

**On the adverse health effect of unemployment and its aetiology, based  
on the examination of public health conditions and health status of  
Hungarian and Roma unemployed living in Ózd Micro Region**

Doctoral theses

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## Introduction

It has been known for a long time both from works of Pericles and also from the Gospel of Matthew that some kind of labour shortage, unemployment already existed in the ancient Athens and also at the time when the New Testament was being written. However unemployment of wide social significance unambiguously equals in age with the appearance of industrialization, with the development of industrial dominance, the industrial revolution. In the first centuries of the industrialized countries' history masses of workers became redundant, unemployed due to starting newer and newer technologies thus increasing the efficiency of the already existing production processes. The continuous fear of becoming unemployed gave rise to frequent incidents (machine wrecking, luddism, rebellions etc.) between workers and employers or owners. At the same time struggles started for new markets in order to sell more and more new products. The conflicts resulted in wars crowned by World War I. Both winners and losers of the "Great War" recognized the often disastrous economic and social consequences of world crises, which accompany mass unemployment. This is why the introductory sentence in the charter signed by the governments of 146 countries of the International Labour Organisation (ILO) brought into life by the 13<sup>th</sup> chapter of the Versailles Peace Treaty of 1919 says that "Universal and lasting peace can only be created if it is based on social justice". Although the 2<sup>nd</sup> Convention of ILO (1919; today the number of Conventions is ~200) already dealt with issues of unemployment to be solved but the people in the centre of misery and poverty owing to unemployment were only mentioned at the end of the great economic world crisis of 1929-1933 in the "Marienthal Study" by a group of psychologists and sociologists. They pointed out that unemployed people are afflicted not only by economic, social, subsistence problems but also by adverse psychic effects of unemployment. Although the hypothesis that unemployment causes somatic health impairment emerged in the last decade of the 20<sup>th</sup> century it was only accepted in the first decade of the 21<sup>st</sup> century.

A paper of the Central Statistical Office (KSH) published in 2009 stated that "While two decades ago research on the relationship between social inequality and health status had to argue for the adjustment of

unemployment, in a broader sense non employment, into the dimensions of social inequalities, now in the 21<sup>st</sup> century the trend dealing with the connection between uncertainty of work and health status has become a significant branch of health-sociology". An editorial of British Medical Journal published in 2009 also dealt with adverse health effects of unemployment and pointed out that according to research results in the early 1990-ies unemployment increases mortality and reemployment of the unemployed facilitates recovery from diseases. Hungarian physicians and researchers working in the field of occupational health first encountered the problem of unemployment at the collapse of the so called socialist world system at the end of 1980-ies and the beginning of 1990-ies. The research team (which I joined as a PhD student) working in the National Institute of Occupational Health observed during the fit for job medical examinations necessary for work at home or abroad that prevalence of unfitness for work was higher among unemployed than employed people. The working group worked out a research plan and besides the yearly report of 1990-1994, it published the first results in 1993. In the research plan the main questions were the following: i.) Does unemployment really increase the prevalence of unfitness for work due to health impairment, i.e. has it a direct adverse health effect, ii.) What could be the reason for this phenomenon unknown until recently? iii.) Does this phenomenon depend on so called modifying factors, like economic strength of the country, ethnic composition of the unemployed in the region, length of unemployment, social situation, poverty, environmental and other characteristics of the unemployed (geographic localization, hygienic condition of the living environment, original health status, life style, personal hygienic practice, education, etc.) The present thesis would like to contribute to the answer of these major questions and problems by analysing results of examinations of the unemployed of a deprived Hungarian Micro Region and also explore certain details of the mentioned problems. In order to accomplish all these, the following objectives have been set up:

## **Objectives**

1. *Examination of public health safety of Ózd Micro Region presumably influenced by its unemployed population, including*

- 1.1. Analysis of demographic and social situation of the unemployed;
- 1.2. Indoor and outdoor living environment, environmental health situation of the unemployed in the Micro Region – and its consequences;
- 1.3. Education, qualification of the unemployed of the Micro Region and its consequences;
2. *Analysis of health status of the Micro Region's unemployed and its influencing factors*, including:
  - 2.1. What are the personal hygienic practice and life-style habits of the unemployed in the Micro Region?
  - 2.2. What is the distribution of diseases diagnosed among the unemployed of the Micro Region like?
  - 2.3. How frequent is unfitnes for work among the unemployed?
  - 2.4. Is there a difference in the ill health complaints between the employees and the unemployed?

After having realized the objectives and answered the questions mentioned in the first two points we set up further objectives and tasks of our study:

3. *Comparative analysis of public health and social safety of the Roma and non-Roma unemployed (for details see 1.1.-1.3.)*
4. *Comparative analysis of health status and its determining factors as well as unfitnes for work of the Roma and non-Roma unemployed (for details see 2.1.-2.4.)*
5. *Analysis of mental hygiene status of the Roma and non-Roma unemployed and comparison of their psychic health.*
6. We also aimed at exploring how the living conditions of the (mainly Roma) unemployed living in Ózd Micro Region in extreme poverty have changed at the time of Hungary's EU membership. What impact the financial-economic world crisis exerted on the unemployed?
7. Finally, after having completed all of our objectives and answered all questions, we wanted to know what can be the aetiology of the fact explored by our team and similarly by others, that the prevalence of diseases is increased among the unemployed compared to the employees and how our original hypothesis on the causative role of unemployment in the health impairment can fit into this aetiology.

## **Methods, study population, data protection, statistical analysis**

*Study populations/groups.* The study was conducted in the years partly before (2000-2006) and partly during (2009-2012) the financial-economic world crisis.

## 1. Studies carried out before the world crisis

1.1. 536 18-61 year old unemployed individuals (332 males and 204 females) living in Ózd Micro Region were recruited when they appeared in the Ózd Work Centre in order to have a fitness for work medical examination by an occupational health specialist. The data of unemployed and employed control groups used for comparison or estimation reasons were taken from studies carried out by the same team using the same methods (relating to unemployed people living in other settlements, employees of big farms, small-scale farmers and inhabitants of small villages and detached farms). These literature-derived data served only for comparison with the indicator parameters obtained as results of the examinations of unemployed people of Ózd and analysis of the results of those studies did not constitute the basis of the present thesