout the world. Their origins have been the subject of controversy throughout the centuries, but in modern times (as mentioned before), it has been discovered, from the linguistic research into their language that the Gypsies originated in Northern India, from which they spread throughout Europe and the Middle East. No one knows when the first gypsies left India or, indeed, why. It is true that due to their physical appearance, foreign tongue, behaviors and exotic customs, the gypsies were subjected to disapproval by others. However, what was considered even more outrageous was their rootless lifestyle combined with, not only the lack of a Christian faith, but a complete absence of fixed religious beliefs altogether. It is obvious that such a lifestyle was deemed abnormal to a Europe that "associated personhood, for most of society, with the locality of ones birth" (Hancock, 1980; Bellman, 1998; Fraser, 1992).

Moreover, in 16th century Europe, people believed that from nobility to peasantry, each caste of the societal hierarchy had its own particular place and mission. The difficulties to fit the Roma into such political-religious system are self-evident. The Roma-gypsies therefore were regarded as rude, wild, and dangerous strangers. They were the target of suspect and satire. The occupations they typically took were various low-pay, low-level social positions, such as blacksmiths, magicians, musicians, and dancers. Some even had the ill fortune to work as slaves.

III.1 The Early History

Romani seem to have arrived in the Middle East about 1000 AD, some going on into North Africa and others on into Europe. They were an intelligent people, used to living on their wits, who found it easy to impress the uneducated locals by giving themselves unwarranted titles and assuming the importance to go with them. Hence they arrived in Europe as Lords, Dukes, Counts and Earls of Little Egypt, demanding and receiving help and support from those in authority. Claiming that they had been ejected

from their homeland, 'Little Egypt', by the wicked Saracens, or that they were on a pilgrimage, gained them succour from no less than the Pope himself, who demanded that they be given safe passage in the countries over which he had sway. So they were able to travel in relative safety, and could expect food and lodging from religious houses, as the rich of the time felt that it would assist their standing in the eyes of the church if they supported pilgrims. Having been on a pilgrimage to the Holy Land was the ultimate status symbol, but supporting those who had been on one, or were taking part in one was the next best thing. So with their quick wits and silver tongues they were soon under the protection of Kings throughout Europe (Fonseca, 1995; Mayall, 2004).

We know for sure that a group of four hundred Roma arrived to Germany, at Luneberg, in 1417. Their leaders, the 'Dukes' Andrew and Michael, along with sundry 'Counts' gave, by their dress, the impression of wealth and respectability. While they were well dressed, their followers were anything, but the 'nobles' stayed in the local hostelry, whilst the others camped or dosed wherever they could find shelter. As pilgrims, they were protected by a letter from the Emperor Sigismund. Sigismund, Roman emperor and King of Hungary and Bohemia, and son of the Emperor Charles IVth, was renowned as the great leader who had taken the combined armies of Christendom on a Crusade against the Turks in 1396. One of the most far-sighted statesman of his day, he tried to bring about the expulsion of the Turks from Europe by uniting all of Christendom against them (Fonseca, 1995; Mayall, 2004).

Later, having persuaded Pope Martin V[th] that they were on a seven years pilgrimage, they received a letter of protection allowing them free and unhindered access to all Christian countries. They lived off the generosity of the locals, and when insufficient was forthcoming, helped themselves. The ladies soon gained a reputation as fortune-tellers, but as many of their "clients" were relieved of their purses at the same time, they also gained the not unfounded reputation of being thieves and pickpockets. Many were arrested and some executed (Mayall, 2004).

Similar groups arrived in most of the countries of Central and Western Europe throughout the 1400's. They are recorded in Spain, Italy, France, Germany and Hungary. They roamed far and wide, living the nomadic life, with the men carrying on their trades as horse dealers, musicians and workers of metal, while the women continued to tell fortunes and to relieve the unwary of their property (Bellman, 1998). Despite their supposed

religious nature, they were feared by many, and this built up into movements by governments against them.

Countries issued edicts against them, the first being Spain in about 1490, but this just drove them underground. Spain tried, over the next three hundred years, to prohibit their dress, language and customs and so to force assimilation and the end of their wanderings. Country after country passed laws to reject and expel them, sometimes to colonies overseas. In 1539, France issued a nationwide expulsion order, England having attempted the same in 1530, under threat of imprisonment, but when that failed, the penalty became death in 1554. In parts of Central Europe they were forced into bondage, and in Romania made to live as chattel slaves - a situation which did not change until they gained their freedom in 1856.

In many cases, their answer was to move elsewhere until such times as a law was made expelling them from the place. All unsettled tribes which lived among settled communities were open to becoming convenient scapegoats. The increased complaints, genuine or not, by the local population majority surely led to official and legal persecution wherever they went.

Until the end of Middle Ages the Romani migration in Europe represented politically and strategically well organized group actions. But in later times, the history of Roma people is a history of discrimination.

During few next centuries many laws and regulations were published aiming to exclude Roma from local society and to persecute them (Bernasovsky and Bernasovska, 1999; Mayal, 2004; www.mecem.sk).

In previous Austro-Hungarian monarchy, Roma children were taken away from their parents to be brought up by other families, a practice that continued in some countries until the twentieth century (Fonseca, 1995).

III.2 The New History, Roma under Socialism

The next two centuries (nineteenth and twentieth) brought a general improvement in the area of Roma issues through most of the European region. Particularly, their legal rights were granted. The black era for Roma ethnic was Nazi holocaust period during Second World War. As many as 1.5 million Roma died in Nazi concentration camps

during the Second World War (Barondess, 1998). The worst atrocities occurred in the Czech region, Romania, Croatia, and the Soviet Union. Recent studies show that in 1938 there were between 3.000 and 4.000 Roma in the Sudetenland, 6.000 in Bohemia, and 8.000 in Moravia. It is estimated that between 6.000 and 8.000 Czech Roma died (Crowe and Kolsti, 1991; Crowe, 1995; Crowe, 1999).

State governmental policies towards Roma during the socialist period should be considered in the context of communist parties' legacies, of the dominant ideology and political context. The major elements of the latter were consolidation of the state around the Communist party and the forced change of social class structure through the rapid industrialization and the creation of modern proletariat. The regime supported also Roma individuals who were encouraged to became educated and participate in the social and political structures linked to the communist party as well as to the new socialist proletariat. These individuals were assigned take the role of "transmitting new thinking to the Roma communities" (UNDP report, At Risk: Roma and the Displaced in Southeast Europe, 2006).

Conditions and legal rights for the Roma generally improved throughout Europe in the post war period, but although many countries engaged in policies to encourage Roma families to settle. Assimilation pressure from communist regimes in Central and Eastern Europe was strongly kept through rigid and strong political and administrative control that was incompatible to nomadic life (UNDP report, At Risk: Roma and the Displaced in Southeast Europe, 2006).

The communist system of socialism emphasis on equality led Roma to work together with members of majority and other minority communities. Roma spent their holidays in the same sanatoria, and sent their children to the same schools. Free healthcare and school access was available for all, regardless or ethnic or religious affiliation. Survey results not surprisingly show a strong nostalgia for the socialist past among elderly Roma respondents. This fact reflect the memories of an era when unskilled Roma workers could afford to vacation with engineers. Roma children couldn't drop out of school because laws on compulsory education until the age of 16 were strictly enforced (Crowe, 1999; The Situation of Roma in an Enlarged European Union, European Commission, 2004; UNDP report, At Risk: Roma and the Displaced in Southeast Europe, 2006).

The collapse of communism, however, had major implications for the Roma population in Central and Eastern Europe: with racist attacks organized by re-emerging parties and associations based on principles of nationalism. Since 1989 there have been significant political changes in Czechoslovakia; the "Velvet Revolution" saw the end of Communism in that country. Paradoxically, however, with democracy came the increased expression of racial prejudice (Ringold, 2000; The social situation of the Roma and their improved access to the labour market in the EU, Committee on Employment and Social Affairs, 2008; www.eumap.org; www.lsg.sk; www.osf.sk; www.rvp.sk; wwwo.soros.org).

Public opinion surveys have recently shown that European anti-Roma sentiment is increasing, the highest is in Czech Republic, Slovakia and Hungary. Some say the Roma have become the scapegoats for all that is wrong in that country, as well as elsewhere in Eastern Europe. Those who express concern about the Roma point to their growth rate, which is much higher than the national averages of the countries in which they live, and express fears about the increase in crime rates occurring across the Czech region since 1989, implying that the phenomenon is occurring because of Roma. These racial opinions create the roots for discrimination in global life and public (The right to the highest attainable standard of health, Committee on Economic, Social and Cultural Rights, General Comment 14, UN ESCOR, 2000; Zoon, 2001; Barany, 2002).

A major factor influencing the status of Roma in the society are the stereotypes and prejudices against Roma, leading to open or hidden discrimination by majority population. Attacks by right-wing extremists occur occasionally in all Central and Eastern European Region. Discrimination maybe often even institutionalized. In addition to the above-mentioned housing construction program, there have been recorded cases of police violence against Roma minority members.

The total number of Roma in the world today is estimated between seven and eight millions, with most of them living in Romania, Bulgaria, Slovakia, Spain, and Hungary. Since the demise of Communist regimes in Eastern Europe, there has been an increase in Roma cultural and ethnic unity. Many governmental and NGO organizations dealing with Roma became created in the CEE region. Many Roma political parties and associations became active, and the word "Roma", which means the people, is gradually replacing the term Gypsy (The Situation of Roma in an Enlarged European Union, European Commission, 2004; www.rrhic.org; www.undp.org; www.unhcr.org; www.unicef.org).

IV. The Romani: Social Structure, Language and Culture

IV. 1 Social Structure

(www.reocities.com - hosting The Patrin Web Journal - Romani Culture and History)

There is an extensive and complicated social structure among the Romani people. Generally, there are four community identities: nation, clan, family, and vista. First, Roma are divided into Natsias or nations, which is their main identity group. The four common Romani nations are the Machwaya, Kalderasha, Churara and Lowara.

The nations are then divided into Kumpania or clans. A clan is "an association of families united by ancestral, professional, or historical ties" (Hancock, 2002). This group consists of extended family that travel and reside together and maintains economic control over a particular territory. Each clan has a leader and the social structure of the clans may differ. There are, incidentally, no "Gypsy Kings."

Some clans are further subdivided into tribes, but many clans are simply composed of *familia*. The one common thread in all clans is the importance of the familia, the most important social group to the Roma. A vista is an extended familia, which includes anywhere from 20 to 200 members who are all related by blood or marriage. The familia has a social structure of its own that is very similar within all clans. Families are male dominated, with a group of male elders within the familia being the major decision makers. Romani women are often not included in the decision making process and generally have a much more subordinate role within the familia (Hancock, 1980; Hancock, 2002).

IV.2 Romani Language

(www.reocities.com hosting - The Patrin Web Journal - Romani Culture and History)

The language of the Roma is called Romani and is derived primarily from India from language Sanskrit; with strong influences from Persian, Greek, and Slavic languages. Until recent years, Romani language was solely "a spoken language" without grammar rules, but there is increasing use of written forms of Romani (Hancock, 1980; Fonseca,

1995; Acton, 1998;) . There are different forms of Romani depending on which clan the Roma belongs to. Interaction between different clans is limited, and the form of Romani spoken is an important means of distinguishing between clans. There also are customs in communicating with country language (Gadje language).

Their Romani language is divided into several dialects, which add up to an estimated number of speakers larger than 2 million. The total number of Romani people is however at least twice as large (several times as large according to high estimates), and many Romani are native speakers of the language current in their country of residence, or of mixed languages combining the two. In the healthcare setting, only the elder males are likely to communicate with healthcare personnel. Women are not permitted to interrupt men or to be alone with a man who is not her husband or relative (Hancock, 2002).

IV.3 Culture and Health

(www.reocities.com - hosting The Patrin Web Journal - Romani Culture and History)

Important Romani concepts related to health care are "*wuzho*" and "*marimé*". Wuzho is the Roma word for pure while marime is a broad term referring both to a state of pollution or impurity or a sentence of expulsion imposed for violation of a ritual or moral nature. Other terms for marimé are moxadó, melali, mageradó, mokadi, kulaló, limaló, prastló, palecidó, pekelimé, gonimé or bolimé. The Romani culture has strict rules about anything considered polluted. A person can be found to be marime for violations of sexual conduct, not following Romani rules, for food preparation, clothes, washing or cleaning, or other activities involving pollution. Women are particularly associated with marimé, with any part of a woman's body above the waist being wuzho or pure and below the woman's waist being marimé or polluted - especially the genitoanal area and its secretions. Secretions from the upper half of the body are not polluting or shameful. Washing hands after touching the lower body before touching the upper body is required. Separate soap and towels are used on the upper and lower parts of the body and they must not be allowed to mix. To the Roma, failure to keep the two sections separate in everyday living may result in serious illness. For this reason, most Romani women will not agree to a gynecologic examination unless the procedure is clearly explained as being essential to her well being.

Certain food or animals (birds and cats) may also be considered marimé. When a young woman reaches menarche, she is introduced to shame and must begin observing the washing, dressing, cooking, eating and behavioral rules of adult women for her own protection as well as the protection of others. Her clothes must be washed separately from those of men and children because of the impurities of her body. She cannot cook food for others during menstruation. She must show respect to men by not passing in front of them, stepping over their clothes, or allowing her skirts to touch them. Prepubescent girls and older women are placed in a different category because they do not menstruate. This allows them freedom, and they are allowed to socially interact with fewer restrictions. The Roma are supposed to wash only with running water, with a shower acceptable but a bath looked upon as sitting or lying in dirty, stagnant water. Dishes cannot be rinsed in the same sink or basin that is used for washing clothing. The kitchen sink is used only for washing dishes and cannot be used to wash the hands. Because they do not observe body separation, Gadje are seen as a source of impurity and disease. The impure public places where Gadje are congregate are also considered potential sources of disease. These places are considered less clean than the Romani home or open outdoors. The Roma generally avoid touching as many impure surfaces as possible. They will attempt to lessen the pollution by using disposable paper cups, plates and towels.

Gypsies as a cultural issue have tendency to marry young. Some tribes practice so called arranged marriages while others permit courtship. If the marriage is arranged, the groom's father selects and pays for a *bori* or daughter-in-law through the help of a marriage arranger. Marriage is not always for love but may be arranged or undertaken according to practical, economic, and/or social considerations of the family or clan. Marriage in the Romani culture has occurred as early as age nine but usually does not take place before the age fourteen. Outside marriage is considered a serious transgression in some clans and may be grounds for expulsion. In other clans, if a Romani male marries a female Gadje his community may eventually accept her provided she adopts the Romani way of life. Marriage festivities last three days after which time the bride and groom are allowed to consummate the marriage. The newlyweds traditionally live with the groom's parents until they have several children of their own, and the family is satisfied with their adult behavior and skills, at which time they are allowed to establish a semi-independent nuclear household. The daughter-in-law must prove herself to her new family and is

expected to perform services with little in return. She is expected to care for her in-laws and produce grandchildren. With the birth of her first child the daughter-in-law moves from the child or bori status to mother-of-the-child status.

Children are a major focus of Romani culture and are believed to bring good luck. Child rearing is the responsibility of everyone in the family. Due to the large and complex social structure, most of the children are raised and cared for by many different people including extended family members and clan members living in the same residential area. Infant care tends to be both permissive and protective. Infants and young children enjoy freedom from most social restraints and are not expected to understand or demonstrate shame. It is not until puberty that they are introduced to the concept of shame and expected to observe marime. Children are not expected to take many of the precautions that adults do to ensure cleanliness in their daily lives, and contradiction to adults they may eat food prepared by Gadje. They are weaned and toilet trained in a very gradual fashion as these are not considered important events in the Roma culture.

V. Roma (Gypsies) in Europe

The majority of Eastern European countries – or former socialist bloc countries – have substantial populations of Roma. After the collapse of communism, many Roma have faced increased discrimination and prejudice from both private groups and national governments (UNDP report, Avoiding the Dependency Trap, 2002; UNDP report, At Risk: Roma and the Displaced in Southeast Europe, 2006; Pogany, 2006).

The level of integration of Roma into society remains limited. In these countries, they usually remain on the margins of society, living in isolated ghetto-like settlements (see e.g. Chánov, Jarovnice). Currently, only a small fraction of Roma children graduate from secondary schools, although, under Communism, the majority of these countries had a policy of mandatory school attendance and all children were institutionally forced to attend school. The state also provided them with all required basics, such as textbooks and the compulsory uniform, just like in the other countries.

V. 1 Settlement and integration model

Although in many countries the designation "Roma" implies nomadic or travelling practices, the overwhelming majority of Roma can be considered sedentary, particularly in the Central and Eastern Europe. Migration and the nomadic life have often been forced due to discrimination, eviction or deportation in different historical periods.

As the figures on the total number of Roma population are insufficient or based on estimations, no accurate data on the number of settled Roma are available. Estimations of the total number of Roma living across Europe range from 10 to 12 million people, yet only 5 % of which are estimated to have nomadic traditions.

Three types of settlement for the sedentary or semi-nomadic people can be distinguished:
- the first type of settlement is a complete integration in towns and villages;
- the second is separation or segregation in urban or rural areas, often with low living standards, or in the neighborhoods and streets where the majority population is Roma;

- the third type is segregation in settlement areas or (authorized and unauthorized) nomad camps outside towns or villages (Teichmann, 2002).

Since 1990s, minority rights have enjoyed an extraordinary renaissance in Europe. Ironically, this has occurred at precisely the time when Europe's largest ethnic minority, the Roma, has faced an unprecedented crisis, particularly in former socialist states. The complex and various issues which affect the Roma in Central and Eastern Europe are also a factor why minority rights regimes have had a marginal impact on the situation confronting this minority (Guy, 2001). There has been a substantial question in the academia as well whether the current conceptions of minority rights are well suited to such an extraordinarily heterogeneous 'people' as the Roma, many of whom have lost the cultural and linguistic features that formerly distinguished them as a minority (Barány, 2002; Pogány, 2006).

Due to the lack of competitive and marketable skills the economic and social transition to the market economy in CEE has aggravated the socially disadvantaged situation of Roma. Increasingly severe poverty and exclusion of Roma in CEE are one of the most striking developments in the region since the transition began in 1989 (Latham, 1999). While Roma have historically been among the poorest people in Europe, the extent of the collapse of their living conditions in the CEE is unprecedented, thereby placing them as a highly vulnerable population group, concerning priorities such as education, employment, housing, health and others. In terms of demography, Slovakia ranks among countries with the highest proportion of Roma population. Different sources offer different numbers ranging from around 320.000 to 500.000 Roma living in Slovakia. That accounts for 8 to 10 percent of the country's population. However, these data are only estimates because it is not possible to collect or maintain information specifically on Roma in Slovakia due to an unclear interpretation of legislation on collection of ethnic data.

According to the last census made in 2001 only 89.947 citizens of Slovakia declared themselves to belong to Roma ethnic minority (Table 1). Geographically, the highest number of Roma lives in the Eastern Slovakia – approximately 60 percent (Kalibova, 1993; Popper et al., 2009).

In Slovakia, there are over 1.000 Roma settlements. Around 150.000 Roma live concentrated in segregated places which are unfit for living and have a negative impact on

the health of the population. Significant part of these dwellings is not equipped with any utilities, they lack sewage system and people living there often have a very difficult access to drinking water. The situation is all the more complicated because government policies are counterproductively contributing to it by implementing a lower-standard apartment construction program, where the overwhelming majority of these apartments are being built in remote areas, out of places of residence of majority population (Popper et al., 2009).

The key determinants of health undoubtedly include not only housing, but also drinking water. In numerous settlements, there is only single water well serving all the residents. The quality of water is not being monitored regularly and people using the water often learn about its possible contamination only after an infection outbreak.

The Roma people had to cope with a loss of jobs for many of them, causing significant deterioration of the social status of this minority and its deepening marginalization. To this day, a major part of Roma is long-term unemployed, with an unemployment rate in some isolated settlements reaching staggering 100 percent.

The main root cause of the unemployment is an extremely low level of education of the Roma minority. With the current setup of the schooling and educational system, as many as 12.4 percent of Roma children fail in schools. A separate issue worth mentioning is the special needs schools. Tests of readiness for school and other performance tests do not take into account social deprivation of Roma children and hence Roma pupils often fail those tests. Therefore, there is a rising and increasing frequency of enrolling the Roma children into special needs schools even though they have no physical or mental disability, but are only socially disadvantaged and use different mother tongue than the official language (Popper et al., 2009).

Tab.1 Geographic distribution of Roma population in Slovakia in 2001

Region in Slovakia	Citizens total	Official number of Roma nationality	Percentage of Roma (%)
Bratislavský kraj	599 015	755	0,13
Trnavský kraj	551 003	3 163	0,57
Trenčiansky kraj	605 582	1 574	0,26
Nitriansky kraj	713 422	4 741	0,66
Žilinský kraj	692 332	2 795	0,4
Banskobystrický kraj	662 121	15 463	2,34
Prešovská kraj	789 968	31 653	4,01
Košický kraj	766 012	29 803	3,89
Slovak Republic	5 379 455	89 947	1,67

Source: Statistical Office of the Slovak Republic, 2001 Population and Housing Census.

V. 2 The Situation of Roma in an Enlarged European Union

Central and Eastern European counties investigate and evaluate the situation of Roma in a number of sectored fields relevant to social inclusion and marginalization. Number of Roma population (Tab. 2) in Central and Eastern European countries is showing importance of this ethnic group and its large size comparing to majority (particularly in Slovakia, Romania, Bulgaria)

Education. The Lisbon European Council has set a number of targets in relation to education for achievement by 2010. Although some Member States of the EU do monitor educational achievements by ethnic or migrant groups, this is not yet common among the Roma. Educational achievements are low among Roma, Gypsies and Travellers. There are a few reasons - segregation of schools with Roma children, low attendance of Roma children at schools, language barrier, cultural barrier and also the fear of majority. Various educational programs and initiatives from the EU institutions have addressed Roma issues, but those are mostly *ad hoc* indicative without any long-term effect (The Situation of Roma in an Enlarged European Union, European Commission, 2004).

Employment. Unemployment rates among Roma continue to be as high as 80 % in some CEE countries. Particularly, there is an extremely high unemployment rate among Roma females reaching total unemployment. Employment is the key to poverty eradication and further social inclusion but Roma unemployment remains extremely high. The impact of employment programs on national and EU level is very weak, however few solitary examples do exist (The Situation of Roma in an Enlarged European Union, European Commission, 2004).

Housing. Roma housing is characterized by high level of segregation, sub-standard accommodation and poor infrastructure. The examples of effective practices point to the need for Roma involvement at all stages of planning and execution of housing. A strong emphasis should be placed on the linkage of housing to the accessible infrastructure with roads, educational and health care accessibility, drinking water and sewage system (The Situation of Roma in an Enlarged European Union, European Commission, 2004).

Health care. Racial and ethnic discrimination in the provision of health care is prohibited by law in the EU. It is the poverty and poor level of accommodation among Roma that leads to the high frequency of communicable and non-communicable disease

and to the reduction of life expectancy. Therefore, more research needs to be done to generate reliable data and improve access to the healthcare among Roma groups (Koupilova et al., 2001; The Situation of Roma in an Enlarged European Union, European Commission, 2004).

Tab. 2 Estimated number of Roma in selected countries of Central and Eastern Europe

Country	Number of Roma	Percent of total population [4]
Albania	90,000–100,000	2.6–2.9%
Bosnia and Herzegovina	40,000–50,000	1.0–1.3%
Bulgaria	700,000–800,000	8.3–9.5%
Croatia	30,000–40,000	0.7–0.9%
Czech Republic	250,000–300,000	2.4–2.9%
Hungary	550,000–600,000	5.4–5.8%
Macedonia	220,000–260,000	10.6–12.5%
Moldova	20,000–25,000	0.5–0.6%
Poland	50,000–60,000	0.1%
Romania	1,800,000–2,500,000	7.9–11.0%
Russia	220,000–400,000	1.5–2.7%
Serbia and Montenegro (including Kosovo)	400,000–450,000	3.8–4.3%
Slovakia	480,000–520,000	9.0–9.7%
Slovenia	8,000–10,000	0.4–0.5%
Ukraine	50,000–60,000	0.1%
Total	4,908,000–6,175,000	

Source: Liegois J-P, Gheorghe N: Roma/Gypsies: A European Minority. *London*: Minority Rights Group; 1995.
Note: Montenegro became independent from Serbia in 2006; Kosovo declared its independence from Serbia in 2008
In Rechel et al. International Journal for Equity in Health, 2009.

V.3 Prognosis of the Growth of Roma Population in Slovakia

Geographic and demographic characteristics of Gypsies were elaborated on the basis of population census" results in 1970 and 1980 based on paper of Kalibova (Kalibova, 1993). Kalibová (1993) describes demographic situation in former Czechoslovakia considering Roma - previously named Gypsies. In 1980, there were about 300.000 of Gypsies in Czechoslovakia (2 % of the total population). The fast numerical growth of Roma becomes a subject of increasing interest of both specialists and large public. According to the prognosis till 2005, in the Czech Republic and the Slovak Republic will be about 495.000 of Gypsies (3 % of the total population). The spatial structure of Gypsies is very inhomogeneous; Roma are concentrated mainly in the East Slovakian districts. The differences between Roma and majority inhabitants in the demographic behavior are evident from the age structure. Gypsies are demographically young population with the progressive type of the age structure (high proportion of children and low proportion of the aged). Gypsy women have a high level of fertility during the whole childbearing period. The number of live born children per one Gypsy woman was 6.0 in the age group 45-49 (total population 2.3) in 1980. The effort has been made to estimate the expectation of life of Roma on the basis of results from population census 1970 and 1980. The probability of death was derived from the probability of survival between 1970 and 1980. In the period 1971-1980 the expectation of life at birth of Roma men was 55.3 years and 59.5 years for Roma women. The level of life expectancy like this we can find in developing countries of the Third World. Changes in the demographic behavior occur as permanent changes only on the basis of the overall social and economic development.

Later analysis (Vaňo, 2002) estimates only in Slovakia till 2025 more than half million of Roma people. The change in the reproductive behavior in case of developing populations is related to the change in life conditions, increase in the standard of living and the growth of the education level. The Roma population will certainly not be an exception. However, these changes are going on relatively slowly as a consequence of the isolation of Roma population. The decisive factor for demographic features of Roma and non-Roma population in order to get nearer and nearer will thus be the progress achieved in the integration of Roma into society.

Based on the available statistical data it can be confirmed that the change in the development of Roma females fertility and mortality has already occurred. Despite the increase in fertility, the age structure of Roma population will ensure the increase in live births also in the forthcoming years.

The improvement in the health conditions of Roma population will bring also the fall in mortality and the extending of life. But health status is a part of social status which is still remaining on low level with negative health determinants. Also the entire demographic situation has to be taken into account. It can be assumed that the low level of majority fertility in Slovakia did bring measures and a supportive reaction of the government in a form of pro-population measures, which can partially modify also the development of Roma fertility. Despite this fact, it is likely that the increase of Roma population will continuously diminish, although slower than in case of the rest of population (Vaňo, 2002). This is confirmed also from statistical prediction of demographic growth and prediction of increasing "index of aging" and "mean population age" (Table 3).

Table 3. Demographic prognosis of rate of natural increase, index of aging and average age of Roma population prediction to 2025

YEAR	Status to date 31.12.	Demographic growth	Index of aging	Mean age
2002	384.786	5.837	5.05	24.43
2003	390.725	5.939	5.42	24.84
2004	396.768	6.043	5.84	25.24
2005	402.914	6.146	6.27	25.62
2010	435.325	6.699	8.27	27.34
2015	468.853	6.560	11.13	28.83
2020	499.170	5.658	15.58	30.37
2025	524.052	4.558	21.55	32.03

Source: Prognóza vývoja rómskeho obyvateľstva v SR do roku 2025. Vaňo, 2002, Infostat. . (Prognosis of demographic rate of Roma population in Slovak republic till 2025. Vaňo, 2002, Infostat).

V.4 The Decade of Roma Inclusion

The **Decade of Roma Inclusion** (*Deshbersh le Romengo Anderyaripnasko* in Romani) is an initiative of 12 European countries to improve the socio-economic status and social inclusion of the Romani minority across the region. The initiative was launched in 2005, with the Decade of Roma Inclusion running from 2005 to 2015, and represents the first multinational project in Europe to actively enhance the lives of Roma. The Decade of Roma inclusion is a major effort to improve Roma inclusion in Europe (www.romadecade.org).

The 12 countries taking part in the Decade of Roma Inclusion are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Montenegro, Romania, Serbia, Slovakia, and Spain. All of these countries have significant Romani minorities, and the Romani minority has been rather disadvantaged, both economically and socially.

The governments of the above countries have committed to closing the gap in welfare and living conditions between the Roma and non-Roma populations, as well as putting an end to the cycle of poverty and exclusion that many Roma find themselves in. Each of these countries has developed a national Decade Action Plan that specifies goals and indicators in the Decade's priority areas: education, employment, health and housing. The 13th country, Slovenia, has observer status.

The founding international partner organizations of the Decade of Roma Inclusion are the World Bank, the Open Society Institute, The European Commission, The United Nations Development Program, The Council of Europe, The Council of Europe Development Bank, The Contact Point for Roma and Sinti Issues of the Office for Democratic Institutions and Human Rights of the Organization for Security and Co-operation in Europe, the European Roma Information Office, the European Roma and Travelers Forum, the European Roma Rights Centre and the Roma Education Fund. In 2008, the United Nations Human Settlements Programme (UN‑HABITAT), the Office of the United Nations High Commissioner for Refugees (UNHCR‑www.unhcr.org), and the United Nations Children's Fund (UNICEF‑www.unicef.org) also became partners in the Decade.

The Roma Education Fund (REF), a central component of the initiative, was established in 2005 with the mission of expanding educational opportunities for Romani communities in Central and Southeastern Europe. REF's goal is to contribute to closing the gap in educational outcomes between Roma and non-Roma through a variety of policies and programs, including desegregation of educational systems. REF receives funds from governments, multilateral organizations and private sources. It finances projects that are proposed and implemented by governments, non-governmental organizations and private organizations.

Planning for the Decade is guided by the International Steering Committee (ISC), which is composed of representatives of the participating governments, international partner organizations and Romani organizations. Each year, one of the participating governments holds the Decade's Presidency. Slovakia currently holds the Presidency, which the Czech Republic will assume on July 1, 2010.

The Decade of Roma Inclusion is a ten year program whose aim is to improve the socio-economic status and social inclusion of Roma in the local societies. In 2004, Lívia Járóka and Viktória Mohácsi of Hungary became the two current Roma Members of the European Parliament (MEP). The first Romani MEP was Juan de Dios Ramirez-Heredia of Spain.

The Decade was launched to focus donor funds on Roma issues particular, because the accession process in the EU did not result in adequately improving the status of Roma. The Decade of Roma Inclusion was launched in 2004 to address inequities in four sectors:

- **Education**
- **Employment**
- **Housing**
- **Health**

The plan of The Decade in the health sector includes these core issues: lack of documentation, specific health priorities (f.e. infectious diseases, reproductive health, non-communicable diseases, accidents). Most action plans seek to include an initial data collection phase, because the baseline status of health is not yet clearly confirmed as a result of many issues in CEE including legal Roma ethnic identification (Schaaf, 2009).

VI. Legal Issues of Personal Data Collection Considering Ethnic Groups, Migrants and Minorities in EU

The EU has adopted **Directive 95/46/EC** (Directive 95/46/EC of the European Parliament and of the Council, 1995) **on the protection of individuals with regard to the processing of personal data and on the free movement of such data**, which must be transposed into domestic law by member States. All international and Community instruments leave domestic legislation broad discretion to develop procedures and implement standards for the protection of personal data. An objection has been made to the collection of ethnic data on the grounds that such a collection would breach the provisions of the EU Directive 95/46/EC on personal data protection. According to the opinion of the European experts on fundamental rights the European rules relating to the processing of personal data, including the reinforced protection of sensitive data related to ethnic origin or religious beliefs of the individual, should not be seen as an obstacle to an adequate monitoring of the impact on certain ethnic, religious or linguistic groups of either public policies or legislation or private practices. It has been argued that "on the contrary, they constitute a necessary and welcome safeguard against any risk of abuse in the process of such monitoring, a pre-condition for which therefore is that these rules protecting personal data are strictly adhered to". In this respect a difference must be drawn between monitoring based and non-based on personal data.

Monitoring not based on personal data

According to Article 2 (a) of the Personal Data Directive, **personal data are any information relating to an identified or identifiable natural person ('data subject');** an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity. Once personal data are made anonymous in order to be used in statistics, the information contained in such statistics

should not be considered as personal data. It has been argued that, in many cases, the use of other reliable techniques under the principle of anonymity (such as those traditionally used in social science empirical research, including the use of representative samples, personal interviews conducted by independent researchers) may lead to obtaining results both reliable and comparable. Therefore, experts say, this monitoring technique, where it is practicable and presents the same or better degree of reliability, may be preferred to a monitoring based on the collection of personal data from the individuals concerned, because of the absence of risk it presents for the protection of personal data.

Monitoring based on personal data

In certain cases, the processing of data related to the ethnic, religious or linguistic affiliation of an individual will be required not only for statistical purposes, or to ensure that the situation of minorities under generally applicable laws or policies is adequately monitored, but also to grant the individual members of minorities certain advantages or to offer them specific treatment. The collection of data relating to ethnicity or religion, or even language, by the use of individual questionnaires initially linked to identified or identifiable individuals, may in many cases lead to under-reporting or over-reporting.

The Article 8 stipulates the following claim:

The processing of special categories of data

1. Member States shall prohibit the processing of personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, trade-union membership, and the processing of data concerning health or sex life.

2. Paragraph 1 shall not apply where:

(a) the data subject has given his explicit consent to the processing of those data, except where the laws of the Member State provide that the prohibition referred to in paragraph 1 may not be lifted by the data subject's giving his consent; or

(b) processing is necessary for the purposes of carrying out the obligations and specific rights of the controller in the field of employment law in so far as it is authorized by national law providing for adequate safeguards; or

(c) processing is necessary to protect the vital interests of the data subject or of another person where the data subject is physically or legally incapable of giving his consent; or

(d) processing is carried out in the course of its legitimate activities with appropriate guarantees by a foundation, association or any other non-profit-seeking body with a

political, philosophical, religious or trade-union aim and on condition that the processing relates solely to the members of the body or to persons who have regular contact with it in connection with its purposes and that the data are not disclosed to a third party without the consent of the data subjects; or

(e) processing relates to data which are manifestly made public by the data subject or is necessary for the establishment, exercise or defense of legal claims.

This chapter is derived from the Directive 95/46/EC of the European Parliament and of the Council from 1995 .

VII. Roma Health and Inequality

Poor social and economic circumstances significantly affect health throughout life. People on low levels of the social ladder usually run at least twice the risk of serious illness and premature death comparing to those on the top. Both material and psychosocial causes contribute to these differences and their effect extends to most diseases and causes of deaths. Life expectancy in lower socioeconomic classes is shortened as it also depends on occupational class and behavioral risk factors which are in close relationship to social class (Berkman and Kawachi, 2000; Donkin et al., 2002; Marmot, 2006). Health researchers have pushed for laudable, yet long overdue goals, calling for a fundamental re-casting of how we think about the causes of disease, and consequently, about disease prevention and health promotion. Berkman and Kawachi (2000) describe in detail the challenges in the social epidemiology research, which holds the key to the causes of most of the modern diseases.

Social exclusion and social inclusion. This monograph uses the definitions of social inclusion and social exclusion used by the European Union, and adopted as part of the EU's Lisbon process, in order to ensure consistency in terminology and with the objectives that all of the EU8 have adopted (Social Exclusion and the EU's Social Inclusion Agenda Paper Prepared for the EU8 Social Inclusion Study Document of the World Bank, 2007).

Social inclusion is at the center of the EU's strategy for making progress on the eradication of poverty and expanding employment by 2010. The EU defines social inclusion and exclusion as follows:

Social exclusion is a process whereby certain individuals are pushed to the edge of society and prevented from participating fully by virtue of their poverty, or lack of basic competencies and lifelong learning opportunities, or as a result of discrimination. This distances them from job, income and education and training opportunities, as well as social and community networks and activities. They have little access to power and decision making bodies and thus often feel powerless and unable to take control over the decisions that affect their day to day lives.

Social inclusion is a process which ensures that those at risk of poverty and social exclusion gain the opportunities and resources necessary to participate fully in economic,

social and cultural life and to enjoy a standard of living and well-being that is considered normal in the society in which they live. It ensures that they have a greater participation in decision making which affects their lives and access to their fundamental rights.

Social disadvantage has many forms and may be absolute or relative. It can include having few family assets, having a poorer education, having insecure employment, living in poor housing conditions and, in older age, living in inadequate retirement pension. These disadvantages tend to concentrate among the same groups of people, and their effects on health accumulate during life. The longer people live in stressful economic and social circumstances, the greater is impact on the quality of life, on life expectancy and on health determinants (Marmot and Wilkinson, 1999; Marmot, 2006).

Inadequate housing, deficient education, unemployment, insufficient income have a substantial influence on health and are important factors determining the state of well-being and living standards. The close relationship between social inequalities and health inequalities is clearly emphasized by many international organizations, particularly WHO, ILO European Commission and others. Basic literature sources confirm the great gap in health inequalities caused by social factors (Marmot, 2006; www.who.int).

The process of exclusion and social marginalization limits the quality of life and goes together with the overall deterioration of health status. The Roma suffer the worst health conditions in the industrialized world together with some of the worst health problems associated with the Third world. The proportion of Roma living in poverty exceeds 75 % in countries throughout the region and in general, the rates of both infectious and non-communicable diseases are incredibly high (McKee, 1997; Hajioff and McKee, 2000; Koupilova et al., 2001; Schaaf, 2007) However, there are some few exceptional cases, notably the tribe of Kalderash clan in Romania, who have been working as traditional coppersmiths and they continue to prosper.

VII.1 Roma Ethnicity Criteria and Definition: the most Difficult Task

Definition of Roma

The Roma are an ethnic group tracing their origins to medieval India. An ethnic group is a group whose members identify themselves or are identified by others, as a result of a mix of cultural and other factors, including ancestry, language, religion, behavioral characteristics such as diet, and biological characteristics (Bernasovsky and Bernasovska,

1999; Bhopal, 2007). The Romany communities are relatively isolated and marginalized ethnic groups, thus there is increasing importance to follow their SES, vulnerability, housing, level of education, health status and increasing need for integration and inclusion of Roma among society.

The concept of ethnicity and race in health care and public health brings difficult ethical issues, which have seldom been explicitly considered. Ethnicity and race are controversial variables in epidemiology and public health. The mysteries behind the myriad of ethnic differences are however not easily solved. The concept of ethnicity and race are being hotly debated in epidemiology. Furthermore there is no consensus on appropriate terms and definitions (Bhopal, 2007).

Roma ethnic identification

There is almost complete lack of official, publicly available and reliable Roma – specific data of relevance to social inclusion, health impact,   anti-discrimination policy and others sectoral field.

Moreover, a general lack of statistical data on the situation of Roma in all sectoral fields makes the design, monitoring and evaluation of policy and programs difficult if not impossible. The problems associated with the lack of statistical data on the situation of Roma are key issues in any kind of planning of programs or recommendations. There is a need to clarify to scope of data protection regulation and to emphasize the need to provide data disaggregated by ethnicity.

It is not possible to identify Roma ethnicity from national surveys, national demographic data or any kind of national health statistics. As a consequence it is difficult, and even impossible to identify them in these datasets. The mention about Roma ethnicity is not permitted in any kind of official documentation including national census, medical records, statistics or other reporting. The main reason is the risk of stigmatization. Marking or labeling "Roma ethnicity" in any kind of official documentation could lead to the discrimination of Roma population on various levels, be it political, social, cultural, economic, health care or a combination of these.

There are a few possible ways to identify Roma ethnicity in research:

1. Self identification. Many Roma's choose not to register their ethnic identity or nationality in official censuses, even when this is possible. Roma can identify themselves

as a Roma nationality in some CEE countries, based on their personal belief. Most of the Roma population does not like to be marked or labeled as "Roma". For example, Slovakia's national census, conducted in 2001, indicates only 1.61 % of Roma nationality (based on their personal opinion about nationality). The published estimations of the Roma population percentage in Slovakia vary from 8 -10 %. Roma identity is often associated with underclass status and discrimination. Simply asking potential research (study) respondent: "Are you Roma ?" is therefore unlikely to yield study or survey data. There is also possible confusion between ethnicity, nationality and citizenship. "Roma nationality" doesn't mean that the person is not Slovakian, Hungarian or any other typical nationality. Therefore Roma are highly underreported in censuses and officially registered datasets.

In the CEE, the estimated data on the percentages of Roma population are varying. By estimation, the highest proportion of Roma people is living in Slovakia, Hungary and Romania (around 10 %). Lower numbers of Roma live in Poland or Slovenia, because the historical routes of migration of Roma did not include the aforementioned geographic areas.

2. Surname, religion or language might theoretically serve as indicators of ethnicity (or minority), yet these indicators do not seem to be appropriate to act as the universal indicators of Roma ethnicity.

Surnames of Roma people are often identical with the majority population, resulting in a high probability of errors. The religion of Roma usually follows the religious patterns of non-Roma population. The Roma language could be a solid indicator of ethnicity, but there are many Roma who do not speak Romany language, mostly those that are assimilated with the majority population. It is difficult to determine their place of residence in smaller areas or villages where Roma and non-Roma live together. Thus, extracting and obtaining data about Roma based on above-mentioned factors could lead to inaccurate outputs.

3. The most common process of Roma identification, with regard to epidemiological medical or biological studies, is the so-called hetero-identification by the observer.

Using hetero-identification we avoid the risk of personal stigmatization or discrimination of Roma by hitting them with a direct discriminating question: Are you Roma?

The disadvantage in this approach could lead to the misclassification of different characteristic features of Roma. The observer has to be an experienced person to recognize the ethnic differences. **Hetero-identification is mostly used as second step in data collection** among Roma settlements or compact Roma population.

4.   Methodological approach used in Roma identification in internationally published data (UNDP report, At Risk: Roma and the Displaced in Southeast Europe, 2006) includes data collection based on "Roma settlements or areas of compact Roma population". Based on this assumption the Roma sample is taken as representative of the Roma population living in "Roma settlements or areas of compact Roma population". Localities settled by Roma are selected on the base of census or municipality data. At different stage of sampling process and further data collection prevail self-identification or external hetero-identification.

VII.2 Roma Health Research across the EU

The poor socio-economic status of Roma in Central and Eastern European countries has been documented by many international institutions. After the collapse of communism, the Roma were disproportionately affected by the difficulties brought by economic and societal transition. The low level of education and lack of qualifications are the primary reasons for higher unemployment rates among the Roma, which subsequently negatively impacts on their health and quality of life.

There are important disparities in health outcomes between racial/ethnic minorities and majorities in all countries where minority health has been investigated. This holds true for the largest minority population of Europe, the Roma, although research data related to Roma are limited and more contested than for other minorities. Major obstacles that hinder or prevent the collection of reliable data in Roma and other minorities are that the definitions and classification systems on race/ethnicity vary widely, pointing to the social construction of both race and ethnicity. Imprecision in taxonomy and definition of target groups is compounded by challenges in data collection, analysis, and interpretation, along with ethnocentricity that shapes the perspectives and approaches of the researchers (Pflaker, 2002; Kosa and Adany, 2007; www.undp.org).

Research on minorities should consider race/ethnicity as proxy indicators of complex health determinants, and should aim at dissecting these determinants into separate items. Careful documentation of methodology and active involvement of the minorities themselves can increase trust between the investigators and the research subjects, which can in turn improve research on minority health (Kosa and Adany, 2007).

The lack of published literature on Roma limits the scope for direct comparison of the situation in more than one country, so inter-country differences are very difficult to obtain. There is relatively small number of researchers in the field which in turn means that for many countries only little or no valuable information is available. Problems in Roma identification and differences in definition and terminology are also problematic. For example, the term used in the UK research - "traveler" would not necessarily be familiar to others in some Eastern European countries and is significantly different from Roma, as it includes a large number of non-Roma people who have nomadic lifestyles.

In some countries, the amount of published evidence may itself reflect the position that the Roma population occupy within society. Thus, it is important not to fall into the trap of equating an absence of evidence on Roma health with evidence of an absence of health inequalities (Kosa and Adany, 2007).

Since the proportion of Roma living in poverty exceeds 75% in countries throughout the region and unemployment reaches similar figures, or even total unemployment in certain areas, the access to preventive and curative services (health care infrastructure) remains low particularly in Bulgaria , Romania and countries located on Balkan. . This also contributes to the fact that - particularly in the CEE countries - there is relatively little information on the specific health status of Roma. These pertaining issues and the existing results from research on Roma health create a broad picture, or context, upon which interventions and further research should be developed. (Zoon, 2001; www.eumap.org).

Most importantly, many Roma are highly susceptible to certain diseases on account of low socioeconomic status and poor living conditions and poverty. These factors both cause and further exacerbate illness by impeding access to preventive care, healthy nutrition, hygienic materials and medications. Possible combination of reasons, including discrimination, can cause the fall and low success of public health programs that could provide health education, health promotion, testing and treatment. High prevalence of

smoking, alcohol drinking, physical inactivity, stress or mental ill-health, chronic diseases like obesity, heart and asthmatic predisposition are the most common chronic health problems of Roma, for which help is not easily found (McKee, 1997; Koupilova et al., 2001; Mladovski, 2007; Mladovski, 2009).

Reproductive health is an important area, and one in which the Roma population fare badly. Roma females are the most discriminated group considering social factors, health, health care and others issues including societal and economic (Centre for Reproductive Law and Policy - CRLP, 2001). Roma females are less likely to seek contraceptive advice than non-Roma women, and have more pregnancies; leading both to significantly more live births and terminations of pregnancy. Teenage pregnancy rates have also been reported to be high. Large number of women gives birth to their first child as teenage girls. Women are less likely to have access to preventive, reproductive and sexual health information and care (Breaking the barriers - Romani women and access to public health care, 2003). Roma minority is characterized by different long-term reproduction patterns and permanent population growth (Disability, Social Care, Health and Traveller People, 2001; Health and Roma community, Transnational report EU, 2009; Popper et al., 2009).

Poor and negative pregnancy and newborn health outcomes have been confirmed by many literature sources (Rimarova et al., 2003; Rimarova et al., 2004; Bobak et al., 2005; Rimarova et al., 2005; Rimarova et al., 2006; Rimarova et al., 2007). Roma females often bear responsibility for health of children and other family members, but they may neglect their own health. Females are unaware of the importance of preventive namely prenatal care during pregnancy, The reasons are mostly cultural and traditional and include also a part of purity and modesty explanation in Roma culture.

Pregnancy outcome research studies are confirming lower birth weight among Roma newborns, lower gestation age, low maternal age or higher prevalence of teenage pregnancies, under nutrition of Roma pregnant females and globally very low SES of mothers comparing to majority (Rimarova et al., 2003; Rimarova et al., 2004; Bobak et al., 2005; Rimarova et al., 2005; Rimarova et al., 2006; Rimarova et al., 2007).

The European Commission against Racism and Intolerance (Women's Reproductive Rights in Croatia: A Shadow Report, 2001; Breaking the barriers - Romani women and access to the public health care, 2003) has noted that the living conditions of

poor Roma are deteriorated by generally little knowledge about proper nutrition. In particular, many Roma women are not aware of the need to modify their lifestyle and diet during pregnancy. Fifty one percent of women aged 16-50 in settlements near Belgrade were found to be undernourished; their diet was found to consist of potatoes, rice and pastry: meat, milk, fruits and vegetables are rarely consumed. Roma children in Romania have been found to suffer vitamin deficiencies, malnutrition and anaemia to a greater degree than non-Roma (www.soros.org; www.undp.org).

Furthermore, Roma people, as an isolated community, have higher inbreeding rate and they are susceptible to some atypical hereditary diseases. For example, they could suffer from primary glaucoma, hereditary muscles and nervous system disorders (Matrinez-Frias and Bermejo, 1992).

The Roma population has a different age structure and a higher share of children and youth than the majority population. Almost half of the Roma population in Slovakia is younger than 18 years old. In this context, the "young character" of the Roma population will, in the near future, cause an increase of the relative share of Roma children in the whole population (Popper et al., 2009).

As a result, Roma have lower life expectancies, higher infant mortality, a high rate of sickness, and low rates of vaccination. Discrimination in access to health care makes remediation of these widespread problems very difficult, either on a community, national or international level (Zdravotna starostlivost v socialne vylucenych romskych komunitach, 2007).

As a matter of fact, life expectancy is lower than that of the majority population and mortality higher among both children and adults. The lower life expectancy of both male and female Roma, compared to the general population, has been widely noted in both Western and Eastern Europe. In Slovakia, for instance, the life expectancy of Roma women is 17 years less than for the majority population; for men, it is 13 years less (Minority protection in the EU accession process, 2001; www.rrhic.org; www.soros.org; www.undp.org; www.unicef.org).

Infant mortality rate (IMR) for Roma has also been found to be notably higher than national averages throughout Europe. In 1991 the IMR for Roma in the Czechoslovakia was over twice the national average; in Bulgaria (1989) it was six times greater; in Italy (1991) almost three times the rate of the wider population; in Eastern Slovakia, where

there is a high concentration of Roma, the rate is 3 times higher than for the population at large;12 in Hungary and Ireland, it is double the national average (Disability, Social Care, Health and Traveler People, 2001; Minority protection in the EU accession process, 2001).

In small Roma children of age 0-2 years have been confirmed higher incidence of influenza, otitis media, intestinal infections. On the other side the authors did find extremely low prevalence of allergies among Roma comparing to majority (Dostal et al., 2010).

Marginalized Roma communities across Europe are lacking proper sanitation, including garbage collection, running water and electricity. For example, in many of the Roma settlements of Eastern Slovakia, where an estimated 120.000 Roma live, there is no running drinking water and even no electricity. Some of them have no roads at all connecting them with the outside community. These factors foster the breeding of bacteria and infection while reducing the opportunities to access and maintain adequate hygiene and curative conditions. It comes as no surprise that there are higher rates of contagious diseases such as tuberculosis, hepatitis, scabies, pediculosis, gastrointestinal infections, dysentery, AIDS and skin problems throughout Roma settlements. Overcrowded conditions make eradication of these problems an extremely difficult task. The lack of, or poor quality of, water promotes the spread of contagious disease while heightening the occurrence of conditions such as urinary tract infections and intestinal communicable diseases. Adult and children's health and safety may be compromised by a range of factors, e.g. fast traffic, rats, insects, lack of safe play areas, difficulty drying clothes, overcrowding, mud, dogs, home animals, broken glass, a site getting, lack of education, noises from factories, and smells from nearby sewage works (Disability, Social Care, Health and Traveler People, 2001; Schaaf, 2007; Popper et al., 2009).

Low vaccination coverage among Roma children is evident across Central and Eastern European countries. In this case, Roma people can get affected and seriously ill by diseases that could be prevented through simple vaccination, which also accounts for why the morbidity rates for such diseases among Roma children may be particularly high.

When considering the literature search "about Roma or gypsy health" by Hajioff and McKee (2000), it is striking that seventy percent of publication found on Medline and online sources have connection to 4 countries - Spain (24 papers), Czech republic (19 papers) Slovakia (16 papers) and Hungary (14 papers). Most of the published health topics

are papers connected to child health. Indeed, children – including pre-school children, schoolchildren, and adolescents - are the best reachable and available Roma population for conducting research (in kindergartens, schools and other educational institutions). Second place in the research ladder is occupied by the topic "communicable disease"; and further down the ladder are topics connected with reproductive health, healthcare and sociology (Hajioff and McKee, 2000).

Studies of self perceived health using questionnaires can provide different results, worse perceived health caused mostly by low SES is confirming by Kolarcik at al. (2009) Results from EU Gitanos group project are showing self-perception of health in Roma population better than in EU average, one of explanation might be the reason that Roma population is much more younger than EU average and difference is 15 years (Health and Roma community: Analysis of the situation in Europe, Transnational Report, 2009).

VIII. Selected Outputs from Research about Roma Health from MEHO and others projects

VIII.1 Ethnic and Social Differences in Growth and Development of Roma Children

Introduction. Low SES and lifestyle of Roma community can lead to the consequences in child nutritional status and developmental health - and could be reflected in malnutrition and stunted body growth arising from the complex of social factors, low education and low income of parents, poverty and also genetic factors.

The specific development of children starts in the prenatal development being influenced by prenatal insufficient care, insufficient maternal nutrition, negative habits as smoking and alcohol consumption and socioeconomic impact on newborn health and pregnancy outcomes. In subsequent stages of child's development and growth, the most significant factors become low social status including insufficient nutrition, lack of care, as well as genetic hereditary factors and many others external factors f. e. frequency of acute and chronic diseases (Bernasovsky and Bernasovska, 1999).

Material and methods. This chapter reports the results of cross-sectional study on the stunted growth and development of Roma children, aged 3 – 12 years, living in semi-segregated Roma settlement of Kosice, Lunik 9. The study was conducted between years 2005 - 2007. Basic body anthropometric parameters were measured: body weight, body height, chest circumference, waist and hips circumferences. Based on these inputs, indexes as are - WHR (Waist-Hip Ratio) and BMI (Body Mass Index) - were calculated. Children were weighted wearing light clothes; and they were measured using a digital scale accurate to 0.5 kg; body height was measured with accuracy to 0.5 cm with portable centimeter scale. The measurement was conducted in the group of 710 Roma children - 332 boys and 378 girls. The results have been compared with outputs from 2001 Slovak National Anthropometric Survey (Ševčíková et al., 2004). This group of data is signed as SR 2001

- Slovak Republic average from 2001 National Anthropometric Survey. Statistical Student's t-test was used to compare arithmetic means of anthropometric parameters.

Questionnaires for parents about SES status were partly incomplete, so we conducted study of 365 questionnaires with data more than 60 % of completeness. SES status of Roma parents we tried to compare with the level of BMI index.

Results. The average body height with respect to age group of the Romany and non-Romany boys are described on Figure 1 and Table 4 with calculated statistical comparison. The body height of the studied Romany boys increases continuously between ages of 3-12. Lower values were obtained in Romany boys of all age groups compared to non-Romany boys. These differences between Romany and non-Romany boys were statistically highly significant in all age groups. The simple difference was expressed in all Tables as "Arith. diff." = simple arithmetic difference for Roma comparing to 2001 National Survey and in body height varied from 7.68 cm in 4 year old boys to 16.16 cm in 7 years boys. Despite the fact that there was low possibility to obtain the SES from parents, measured biological data shows great discrepancy in growth between the National Anthropometric Survey 2001 and Roma boys.

Table 4. Comparison of body height of Roma and non-Roma boys

	Slovak Republic 2001			Roma 2006			Stat. results	
Age	n	x (cm)	SD (cm)	n	x (cm)	SD (cm)	Arith. diff.	p
3	772	101.13	5.86	10	93.30	6.80	-7.83	**
4	477	107.84	5.90	16	100.16	4.21	-7.68	***
5	581	115.22	6.22	17	105.26	5.10	-9.96	***
6	492	123.15	6.16	58	111.27	9.17	-11.88	***
7	884	127.46	6.55	67	111.30	10.53	-16.16	***
8	982	132.72	6.46	55	120.15	8.90	-12.57	***
9	816	138.53	6.62	60	122.70	10.09	-15.83	***
10	747	143.47	7.36	38	133.04	6.55	-10.43	***
11	782	148.61	7.49	18	136.83	6.95	-11.78	***
12	813	155.03	8.39	3	140.33	2.52	-14.70	**

* $p<0.05$; ** $p<0.01$; *** $p<0.001$, n.s. not significant

Figure 1. Comparison of body height of Roma and non-Roma boys

Table 5. Comparison of body height of Roma and non-Roma girls

	Slovak Republic 2001			Roma 2006			Stat. results	
Age	n	x (cm)	SD (cm)	n	x (cm)	SD (cm)	Arith. diff.	p
3	728	100.30	5.96	8	94.38	3.78	-5.92	**
4	481	107.83	5.91	13	100.08	4.37	-7.75	***
5	530	114.93	5.83	20	105.35	4.98	-9.58	***
6	508	122.44	6.46	56	108.08	8.23	-14.36	***
7	884	126.34	6.18	95	112.45	9.32	-13.89	***
8	948	132.06	6.42	66	119.19	9.03	-12.87	***
9	833	137.06	7.17	69	124.24	10.39	-12.82	***
10	779	143.27	7.47	28	135.55	9.71	-7.72	***
11	858	150.85	8.41	17	142.41	7.61	-8.44	***
12	854	156.21	7.64	6	150.08	6.83	-6.13	n.s.

* $p<0.05$; ** $p<0.01$; *** $p<0.001$, n.s. not significant

Figure 2. Comparison of body height of Roma and non-Roma girls

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Similar to the subject matter of body height of Roma boys, body height of Roma girls increased continuously within the ages of 3-12 (Table 5, Figure 2). The values of Roma girls are lower in comparison with the non-Roma girls. The differences are statistically significant in all age groups with the exception of girls aged 12, where there is a possible confounder of insufficiently low number of measured Roma girls. The simple differences are highest in 6 years old girls (14.36 cm) and the lowest in the age group of 3 years old girls (5.92 cm).

The average body weight values of Roma boys and their comparison with non-Roma ones are illustrated in Figure 3 and Table 6. From age-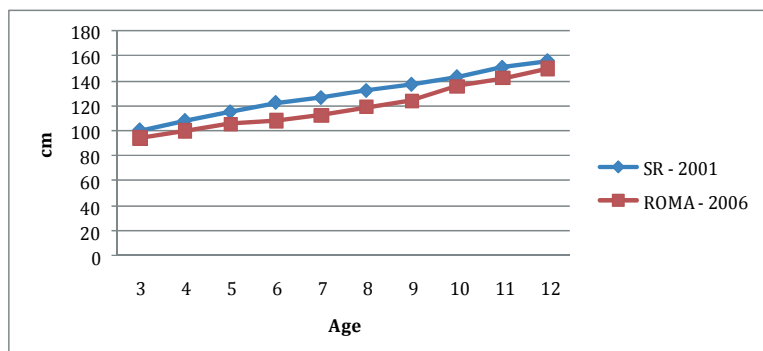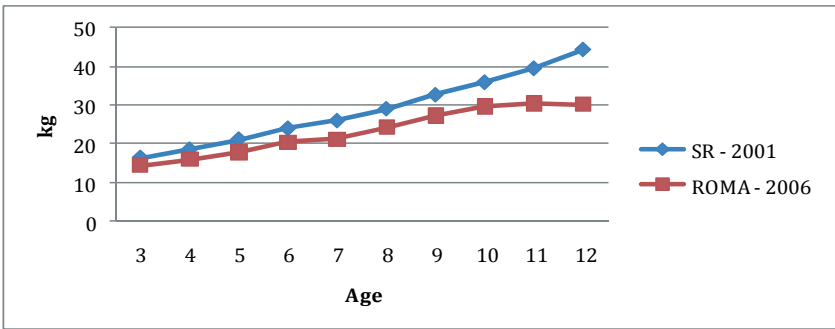trend graph is visible continuous increasing trend in body weight during ages 3-12. The values of Romany boys, however, are lower in comparison with the Slovak National Average. The differences are statistically significant in all age groups (Table 6).

Table 6. Comparison of body weight of Roma and non-Roma boys

	Slovak Republic 2001			Roma 2006			Stat. results	
Age	n	x (kg)	SD (kg)	n	x (kg)	SD (kg)	Arith. diff.	p
3	772	16.35	2.46	10	14.30	1.78	-2.05	**
4	477	18.44	2.95	16	15.94	1.93	-2.50	***
5	581	21.06	3.55	17	17.76	1.68	-3.30	***
6	493	23.87	4.63	58	20.41	3.14	-3.46	***
7	883	25.89	5.36	67	21.12	3.14	-4.77	***
8	981	28.95	6.82	55	24.18	3.92	-4.77	***
9	817	32.58	7.26	60	27.23	4.48	-5.35	***
10	750	35.81	8.11	38	29.60	5.82	-6.21	***
11	782	39.43	9.07	18	30.39	3.97	-9.04	***
12	814	44.30	10.19	3	30.17	2.93	-14.13	*

$* p<0.05; ** p<0.01 ; *** p<0.001$, n.s. not significant
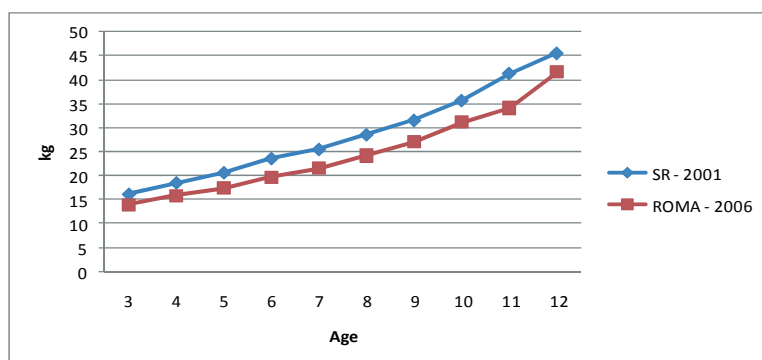

Figure 3. Comparison of body weight of Roma and non-Roma boys

Similarly, the average body weight values of Romany girls and their comparison with non-Romany Slovak average are illustrated in Table 7 and Figure 4. As seen, the continuous increasing trend in body weight during ages 3-12 has been observed, however, the values of Romany girls are still lighter in comparison with the non-Romany. The differences are statistically significant in all age groups with the exception of girls aged 12 (Table 7). Simple differences in body weight of boys are globally lower than in parameter body height and reach 2.2-7.26 kg.

Table 7. Comparison of body weight of Roma and non-Roma girls

	Slovak Republic 2001			Roma 2006			Stat. results	
Ag	n	x (kg)	SD (kg)	N	x (kg)	SD (kg)	Arith. diff.	p
3	728	16.08	2.58	8	13.88	1.51	-2.20	**
4	481	18.46	3.18	13	15.81	1.79	-2.65	***
5	530	20.58	3.59	20	17.37	1.99	-3.21	***
6	508	23.55	5.60	56	19.70	2.83	-3.85	***
7	884	25.45	4.91	95	21.48	5.00	-3.97	***
8	948	28.52	6.26	66	24.17	4.15	-4.35	***
9	833	31.50	6.83	69	27.03	5.83	-4.47	***
10	780	35.66	8.36	28	31.18	6.01	-4.48	***
11	858	41.32	10.03	17	34.06	5.94	-7.26	***
12	856	45.54	9.78	6	41.67	4.89	-3.87	n.s.

* p<0.05; ** p<0.01 ; *** p<0.001, n.s. not significant

Figure 4. Comparison of body weight of Roma and non-Roma girls
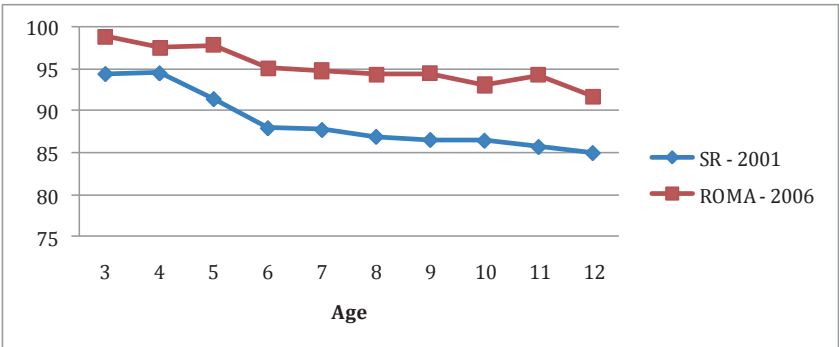
For the evaluation of androgenic or masculine obesity, the typical index used is WHR, or the Waist-Hip Ratio. The average values of WHR index and comparison between Slovak average and measured Roma boys groups are illustrated in Table 8 and Figure 5. Based on the comparison of our Romany children group with non-Romany ones, higher

values of WHR in Romany boys are noted, and the differences are statistically significant in all age groups with the exception of boys aged 3, 4 and 12. (Table 7, Figure 5). These results confirm the tendency for androgenic masculine obesity among Roma boys and what is even more, statistically significant WHR is also the anatomical and developmental sign of stunted growth among Roma boys.

Table 8. Comparison of WHR index of Roma and non-Roma boys

| Age | Slovak Republic 2001 | | | Roma 2006 | | | Stat. results | |
	n	x	SD	n	x	SD	Arith. diff.	p
3	772	94.41	8.70	10	98.83	2.15	+4.42	n.s.
4	477	94.49	8.80	16	97.51	3.61	+3.02	n.s.
5	582	91.42	6.09	17	97.82	2.92	+6.4	***
6	494	87.96	4.96	58	95.10	3.82	+7.14	***
7	885	87.75	5.05	67	94.79	4.38	+7.04	***
8	983	86.93	5.77	55	94.36	4.64	+7.43	***
9	816	86.56	5.12	60	94.47	3.94	+7.91	***
10	749	86.47	5.56	38	93.10	4.62	+6.63	***
11	782	85.72	5.36	18	94.25	3.18	+8.53	***
12	814	85.00	5.95	3	91.73	3.46	+6.73	n.s.

 * $p<0.05$; ** $p<0.01$; *** $p<0.001$, n.s. not significant

Figure 5. Comparison of WHR index of Roma and non-Roma boys

The identical outputs in measuring of WHR index in girls groups were confirmed. WHR indexes are higher among Roma girls, and in the most of age groups are statistically significant (Table 9, Figure 6). These outputs prove the theory about the stunted body growth among the both sex of Roma (Bernasovsky and Bernasovska, 1999).
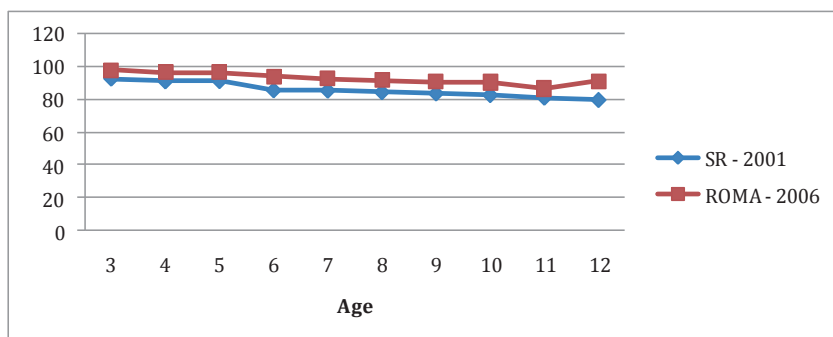
Scientific study (Alvarez et al., 2008) also confirmed the association of the anthropometric measures with metabolic syndrome components which was evaluated by multivariate linear regression adjusted according to the age, BMI or percentage of body fat. In boys, a positive association between waist circumference (beta=1.03 $p<0.01$) and WHR (beta= 2.33, $p< 0.05$; beta=2.12 and $p< 0.01$) with triglycerides was maintained after age, BMI and % body fat adjusting, respectively. Waist circumference was associated also with higher systolic blood pressure after adjusting both for boys (beta= 0.70 $p<0.01$) and girls (beta=0.68 $p<0.01$). In conclusion, waist circumference and WHR were the measures of central body fat that presented the best association with components of androgenic obesity and metabolic syndrome in adolescents. Higher WHR could be one of the predictors of the metabolic syndrome.

Table 9. Comparison of WHR index of Roma and non-Roma girls

	Slovak Republic 2001			Roma 2006			Stat. results	
Age	n	x	SD	n	x	SD	Arith. diff.	p
3	728	92.72	5.62	8	97.76	1.66	+5.04	*
4	481	91.03	6.69	13	96.54	3.10	+5.51	**
5	530	91.19	12.00	20	96.40	4.16	+5.21	n.s.
6	506	85.62	4.91	56	93.92	3.33	+8.30	***
7	885	85.41	7.18	95	92.64	3.93	+7.23	***
8	947	84.49	5.54	66	91.79	4.29	+7.30	***
9	833	83.70	5.24	69	90.72	11.42	+7.02	***
10	780	82.72	5.43	28	90.30	4.82	+7.58	***
11	857	81.14	5.51	17	86.57	5.56	+5.43	***
12	855	79.74	5.88	6	91.12	5.31	+11.38	***

* $p<0.05$; ** $p<0.01$; *** $p<0.001$, n.s. not significant
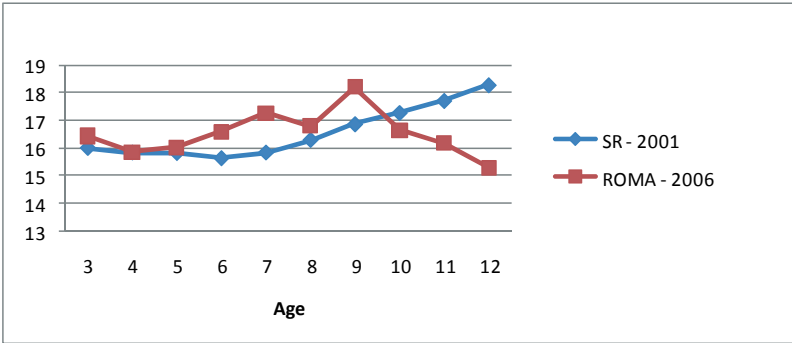

Figure 6. Comparison of WHR index of Roma and non-Roma girls

For the obesity estimation, we calculated and compared BMI - Body Mass Index. Table 10 and Figure 7 show data of BMI index for boys. Based on comparison of Romany children groups with Slovak national average, higher values of Romany boys are noted in lower age groups (3-9), and lower values of BMI in Romany boys are noted at higher age groups (10-12). The differences are statistically significant just in 6, 7 and 11 year-old age groups where Roma have higher BMI indexes, but the trend for obesity is not clear (Table 10).

Table 10. Comparison of BMI index of Roma and non-Roma boys

	Slovak Republic 2001			Roma 2006			Stat. results	
Age	n	x	SD	n	x	SD	Arith. diff.	p
3	772	16.00	2.05	10	16.43	1.20	+0.43	n.s.
4	477	15.83	2.01	16	15.84	1.17	+0.01	n.s.
5	581	15.81	1.85	17	16.02	0.79	+0.21	n.s.
6	492	15.62	2.33	58	16.58	2.45	+0.96	**
7	883	15.83	2.34	67	17.26	2.91	+1.43	***
8	982	16.29	3.14	55	16.80	2.36	+0.51	n.s.
9	816	16.86	2.82	60	18.21	2.84	-1.35	**
10	747	17.27	3.06	38	16.64	2.56	-0.63	n.s.
11	782	17.71	3.03	18	16.17	0.88	-1.54	*
12	813	18.28	3.12	3	15.29	0.94	-2.99	n.s.

* $p<0.05$; ** $p<0.01$; *** $p<0.001$, n.s. not significant
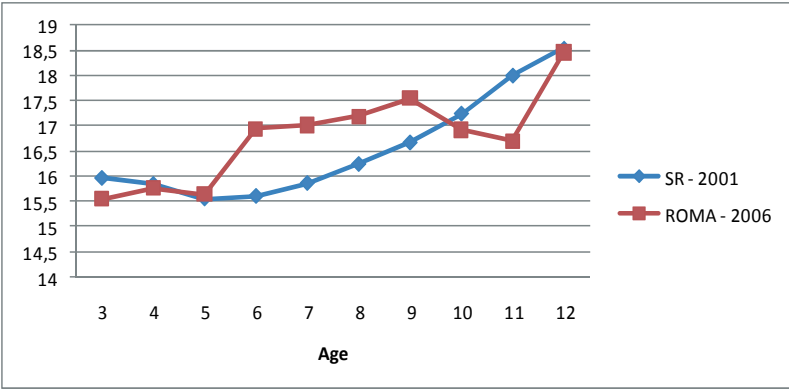

Figure 7. Comparison of BMI index of Roma and non-Roma boys

Table 11. Comparison of BMI index of Roma and non-Roma girls

	Slovak Republic 2001			Roma 2006			Stat. results	
Age	n	x	SD	n	x	SD	Arith. diff.	p
3	728	15.95	2.04	8	15.54	1.15	-0.41	n.s.
4	481	15.83	1.99	13	15.76	1.18	-0.07	n.s.
5	530	15.54	2.18	20	15.64	1.15	+0.10	n.s.
6	508	15.59	2.68	56	16.94	2.33	+1.35	***
7	883	15.85	2.25	95	17.01	3.24	+1.16	***
8	948	16.23	2.60	66	17.18	3.42	+0.95	**
9	832	16.66	2.64	69	17.54	3.05	+0.88	**
10	779	17.24	3.10	28	16.92	2.42	-0.32	n.s.
11	857	18.00	3.29	17	16.69	1.85	-1.31	*
12	854	18.54	3.11	6	18.46	1.19	-0.08	n.s.

* $p<0.05$; ** $p<0.01$; *** $p<0.001$, n.s. - not significant

Figure 8. Comparison of BMI index of Roma and non-Roma girls

Figure 8 and Table 11 show the average value data of BMI index for girls. Based on comparison of Romany girls children with non-Romany ones, lower values of Romany girls are noted at the lowest age groups (3-4) and the highest age groups (10-12). Higher values of Romany girls are noted at middle age groups (5-9). The differences are statistically significantly higher among Roma girls aged 6-9 years old (Table 11).

Results from questionnaires study. Currently with an anthropometric study we conducted parent's questionnaires cross-sectional study. Many questionnaires were incomplete (even provided as regulated interview by experienced persons) due to

language and educational barrier, so we included to the statistical analysis only 365 questionnaires with 60 and more percent of complete answers.

Multiple regression model of impact SES on BMI on Roma schoolchildren confirms statistical significance of mother education (with increasing level of education BMI is decreasing; single family status - in single families BMI is higher). In smoking status families BMI of children is lower, but not on statistical significance. The statistical significance is rather low - on level p<0.05 - due low amount of questionnaires, low completeness of data and also barriers of the difference in understanding including cultural, educational and language barriers (Table 12).

Table 12. Linear regression model of SES status attainment on BMI in Roma children (adjusted for sex, 365 questionnaires)

ADJUSTMENT of BMI	β coeff.	p
SEX/BOYS	0.42	*
MOTHER ELEM. EDUCATION	0.79	*
FATHER ELEM. EDUCATION	0.35	n.s.
SINGLE FAMILY	0.87	*
FATHER UNEMPLOYMENT	0.35	n.s.
MOTHER UNEMPLOYMENT	0.26	n.s.
SMOKING	-0.22	n.s
LOW FREQUENCY OF DAILY MEAL	-0.31	n.s.

Discussion and conclusions. The comparison of Roma weight and Roma height is showing large discrepancies comparing to National Slovak Anthropometric Survey. The comparison confirmed huge gap in body height in the both of groups, more significant for boys. The same results are in the parameter of body weight. WHR indexes are confirming stunned growth among Roma, BMI indexes depend on age group and do no confirm trend for obesity among Roma children. The results might be also influenced by hereditary factors confirming that the Roma people are shorter (Bernasovsky a Bernasovska, 1999).

Despite the problems with the questionnaires we confirmed impact low SES status on BMI index. SES status and its impact on obesity has been confirmed by many literature resources. The objective of McLaren (2007) study review was to evaluate total of 333 published studies, representing 1.914 primarily cross-sectional associations. The overall pattern of results, for both men and women, was of an increasing proportion of positive associations and a decreasing proportion of negative associations as one moved from countries with high levels of socioeconomic development to countries with medium and low levels of development. Findings varied by SES indicator; for example, negative associations (lower SES associated with larger body size and higher BMI) for women in highly developed countries were most common related to education and occupation. Positive associations for women in medium- and low-development countries were most common related to income and material possessions. Results underscore a view of obesity as a social phenomenon, for which appropriate action includes targeting both economic and socio-cultural factors. As obesity in childhood is rising rapidly, early intervention from public health officials will be required to prevent excessive weight gain.

A representative study (Sichieri et. al., 2000) of the city of Rio de Janeiro also found an increased risk of abdominal obesity (measured by WHR) in women of low stature and stunted growth, when controlled for race, socio-economic conditions and energy intake.
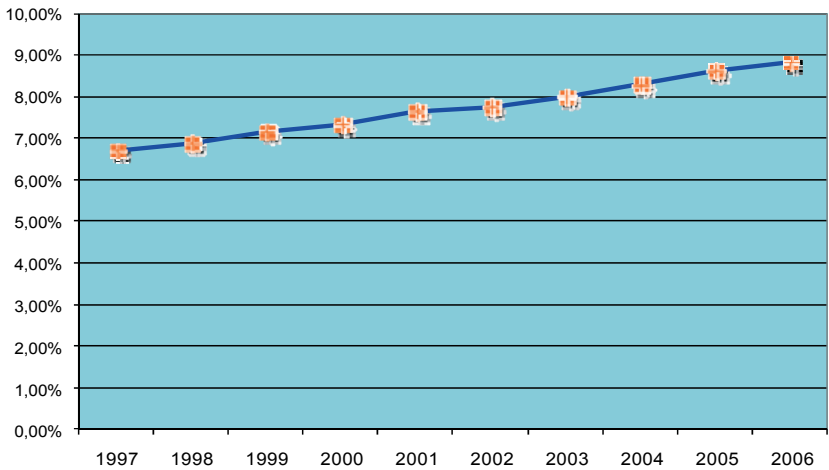
Using a similar line of analysis (Seidell et al., 1997) report that narrow hips and a broad waist contribute independently to increased risk of type 2 diabetes. Thus, individuals with identical figures for the circumference of the waist may have a greater risk for this disease if their hips are slimmer. In women, the combination of a broad waist and slender hips was especially significant. In men, slimmer hips, independent of the size of the waist, were an important predictor of diabetes.

In conclusion, Roma pre-school and school children do not confer any more or less risk for overweight compared to non-Roma. The outputs are claiming lower anthropometrical parameters in the Roma children population, stunted growth due to both: genetic-ethnic and socio-economic factors (Rimarova et al., 2002; Rimarova et al., 2009).

VIII. 2 Frequency of Communicable Diseases among Roma Population - Comparison with Majority in the Bardejov District during 1997 - 2006

    Introduction. Demographers currently estimate the range of 480 - 520.000 Romanies living in Slovakia. The Roma population is the second largest minority in the Slovak Republic. Relative to the total population, Slovakia is one of the states with the highest concentration of Roma in the world. More than 5 millions of Roma inhabitants now live in countries of former eastern block and they create one of the most important minorities, particularly in Slovakia, Romania, Bulgaria, Hungary and Balkan countries. Nevertheless, Romanies are not spread homogenously in Slovakia. Two thirds of Roma in Slovakia live in the south-central and east part of Slovakia.

    The town of Bardejov is an administrative centre of "Upper Sharish" region, it is also a centre of industry, culture and sports. It is called "the most gothic town of Slovakia". In 2006 there was 76.543 inhabitants total in the district of Bardejov (85 villages). From the total amount, 6.755 were Roma living in segregated settlements. Thus, Roma represents 8.82 % of the total population of the district Bardejov. This population in Bardejov district is permanently rising up and having increasing demographic trend (Figure 9).

Figure 9. Frequency of Roma population in Bardejov district 1997 – 2006

When compared to other inhabitants of Slovakia, the Roma are socially and culturally distinct. This is certainly true about their demographic behavior, in particular the age structure of the population, which can be described as a progressive young type of age structure, characterized by a high proportion of children and small proportion of elderly inhabitants. One of the long-term targets of demographers is to change the demographic behavior from demographic reproduction to demographic revolution. This process is characterized by decrease in both mortality (maternal and infant) and birth rate. The results would be demographic ageing and the change from uncontrolled to planned number of births on the scale of family structure. However, these implemented methods failed among Roma communities with grasping differences in demographic behavior in Romany settlements with completely different social and cultural standards.

Our results confirmed existing differences in the demographic characteristic among Roma and non-Roma. The age pyramid of the Roma people in Bardejov district (Figure 10) collected in 2006 has a broad base expressing dominant proportion of the youngest age-group and represents a progressive type of age structure. The shape of the age pyramid of the majority group is close to a regressive type of age structure. Likewise, the number of children per Roma mother is higher than the number of children per majority mother across the region. In poor Roma settlements in Slovak Republic, the number of children per family reaches 7.8. These trends make the shape of age pyramids for Roma minorities similar to the shapes in developing countries.

The aim of the work. One of the purposes of this study is to find and compare the incidence of selected communicable preventable diseases among the Roma population compared to the majority population in the district of Bardejov during decade from 1997 - 2006. As a preventable gastrointestinal infections have been selected -

1. *Shigella species* infections – shigelloses,

2. *Salmonella species* infections,

3. viral hepatitis A.

All afore-mentioned communicable diseases are preventable by routine hygienic and sanitary procedures and are transmitted in the fecal-oral way. Basic hygienic and sanitation measures, access to drinking water and appropriate food preparation can be used to prevent all about mentioned infectious diseases. One of the most important measures is

access to good quality drinking water, others measures include   sewage waste management, personal hygiene and appropriate food processing.

Characterization of investigated disease

1. *Shigella* is a genus of Gram-negative, non-spore forming rod-shaped bacteria closely related to *Escherichia coli* and *Salmonella*. *Shigella* species is the causative agent of human shigellosis. Shigella causes disease in primates, but not in other mammals. It is only naturally found in humans and apes. During infection, it typically causes dysentery. Three *Shigella* groups are the major disease-causing species: *Shigella   flexneri* is the most frequently isolated species worldwide and accounts for 60 % of cases in the developing world; *Shigella sonnei* causes 77 % of cases in the developed world, compared to only 15 % of cases in the developing world; and *Shigella   dysenteriae* is usually the cause of epidemics of dysentery, particularly in confined populations such as refugee camps or isolated settlements with very poor sanitation (Knobler et. al., 2006).

2. *Salmonella species* is a genus of rod-shaped, Gram-negative, non-spore forming, predominantly motile enterobacteria with diameters around 0.7 to 1.5 µm, lengths from 2 to 5 µm, and flagella which project in all directions. *Salmonella* is closely related to the *Escherichia* genus and are found worldwide in cold- and warm-blooded animals (including humans), and in the environment. They cause illnesses such as typhoid fever, paratyphoid fever, and the most common is the foodborne illness salmonellosis (Knobler et. al., 2006) .

Salmonella infections (except *Salmonella typhi*) are zoonotic and can be transferred between humans and animals. Many infections are due to ingestion of contaminated food. These bacteria are named after the scientist who discovered them, Dr. Daniel Salmon. The majority of the components of these bacteria are identical, and at the DNA level, they are between 95 % and 99 % identical (www.wikipedia.org).

As their name suggest, *Salmonella enterica* are involved in causing diseases of the intestines. **The three main serovars of *Salmonella enterica* are *Typhimurium*, *Enteritidis,* and *Typhi*.** Each of these is discussed further below. These distinctions are designed to help scientists distinguish similar bacteria from each other in papers and when discussing the genetics.

Serovars of *Salmonella enterica* can be subgrouped even further by "phage type". This technique uses the specificity of phage to differentiate between extremely closely

related bacteria. Often these bacteria are indistinguishable by other means, and indeed, the reasons for the differences in phage specificity are often not known.

Salmonella enterica serovar Typhi (also called *Salmonella typhi* or abbreviated to *S. typhi*). This bacterium is the causative agent of very serious illness - typhoid fever. Although typhoid fever is not widespread in the developed countries, it is very common in under-developed countries, and causes a serious, often fatal disease. The symptoms of typhoid fever include nausea, vomiting, skin rush, fever and death. Unlike the other *Salmonella* discussed below, *S. typhi* can only infect humans, and no other host has been identified. The main source of *S. typhi* infection is from swallowing infected water contaminated from human faeces. Food may also be contaminated with *S. typhi*, if it is washed or irrigated with contaminated water. Also lack of personal hygiene and direct contact could be the way of transmission.

Salmonella enterica serovar Typhimurium (also called *Salmonella typhimurium* or abbreviated to *S. typhimurium*). Until recently the most common cause of food poisoning by *Salmonella* species was due to *S. typhimurium*. As its name suggests, it causes a typhoid-like disease in mice. In humans *S. typhimurium* does not cause as severe disease as *S. typhi*, and is not normally fatal. The disease is characterized by diarrhea, fever, abdominal cramps, vomiting and nausea, and generally lasts up to 7 days. Unfortunately, in immunocompromized people, that are the elderly, newborns, infants, young, or people with depressed immune systems, *Salmonella* infections are often fatal - if they are not treated with antibiotics.

Salmonella enterica serovar Enteritidis (also called *Salmonella enteritidis* or abbreviated to *S. enteritidis*) In the last 20 years *S. enteritidis* has become the single most common cause of food poisoning worldwide. *S. enteritidis* causes a disease almost identical to the very closely related *S. typhimurium*. *S. enteritidis* is particularly adept at infecting chicken flocks without causing visible disease, and spreading from hen to hen rapidly. Many specialists have blamed the recent increase in the rise of S. enteritidis infections on the use of mass production chicken and other poultry and meat farms. When tens or hundreds of thousands of chickens or animals are processed together a *Salmonella* infection can rapidly spread throughout the whole food chain. A compounding factor is that the meat from a single farm may be distributed over many cities, and even states, and hence *Salmonella* infections can be rapidly dispersed through millions of people.

So the distinction is made between *Salmonella enteritis, Salmonella typhimurium* and *Salmonella typhi*, where is categorization based on the latter - because of a special virulence factor and a capsule protein (virulence antigen) - can cause different serious illness. *Salmonella typhi* is adapted to humans and does not occur in animals.

3. Viral hepatitis A - formerly known as infectious hepatitis is an acute infectious disease of the liver caused by the hepatitis A virus (HAV), which is most commonly transmitted by the fecal-oral route via contaminated food, drinking water or inappropriate presonla hygiene. Every year, approximately 10 million people worldwide are infected with the virus. The time between infection and the appearance of the symptoms, (the incubation period), is between two and six weeks and the average incubation period is 28 days.
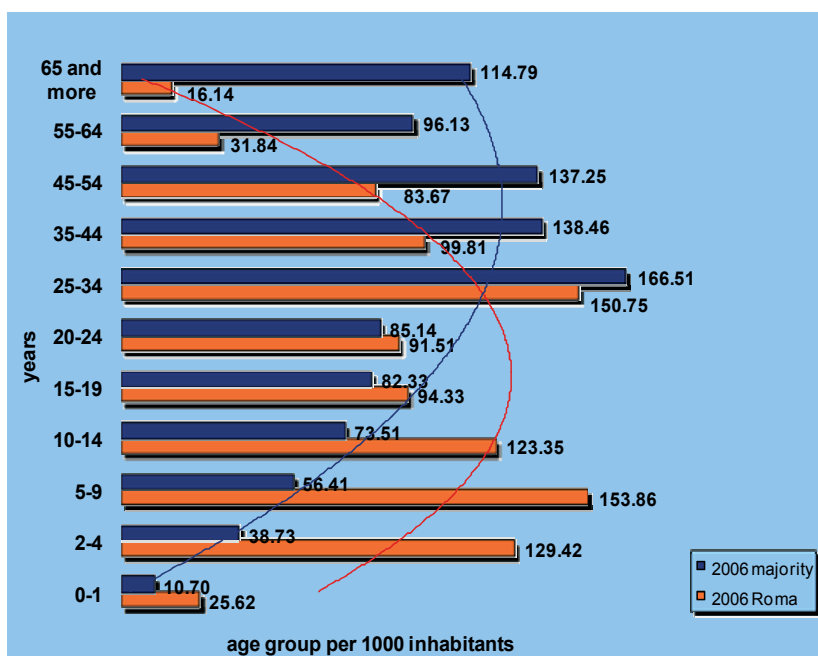
In developing countries, and in regions with poor hygiene standards, the incidence of infection with this virus is high and the illness is usually contracted in early childhood. HAV virus has also been found in samples taken to study ocean water quality. Hepatitis A infection causes no clinical signs and symptoms in over 90 % of infected children and since the infection confers lifelong immunity, the disease is of no special significance to the indigenous population. In Europe, the United States and other industrialized countries, on the other hand, the infection is contracted primarily by susceptible young adults, most of whom are infected with the virus during trips to countries with a high incidence of the disease. High prevalence of seasonal outbreaks has been remarked also in Roma settlements (Knobler et. al., 2006; www.wikipedia.org).

Hepatitis A does not have a chronic stage, is not progressive, and does not cause permanent liver damage. Following infection, the immune system makes antibodies against HAV that confer immunity against future infection. The disease can be prevented by vaccination, and hepatitis A vaccine has been proven effective in controlling outbreaks worldwide (Knobler et. al., 2006).

The aims of the work are as followed:

1. more specifically, we aimed to compare the overall and age-specific morbidity of dysentery among the Roma population compared to the majority population in the district of Bardejov in 1997 – 2006,

2. to follow overall and age-specific morbidity of *Salmonella* gastrointestinal infection among the Roma population compared to the majority population in the district of Bardejov in 1997 – 2006.

3. overall and age-specific morbidity of viral hepatitis type A among the Roma
   population compared to the majority population in the district of Bardejov in
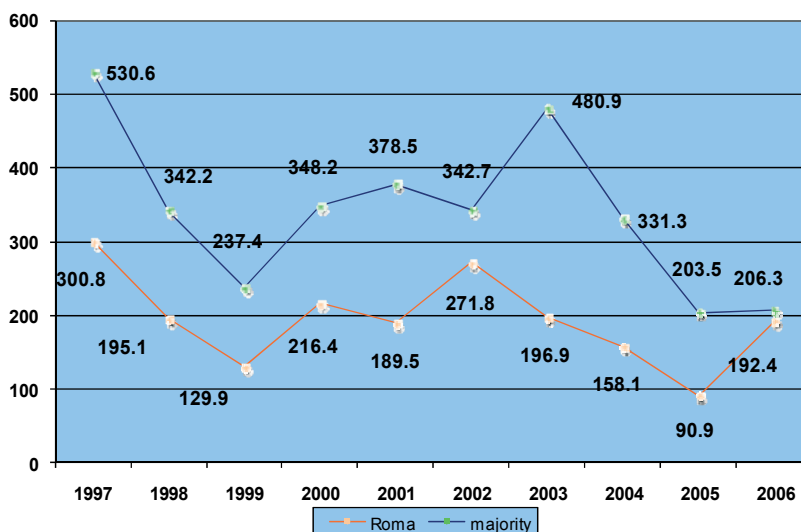   1997 – 2006.

Figure 10. Age pyramid of Roma and the majority population, district Bardejov, 2006

Material and methods. The data about the proportion of Roma population and majority population demography in Bardejov district were obtained from regional municipality statistics and from Statistical Office of Slovak Republic during 1997 – 2006 period.

The data about the frequency of selected communicable diseases were obtained through the information system database EPIS from Regional Public Health Authority Bardejov. Reporting of infectious disease is mandatory through EPIS and it is duty of local G.P. and pediatricians (any primary health care staff). The Roma were identified on the basis of reporting self-identity, which was supported by health authorities due to the necessity to follow the frequency of communicable diseases among the Roma. Statistical analysis was performed in SPSS program, the significance was tested by Chi-square test.

Results. First we compared overall morbidity of *Salmonella* infections among the Roma population compared to the majority population in the Bardejov district in the period 1997 - 2006. The data showed in Figure 11 refers to measurements from 1997 to 2006.
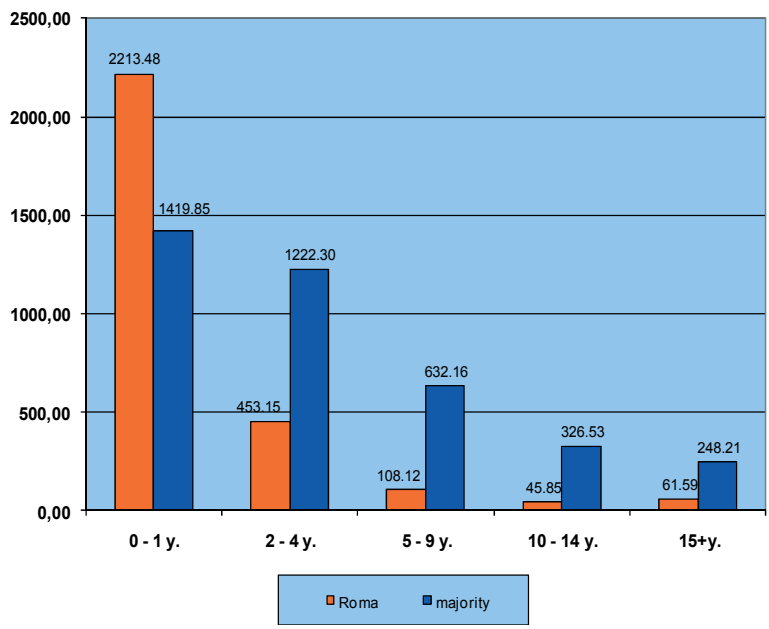

Figure 11. Frequency of morbidity for *Salmonella* infections among Roma and non-Roma in   district Bardejov per 100.00 inhabitants, 1997 - 2006

During the 1997, 1998 and 1999, the incidence of morbidity for *Salmonella* infections decreased. In 1999 the incidence of morbidity for salmonella was about 44 % less (in both populations) then in the same period two years before (1997). Then incidence of morbidity for *Salmonella* started to increase with the peak of 480.9 cases per 100.000 inhabitants in 2003 among non-Roma and 271.8 cases per 100.000 inhabitants in 2002 among Roma. The incidence of morbidity for *Salmonella* starts to decrease; in 2002 (for Roma) and 2003 (for non-Roma). Overall, the average morbidity of the majority population was 1.8 times higher than in the Roma population ($\chi2 = 36.12$, p <0.001). The most noteworthy differences were found in 2003 with 2.44 times higher incidence of morbidity for *Salmonella* among non-Roma compared to Roma.

These interesting findings about **lower incidence of *Salmonella* infection** can confirm underreporting, particularly among adult Roma who neglect gastrointestinal symptoms; where diarrhea becomes the normal status of health. Roma visit and seek
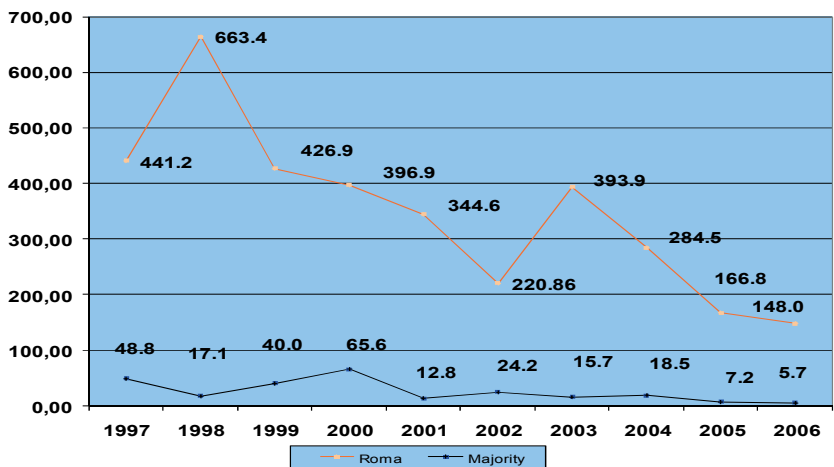
medical services only in case of emergency and with very evident diseases symptoms, thus we suppose *Salmonella* infections are underreported among adult and children Roma.

Figure 12. The average age-specific morbidity for *Salmonella* infections among the Roma and non-Roma in district Bardejov per 100.000 inhabitants, 1997 ‑ 2006

In the age group of infants (0-1 year age) the morbidity for *Salmonella* was 1.6 times higher among Roma compared to the majority, so it is completely opposite trend then in total *Salmonella* morbidity (Figure 12). In the age group "2-4 years" it was already 2.7 times more *Salmonella* infections among non-Roma. In the age groups "5-9 years" and "10-14 years" there was 5.3 and 7.2 times respectively more *Salmonella* infections among the majority then among the Roma population. Finally, in the age group "15+ years", the difference decreased a little bit, morbidity for *Salmonella* was 4 times higher among non-Roma compared to Roma sample. There is a high probability for underreported *Salmonella* infections among Roma due to weak clinical symptoms and other barriers (infrastructure, economic) to visit health care providers.

In the next step, we concentrated on the next disease - the overall morbidity of *Shigella* infections and dysentery among the Roma population compared to the majority population in the district of Bardejov in 1997 ‑ 2006 (Figure 13).
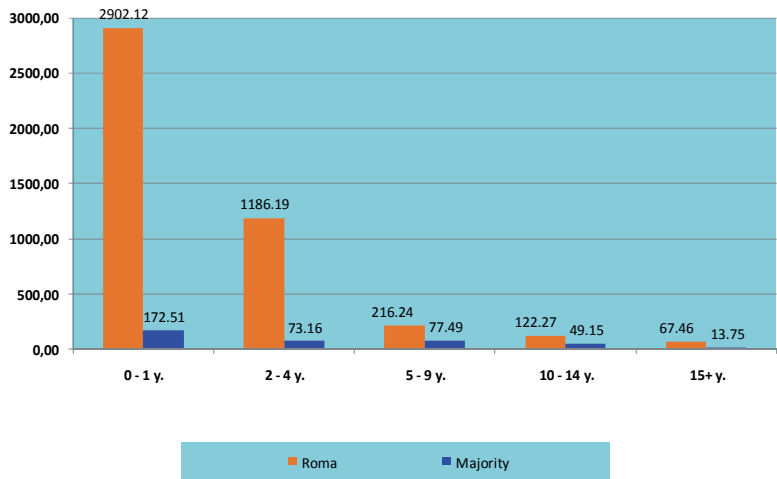

Figure 13. Frequency of morbidity for *Shigella* infections among Roma and non-Roma in district Bardejov per 100.00 inhabitants, 1997 ‑ 2006

Morbidity for dysentery among majority populations was relatively small. The average morbidity among the Roma population was 13.2 times higher than among the majority population ($\chi 2$ = 1049.83, p <0.001). The overall morbidity time trends for dysentery among Roma decreased, in 2006 was almost 3 times lower compared to year 1997.

The age-specific distribution of *Shigella* (Table 13, Figure 14) infections show a decreasing morbidity for dysentery across the rising age groups. The greatest gaps among both groups Roma and non-Roma are in age group "0-1" and "2-4", in these age groups the morbidity for *Shigella* was about more than 16 times higher in Roma sample compared to majority. In older age group "5-9" it was 2.8 times more dysentery cases among Roma; and in age group "10 ‑ 14", dysentery was 2.5 more frequent in Roma than majority sample. In age group "15 +", the difference increased a little bit, morbidity for dysentery was 4.9 times higher among Roma compared to majority sample.

Table 13. The average age-specific morbidity for *Shigella* infections among the Roma and non-Roma in the district Bardejov per 100.000 inhabitants, 1997 - 2006

Age group	Roma	Majority	The difference in morbidity
0 -1	2902.12	172.51	16.8-times
2 - 4	1186.19	73.16	16.2-times
5 - 9	216.24	77.49	2.8-times
10 -14	122.27	49.15	2.5-times
15 +	67.46	13.75	4.9-times

Figure 14. The average age-specific morbidity for *Shigella* infections among the Roma and non-Roma in district Bardejov per 100.000 inhabitants, 1997 ‑ 2006
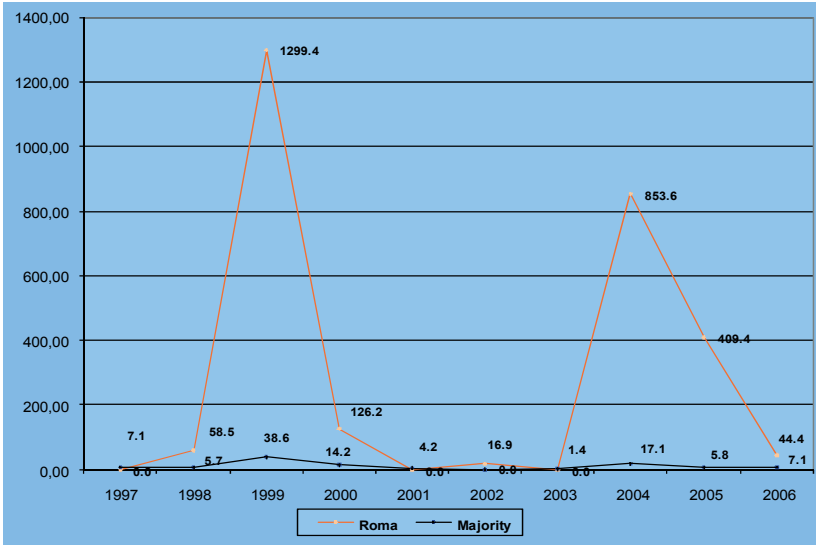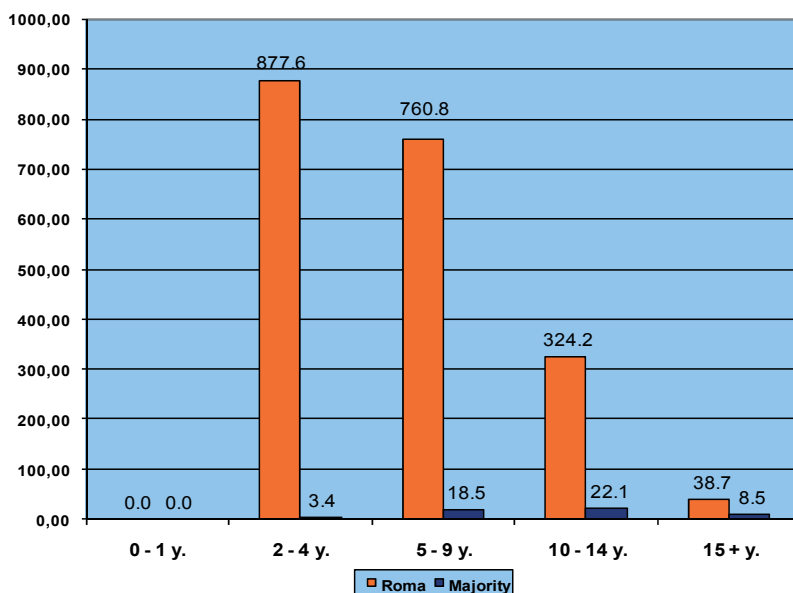
Finally, an overall and age-specific morbidity of viral hepatitis type A among the Roma population was compared to the majority population in the district of Bardejov in 1997 - 2006 (Figure 15). Morbidity for hepatitis A in the majority sample was relatively small again. According to the Roma sample in 1999 and 2004, there are two huge peaks of viral hepatitis A outbreaks and increase of morbidity of viral hepatitis type A. The average morbidity among the Roma population was 13.2 times higher than among the majority population ($\chi 2$ = 1049.83, p <0.001). In the Roma community, there is a typical seasonal outbreak of viral hepatitis A, particularly in the autumn and first winter months.

The categorization of viral hepatitis A by age groups (Figure 16) confirms higher incidence of hepatitis A morbidity among Roma population. The largest difference is in the age group "2-4", where the morbidity for hepatitis type A was about 258.1 times higher in the Roma sample compared to the majority. The age group of Roma "5-9" had 41.12 fold increased morbidity, and in the age group "10-14" data confirms 14.7 times higher incidence in Roma than in non-Roma. In the age group "15 +", the difference decreases to 4.5 times.

Figure 15. Frequency of morbidity for viral hepatitis A among Roma and non-Roma in the district of Bardejov per 100.00 inhabitants, 1997 - 2006

Figure 16. The average age-specific morbidity for viral hepatitis A among the Roma and non-Roma in district Bardejov per 100.000 inhabitants, 1997 - 2006

Discussion and conclusions. Vulnerable groups are disproportionately affected by infectious diseases in every country worldwide including European Union (EU). The level and distribution of wealth within a society plays a significant role in determining vulnerabilities to communicable diseases. A clear association between social welfare spending and mortality across EU countries has been reported (Stuckler et al., 2010). Effort for reducing and combating infectious disease has to be necessarily connected with reducing inequality is social status (Semenza and Giesecke, 2008; Semenza et al., 2010)

Other literature sources are also confirming higher amount of infectious disease among vulnerable and poor Roma comparing to majority population, including TB, HIV, measles, namely reported in 2009 - 2010 and spreading from Bulgaria and Greece (Marinova et. al., 2009).

It is widely agreed that TB, HIV/AIDS, and viral hepatitis (A, B) disproportionately affect minority populations in Eastern and Central Europe (The Situation of Roma in an Enlarged European Union, European Commission, Report

European Commission, 2004; UNDP report: Social Assessment of Roma and HIV/AIDS in Central East Europe. Bucharest, 2003-2004).

Pavlovic et al. (2006) reports in a Serbian Roma community 2.5 times higher TB prevalence rates then national average. Marta Schaaf in 2007 in paper published by Open Society Institute – Confronting a Hidden Disease – TB in Roma Communities - claim higher prevalence of TB among Roma almost in all CEE countries. According to the most recent data from the World Health Organization (WHO), 80 percent of the TB cases in Europe are concentrated in 16 countries, many of which have substantial Roma populations. TB treatment in Central and Eastern Europe and the Commonwealth of Independent States (CIS) generally requires two months of hospitalization, followed by four months of out-patient treatment (www.who.int).

Scientific papers provide new insights about the social determinants of potentially rare infectious diseases f.e. of listeriosis (Gillespie et. al., 2010; Mook et al., 2010). While the incidence is relatively low, Europe has experienced a steady increase in incidence over the years (Annual epidemiological report on communicable diseases in Europe, ECDC - European Centre for Disease Prevention and Control, 2009) . Listeriosis is a potentially serious infection caused by consumption of food contaminated with the bacterium *Listeria monocytogenes*. Food products can be contaminated with *Listeria* during processing or preparation, and most cases are domestically acquired. *L. monocytogenes* is capable of multiplying in a refrigerator at +4°C and is considered a health risk for healthy adults, however main risk groups for listeriosis are young children, pregnant women, immunocompromised and elderly people (Miettinen et al., 1999). While appropriate food storage is nonetheless important, especially in the home, preventing the initial food contamination is even more important. Gillespie et al. (2010) demonstrate that human listeriosis in England is associated with neighborhood deprivation. They rank geographic areas in England according to an "index of multiple deprivation" by taking into account a number of socio-economic factors: income, employment, health deprivation and disability, barriers to housing and services, living environment, crime and disorder, and education, skills and training. *Listeria* incidence increased with rising IMD "index of multiple deprivation" (least to most deprived). The authors suggest that health education tailored to vulnerable groups should be intensified. Unfortunately, vulnerable groups tend not to respond well to health promotion interventions (Semenza et al., 2010). The paper by

Mook et al. (2010) is specifically addressed to pregnancy- related listeriosis among ethnic minorities in England and Wales between 2001 and 2008. The authors take advantage of a number of data sets to assess the listeriosis risk and they document a significant incidence increase among ethnic minorities in recent years.

While ethnicity is not inevitably linked to vulnerability, ethnic minorities tended to reside more in deprived areas (Tinsley and Jacob, 2006). In light of shifting migration patterns in Europe this apparent incidence increase has an epidemic potential that should be closely monitored.

Also "Tick Born Encephalitis" is a rare disease with confirmed impact of low socio-economic status. Cases of "Tick Born Encephalitis" are reported also from areas that had not previously reported such as diseases (Süss et. al., 2004; Scarpass et al., 2006). Previous studies have shown that factors such as climate variations that directly or indirectly influence the transmission of the virus, the vector, the vertebrate wildlife, or people's behavior, are correlated with variations of "Tick Born Encephalitis" incidence over time (Lindgren, 1998).

The studies summarized in the paper of Randolph et. al. (2010) suggest strong correlations across eight CEE countries between "Tick Born Encephalitis rates and the percentage of household expenditure on food. Randolph with colleagues suggests mushroom picking as an alternative source of income in times of high unemployment as a driver of these rates. In Latvia, higher "Tick Born Encephalitis" rates were observed after forest cutting activities (probably through exposure of forest workers), at times of low economic activity (in a national level analysis), or in populations with low education levels (in a regional level analysis). Climate and weather patterns are also described to play a role in determining human exposure to ticks. These intriguing suggestions call for epidemiologic case control studies to account for potential confounders. Such studies would truly advance the field. For example, Randolph et al. (2010) points out, in line with previous studies, that under more stable socio-economic conditions, "Tick Born Encephalitis" emergence may rather be the consequence of enhanced zoonotic cycles.

The results confirmed in our research differences in health condition in selected communicable diseases among Roma population and majority. These findings refer to the persisting problems, which have negative influence on health and quality of life of Roma inhabitants, particularly children. The Roma visit and seek medical services only in case of

emergency and with very serious diseases symptoms, thus we suppose only *Salmonella* infections are underreported among Roma.

Other investigated infections - including viral hepatitis A and *Shigella* infections- displayed several times higher frequency among Roma compared to non-Roma.   We suppose this is a very reliable long term (10 years) study. As results have been collected for 10 years in the entire Bardejov district, we can definitely confirm higher incidence of preventable communicable diseases, which can be by simple eliminated by simple sanitary measures or vaccination (hepatitis A).

Currently, in the wake up of the financial crisis, rising unemployment and public economic debt in many EU countries press further weight to the notion emphasized in all issues, particularly   socio-economic determinants of infectious diseases which becomes public health priority, perhaps even more urgently now than in recent times.

VIII.3 Reproductive Health and Pregnancy Outcomes Results from Multi-Centric Studies in Slovakia

    Introduction. In this part of the research paper, we analyzed a multi-centric obstetric clinics study from Slovakia. The results from previous large population study (Bobak et al., 1995) confirmed that SES status and the ethnicity was an important determinant of birth weight, gestational age, IUGR – intrauterine growth retardation and fetal growth.

    The aim of the project. This part has objectives to quantify the differences between Roma and non-Roma infants in birth weight, gestational age and to confirm difference between Roma and non-Roma mothers. The next objective was to estimate the contribution of demographic variables, socioeconomic disadvantage, health behaviors and ethnic to pregnancy outcomes and newborn health.
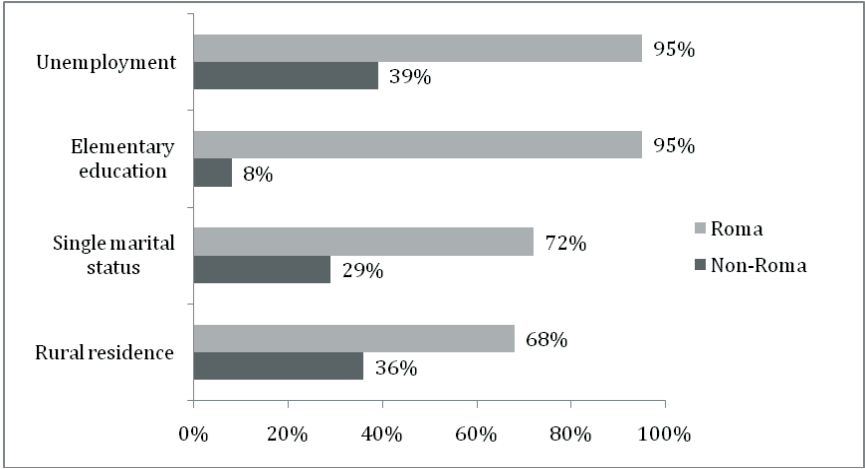
    Material and methods. Data from multi-centre studies collected in 2003-2006 included clinical data and questionnaires of mothers from singleton pregnancies. Twins and multiple pregnancies have been excluded from the study as a confounder. Maternal obstetric and newborn reports were retrospectively collected on 8 regional gynecologic and obstetrical centers including East, Middle and West part of Slovakia.

    The data included reports from Roma (947) and non-Roma (2.713). Virtually all deliveries in these districts during the study period were hospitalized, and women were enrolled during their stay in hospital. Universal hospitalization of deliveries in Slovakia is a great advantage of the study because we could reach all pregnancies. The study had the low refusal rate (3-6 %). During hospital stay, women completed a self-administered questionnaire with a help of a specially trained nurse or researcher. Ethnicity was based on maternal self-report and question about using Roma language at home and in the society.

    The newborn medical reports included data about birth weight, birth length, chest and head circumference, Apgar score for newborn vitality. The reproductive parameters (preterm delivery, low gestation age, interruption – vs. artificial abortion, spontaneous abortion, parity, frequency of Caesarean section, mother's weight increase, and complications during pregnancy) were collected also from maternal and obstetric reports.

In the regulated personal questionnaires mothers reported their level of education, employment, marital status (married; partnership; single; divorced, widowed), area of dwelling (rural versus urban), smoking (cigarettes per day), consumption of alcohol during pregnancy, coffee drinking, body weight increase during pregnancy.
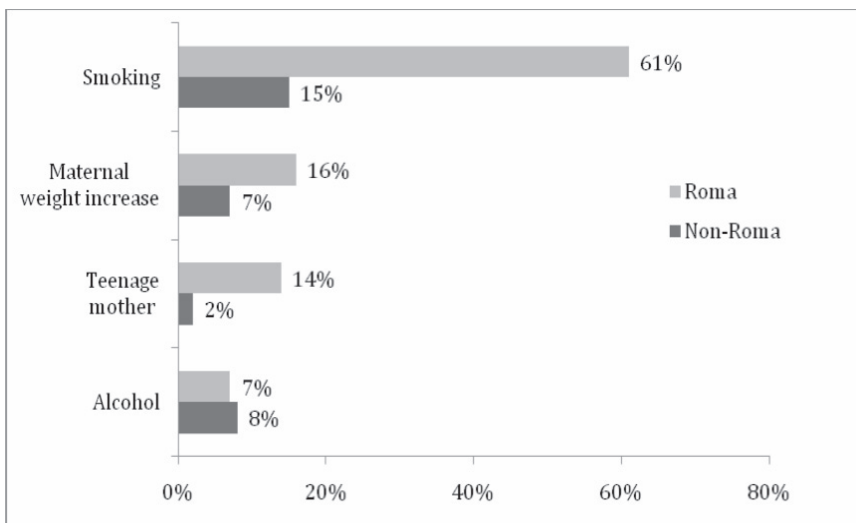
Databases and statistical analysis outputs were created in SPSS. OR vs. adjusted OR ratios with 95 % confidence interval (Mantel-Haenszel), further linear regression model and binary logistic model have been used, for simple arithmetic difference ANOVA comparison was applied.

Figure 17 . Differences in socioeconomic factors between Roma and Non-Roma, Kosice, Slovak Republic, 2003-06 (n=947; 2.713)

Results. The study also focused on the differences in SES and behavioral risk factors between Roma and non-Roma (Figure 17). The distribution of the socioeconomic characteristics and behaviors are in Figure 17 and 18. Output shows the differences in parents' education, employment status, marital status between Roma and non-Roma respondents. Roma mothers are more frequently unemployed, having lower education, having single status and living in rural areas.

Roma mothers smoke more, but they are drinking less alcohol compared to non-Roma mothers. Roma mothers also have significantly higher proportion of teenage pregnancy and low weight increase during pregnancy (Figure 18).

Figure 18. Differences in risk factors between Roma and Non-Roma, Slovak Republic, 2003-06 (n=947; 2.713)

Table 14. Differences in selected indicators Roma and non-Roma (ANOVA)

Parameter	Roma (n=947)		non-Roma (n=2713)		t-test p-value
	Mean	SD	Mean	SD	
Birth weight (g)	2866.9	452.3	3267.5	538.5	<0.001
Birth length (cm)	48.4	2.3	49.7	2.6	<0.001
Head circumference (cm)	33.0	1.7	34.1	1.6	<0.001
Chest circumference (cm)	32.1	2.1	33.1	2.0	<0.001
Gestational age	37.0	1.5	39.2	1.6	<0.01
Apgar score	9.3	1.4	9.2	1.2	n.s.

The birth weight, birth length, head circumference, chest circumference, gestational age and Apgar score differences in Romany and non-Romany (Table 14) were compared with the ANOVA test. Roma infants had considerably lower birth weight (p<0.001), birth length (p<0.001) and significantly   shorter gestation age   (p<0.001). Statistically significant differences were found between the average head circumference (p<0.001), chest circumference (p<0.001) between Romany and non-Romany. No significant differences were observed in the Apgar score between these groups.

Table 15. Ethnic differences in birth weight (g) - linear regression (Roma vs. Non-Roma, Slovak republic, 2003-2006, (n=947; 2.713)

ADJUSTMENT	Diff. (grams)	SE	p
CRUDE	-401	(20)	<0.001
EDUCATION (1)	-356	(16)	<0.001
SMOKING (2)	-316	(13)	<0.001
SINGLE STATUS (3)	-150	(18)	<0.001
RESIDENCE RURAL	-142	(17)	<0.001
TEENAGE MOTHER	-131	(12)	<0.001
GENDER	-122	(11)	<0.001
EMPLOYMENT	-121	(10)	<0.001
BIRTH ORDER	-79	(7)	<0.05
ALCOHOL	-55	(9)	0.12
ALL COVARIATES	-198	(10)	<0.001

The linear regression model for birth weight impact (Table15) shows the extent to which different characteristic explain differences between Roma and non-Roma determinants. In crude analysis (see also Table 14 and 15) Roma infants were 400.6 g lighter at births. Analysis showed importance of education, smoking, single status and teenage pregnancy and other significant factors. Our study didn't confirm alcohol drinking as important factors of birth weight reduction. Results are confirming also as relevant

risk factors rural residence, unemployment and low birth order (primipara is delivering baby in average having 79 grams less then multipara - see Table 15). All covariate analysis confirmed 198 grams difference in birth weight - which is explained as ethnic difference but also includes some confounders which haven't been measures f.e. anthropometric characteristic of the parents|.

The same statistical model applied for low gestational age (Table16) confirmed the importance of smoking, education and employment on gestational age decrease.

Table 16 . Ethnic differences in gestational age in weeks - linear regression (Roma vs. Non-Roma, Slovak republic, 2003-2006)

ADJUSTMENT	Diff. (weeks)	SE	p
CRUDE	-2.2	(0.13)	< 0.001
SMOKING (1)	-1.9	(0.12)	<0.001
EDUCATION (2)	-1.4	(0.06)	<0.001
EMPLOYMENT (3)	-1.3	(0.08)	<0.001
TEENAGE MOTHER	-1.2	(0.04)	< 0.001
SINGLE STATUS	-1.2	(0.03)	<0.001
ALCOHOL	-0.7	(0.07)	< 0.634
GENDER	-0.6	(0.09)	< 0.523
BIRTH ORDER	-0.5	(0.03)	< 0.568
RESIDENCE RURAL	-0.4	(0.01)	< 0.928
ALL COVARIATES	-1.3	(0.09)	< 0.001

Table 17. Ethnic differences in OR for LBW - low birth weight (<2500 g) - logistic binary regression (Roma vs. Non-Roma, Slovak republic, 2003-2006, (n=947; 2.713)

ADJUSTMENT	OR for LBW	p
CRUDE	4.57	<0.001
EDUCATION (2)	2.26	<0.001
SMOKING (1)	2.51	<0.001
SINGLE STATUS	1.46	<0.001
RESIDENCE RURAL	1.22	<0.01
TEEN. MOTHER (3)	2.25	<0.001
GENDER	2.05	<0.001
EMPLOYMENT	1.56	<0.01
BIRTH ORDER	1.27	<0.05
ALCOHOL	0.95	0.12
ALL COVARIATES	1.83	<0.001

Results of logistic binary outcomes (Table 17) for low birth weight (< 2500 g) were similar with Odds Ratios:

crude=4.57;

low education =2.26;

smoking=2.51;

teenage mother under 18=2.25.

The largest contribution has smoking and education.

Discussion and conclusions. The statistical analysis confirmed for the group of Roma mothers statistically significant differences in the unemployment rate, extremely low education level, more frequent single marital status, lower mother's age, and higher amount of smokers. On the other hand, the statistical analysis of newborn reports shows

statistically significant lower birth weight and other anthropometric body parameters of Roma.

Maternal low education is on of the largest contributors for lower birth weight and global poor pregnancy outcomes. Martial status and smoking were also associated with lower birth weight but contribution was smaller than level of education. Other parameters of newborns also shows great difference in lower birth length, low head and chest circumference but no major differences were found in the Apgar score for newborn vitality. Roma have lower gestational age, more frequent pre-term delivery, more frequent multi-parity – number of deliveries, more frequent spontaneous abortion, and a tendency for lower pregnancy weight increase in mothers. The same results have been confirmed by our previous studies (Šereš, 1998; Rimarova et. al., 2004; Rimarova et. al. 2005; Rimarova et. al. 2006; Rimarova et. al. 2007).

The positive parameters for Roma are more frequent spontaneous delivery rate and lower frequency of Caesarean sections. Prenatal gynecological disorders (f.e. eclampsia) and preterm delivery are higher in the group of Roma mothers, but due to the missing data we excluded this factors from our analysis.

VIII.4 Brief Summary of the Book (in English)

In 2007 the European project "MEHO - Migrant and Ethnic Health Observatory" had been launched with the aim of analyzing the selected health indictors of the migrant and ethnic communities in Europe including Roma. The main target of the project was to develop appropriate and representative health indicators from disadvantaged ethnic and minority groups. The project was addressing inequalities in health of ethnic minorities in Western Europe and Roma in the countries of CEE - Central and Eastern Europe. Project suggests on the basis of the knowledge acquired, policies and actions aimed for the improvement of the health situation of the migrants and ethnic in Europe and for the reduction of inequity in health indicators and access to healthcare among different migrant and ethnic groups.

The project was subsidized by the European Union in the context of the Public Health Program and has been developed in 6 countries (The Netherlands, Denmark, United Kingdom, Germany, Italy and Slovakia) with the participation of academic, research, public and private entities of the different countries involved and under the coordination of Erasmus Medical Centre in The Netherlands. The project has 10 work packages. The focus was given on **five critical areas**:

- mortality,
- infectious diseases,
- cancer,
- cardiovascular diseases,
- self-perceived health and health care utilization -

in and between various European countries. Specific attention was done to the conceptual, methodological, ethical and practical issue of identifying ethnic minorities in health databases and to the assessment of valid comparisons between ethnic minority groups within countries and between countries.

The chapters that follow concern the health of European Roma from various angles. Efforts were made to describe SES status of Roma, the prevalence of diseases, the prevalence of risk factors and living habits of citizens.

In the first place, data on socio-demographic aspects are presented, from which to contextualize the particular situation of the Roma community, giving account of the social

determinants of health. Secondly, issues concerning the cardiovascular diseases risk, obesity and child growth are described. The third axis has been the analysis of preventable gastrointestinal infections among Roma in 10 years period in one selected district of Slovakia, concerning *Salmonella, Shigella* and hepatitis A infections. The fourth and final thematic area focuses on the reproductive health outcomes, pregnancy and newborn health.

Methodology. Material and methods are described in each chapter of the publication   separately. In a research project of this type seeking to obtain information on the health determinants of the Roma population, anyone who knows this population group can attest to the difficulty in acquiring the most accurate information possible in terms of real figures of the population in order to design a valid sample. Serious difficulties were encountered in quantifying the size of the Roma population. The fact that "official" statistics do no exist in all of the countries studied and the discrepancy between such figures and estimates which are believed to better reflect reality, made our results more difficult.

Target population: Our target population was entirely composed of Roma from Slovakia, but literature research include published data also about Roma from other CEE countries. Statistical data were gathered based on the Roma population of all ages, namely children both men and women. All described studies are cross-sectional.

Project and results of monograph are focused on 3 critical areas of Roma health issues:

1. growth and obesity risk among children,

2. infectious disease,

3. reproductive health and pregnancy outcomes.

Growth   anthropometric survey confirmed   stunting body growth in children, expressed more apparently in the group of boys and in the parameter of body height. We didn't confirm higher obesity among Roma children but tendency for fat accumulation in the waist areas. Outputs of anthropometric measurements were compared with the results of the Slovak National Anthropometric Survey 2001. The result of all observed anthropometric variables confirmed lower values in all age groups of Roma children. Lower anthropometric indicators of Roma children in pre-school and school age are due to proven genetic, SES factors as well as resulting from nutritional deficiencies.

Infectious diseases considering *Shigella* infection and viral hepatitis A had higher prevalence among Roma during 10 years of the study. *Salmonella* infection were more frequent among Roma infants, but among older children and adults we didn't confirm higher prevalence due probable underreported cases.

Results of reproductive Roma health study confirmed negative trends in Roma pregnancy outcomes and newborns health, including lower birth weight, multiply pregnancies, shorter gestational age, higher smoking prevalence. As a positive outcome was found higher frequency of spontaneous labors in Roma mothers.

This monograph provides further evidence that Roma population suffers significant differences in selected parameters of health status. Social, financial and geographical barriers are related to cultural barriers and the both result in negative health determinants. Research findings illustrate the complexity of the problems the Roma in Slovakia and Central and Eastern Europe face. Unemployment, low education and poverty are widespread and affect health and access to health care. The poor quality of education increases barriers to seeking and receiving information about possible impacts on health. Access to proper housing and community infrastructures also have an impact on health. Thus, strategies to improve health for Roma in CEE and elsewhere need to adopt an integrated approach addressing the complexity of the needs of these population. Health also forms one of the priority areas of the Decade for Roma Inclusion, an initiative that aims to achieve by 2015 the full integration of Roma in society in a number of countries in Central and Eastern Europe.

VIII.5 Summary of the Book (in Slovak)

Táto monografia, ktorá je súčasťou môjho habilitačného konania vznikla ako súhrnný sumár výsledkov zo súčastí niekoľkých projektov, hlavne projektu MEHO – „Migrant and Ethnic Health Observatory", ktorý bol EÚ zahájený v roku 2007.

Odlišná etnokultúra, vyšší stupeň chudoby, nedostatočné vzdelanie, nezamestnanosť, možnosti rôznych foriem diskriminácie, problematický prístup k zdravotníckej starostlivosti sú všeobecne dobre známe problémy rómskej komunity v Európe. Je zrejmé, že stratégie na ich dlhodobé riešenia predstavujú výzvy nielen pre rómsku menšinu, ale aj pre vládne, mimovládne a medzinárodné inštitúcie. Na to, aby boli vytvorené vhodné politické mechanizmy a programy pre implementáciu týchto riešení je potrebný prístup k spoľahlivým dátam o Rómoch, o ich vzdelaní, postavení, zamestnanosti, zdravotných determinantoch. Komparatívne štatistické informácie o rómskej populácii v strednej a východnej Európe sú nedostatočné. Doterajšie programy a výskumy sa spoliehali primárne na kvalitatívne informácie na úkor kvantitatívnych. V niektorých prípadoch boli k dispozícii štatistiky z niekoľkých krajín, no keďže dáta chýbali zo všetkých štátov v regióne, alebo boli spracovávané odlišnou metodikou a prístupom, nebolo možné zostaviť komparatívne štatistiky alebo štandardizovať dáta a informácie.

Na svete žije okolo 8 -12 miliónov Rómov, z toho 7 - 9 miliónov žije v Európe a z nich asi dve tretiny v krajinách strednej a východnej Európy. Najväčší podiel rómskeho obyvateľstva (viac ako 2,5 milióna) žije v Rumunsku, v Maďarsku (viac ako 600 000), v Bulharsku (500 000), na Slovensku (400 000) a v Českej republike (300 000). Do roku 2004 bolo z hľadiska celkového počtu rómskych obyvateľov na prvom mieste z krajín Európskej únie Španielsko s viac ako 650 000 obyvateľmi rómskeho pôvodu.

Najnovšie výskumy o stave rómskej komunity realizované v európskych krajinách sa stretávajú s rovnakým problémom - definovať rómske etnikum a identifikovať, kto patrí do rómskeho etnika. Problém identifikácie Rómov vyúsťuje do rôznych počtov a odhadov rómskeho obyvateľstva v jednotlivých krajinách a v celej Európe. V skutočnosti samých seba za Rómov pokladá menej občanov, v porovnaní s hodnotením okolia a s klasifikáciou stanovenou výskumnými organizáciami („self-identification" versus „hetero-identification").

Výrazný vplyv na klasifikáciu obyvateľov ako Rómov majú sociálne a ekonomické faktory (nízky príjem, nedostatočné vzdelanie, nezamestnanosť, život vo veľkom rodinnom spoločenstve, v osade). Z tohto dôvodu existujú niekoľkonásobne vyššie odhadované počty rómskych obyvateľov v porovnaní s tými, kde sa v skutočnosti identifikujú sami Rómovia. Obyvatelia rómskeho pôvodu sa často hlásia k inej národnostnej menšine, či už z vlastného presvedčenia, alebo z obavy pred odlišným zaobchádzaním respektíve diskrimináciou Existujúce štatistiky a dáta dokazujú, že priemerná dĺžka života, mortalita novorodencov, morbidita a niektoré ďalšie zdravotné indikátory sú v rómskej populácii podstatne horšie ako v prípade majoritnej populácie v strednej a východnej Európe. Moja práca sa preto snaží analyzovať tieto problémy na základe dát, ktoré boli získané výskumami a prieskumami vedenými EU a asociovaným partnerom na LF UPJŠ.

Väčšina príčin zlej životnej úrovne rómskych komunít je spojená s chudobou, slabou hygienou a buď neexistujúcou alebo neadekvátnou základnou infraštruktúrou v rómskych komunitách. To znamená, že aj projekty, ktoré nie sú priamo zamerané na zvýšenie zdravotnej úrovne (napríklad rozvoj infraštruktúry) môžu mať významný, aj keď nepriamy pozitívny efekt na ich úroveň zdravia.

Z hľadiska biologickej antropológie je možné považovať rómske obyvateľstvo za čiastočne spoločensky podmienený izolovanú skupinu. V záujme ďalšieho pozitívneho vývoja je potrebné odstraňovať všetky druhy prekážok, ktoré pomáhajú spoločensky izolované skupiny udržať. V prípade, ak je jedna populácia izolovaná v rámci druhej populácie, potom majoritná populácia je určujúcou zložkou spoločenského prostredia a má vytvoriť také podmienky, ktoré by umožnili prechod zo stavu izolácie do stavu integrácie. Ide o prekonanie rozdielu, ktorý vznikol predchádzajúcim odlišným vývojom. Jednou z hlavných iniciatív je Dekáda inklúzie Rómov.

Projekt EU MEHO má tri priority, ktoré sa týkajú balíka 10 (Workpackage 10) spojeného s otázkou riešenia zdravotných determinantov rómskej problematiky. Tieto priority sú zahrnuté aj do monografie a predstavujú sledovanie zdravotného stavu rómskej populácie v nasledovných oblastiach:

1. rast a riziko obezity v detskej populácii,

2. infekčné ochorenia,

3. reprodukčné zdravie a vplyv na tehotenstvo.

Rast a riziko obezity v detskej populácii. Antropometrická prierezová survey detí od 3-12 rokov potvrdzuje v rómskej detskej populácii výrazné zaostávanie vo výške, hmotnosti a ostatných antropometrických ukazovateľoch v porovnaní s celoštátnymi výsledkami antropometrických meraní z roku 2001. Porovnanie výsledkov prináša viac markantné rozdiely v parametri výška a v skupine chlapcov v porovnaní s dievčatami. BMI indexy rómskych a nerómskych detí sa tak výrazne nerozlišujú, výskum nepotvrdil riziko obezity u rómskych detí, ale poukazuje na kumuláciu tuku do viscerálnej oblasti, čo je rizikovým faktorom centrálnej obezity a metabolického syndrómu. Závery poukazujú na fakt, že v rómskych podmienkach života sa nič nezmenilo, čo znamená aj minimálnu akceleráciu telesného rozvoja a rastu. Rómske deti v porovnaní s nerómskymi sú ľahšie a menšie. Túto retardáciu môžeme pripísať zhoršeným sociálno-ekonomickým faktorom, genetickým faktorom, nutričným deficitom a faktu, že rómska populácia ešte stále vytvára dosť izolovanú sociálnu skupinu.

Infekčné ochorenia. Počas desaťročného obdobia sa v Bardejovskom okrese sledovala skupina fekálno-orálne prenášaných nákaz, vírusovej hepatitídy A, šigelózy a salmonelózy. Výskum potvrdil oveľa vyšší výskyt dyzentérií v rómskej populácii, tak isto sa zaznamenal niekoľkonásobne vyšší výskyt hepatitíd A, hlavne v období sezónneho vzplanutia infekcie. Salmonelózy boli vyššie u dojčiat rómskeho pôvodu, ale naopak, čo je zaujímavým faktom - u starších detí a dospelých bola reportovaná salmonelóza vyššia u majoritnej skupiny obyvateľstva.

Reprodukčné zdravie a vplyv na tehotenstvo. Prierezové gynekologicko-pôrodnícke štúdie zo v Slovenskej republike potvrdili nižšiu pôrodnú hmotnosť a dĺžku rómskych novorodencov a ich nižší gestačný vek. Na negatívnych reprodukčných zdravotných indikátoroch sa podieľajú aj sledované SES parametre, hlavne extrémne nízka vzdelanosť, fajčenie, rodinný stav a nízka zamestnanosť rómskych matiek. Negatívne pôsobiace faktory zo strany matky, ako sú: nižší vek matky, vyššie percento tzv. tínedžerských tehotenstiev, nižší hmotnostný prírastok v tehotenstve, vyšší počet tehotenstiev, majú vplyv na horšie výsledky novorodeneckých parametrov. Ako pozitívne možno hodnotiť v rómskej populácii rodičiek vyššie percento spontánnych pôrodov, nižší počet cisárskych rezov a napriek nižšej pôrodnej hmotnosti aj porovnateľné skóre novorodeneckej vitality označovanej ako APGAR skóre.

Sociálne, finančné a geografické bariéry sú spojené s kultúrnymi tradíciami a prekážkami a vyúsťujú do negatívnych hodnôt sledovaných markerov zdravotného stavu rómskej populácie. Výsledky výskumov a prieskumov dokumentujú komplexnosť problémov, ktorým Rómovia v strednej a východnej Európe čelia. Nezamestnanosť, nízke vzdelanie, chudoba majú priamy negatívny vplyv tak na zdravie ako ja na prístup ku zdravotníckej starostlivosti. Nízka vzdelanostná úroveň prehlbuje bariéry pri získavaní informácií o negatívnych dopadoch rôznych faktorov na zdravie. Svoj negatívny podiel na zdraví uplatňuje aj neadekvátne bývanie a komunitná infraštruktúra. Publikácia prináša ďalšiu evidenciu, že rómska populácia má výrazne zhoršené sledované a vybrané parametre zdravia.

Stratégie na zlepšenie kvality zdravia v marginalizovanej skupine Rómov musia mať vysoko integrovaný charakter, tak aby sa pokryli potreby tejto skupiny obyvateľstva. Zdravie je tak isto jednou z priorít Dekády inklúzie Rómov - iniciatívy, ktorá by do roku 2015 chcela dosiahnuť úplnú integráciu Rómov do spoločnosti v krajinách strednej a východnej Európy. Práca a výsledky u vedené v tejto monografii majú prínos hlavne pre prácu verejných zdravotníkov, komunitných pracovníkov pediatrickú a preventívnu prax a tiež sú významné pre verejné zdravotníctvo a prípravu programov pre zlepšenie zdravia tejto marginalizovanej skupiny obyvateľstva.

Index of Abbreviations

AIDS - Acquired Immunodeficiency Syndrome
AD - Anno Domini
ANOVA - Analysis of Variance
BMI - Body Mass Index
CEE - Central and Eastern Europe
CIS - Commonwealth of Independent States
CRLP - Center for Reproductive Law and Policy
EC - European Commission
ECDC - European Center for Diseases Control
EPIS - Epidemiological Information System
EUPHA - European Public Health Association
EU - European Union
HAV - Hepatitis A Virus
HIV - Human Immunodeficiency Virus
ILO - International Labour Organisation
ISC - International Steering Committee
IMR - Infant Mortality Ratio
IUGR - Intrauterine Growth Retardation
KEGA - Kulturna a edukacna grantova agentura – Cultural and Educational Agency
LBW - Low Birth Weight
MEHO - Migrant and Ethnic Health Observatory
MEP - Member of the European Parliament
NFP - Nenavratny financny prispevok - Non Refundable Financial Contribution
n.s. - not significant
OR - Odds Ratio
REF - Roma Educational Found
S.D. - The Standard Deviation
SES - Socio-economic Status
SORO - Sprostredkovatelsky organ pod riadiacim organom –Intermediate Body under the Managing Authority
SPSS - Statistical Package for the Social Sciences
TB - Tuberculosis
U.K. - The United Kingdom
UNDP - The United Nation Development Program
UN ESCOR - The United Nations Economic and Social Council Resolution
UN HABITAT -The United Nations Human Settlements Programme
UNHCR - The United Nations High Commissioner for Refugees
UNICEF - The United Nations Children's Fund
UPJS - Pavol Jozef Safarik University
VEGA - Vedecka grantova agentura
WHR- Waist Hip Ratio

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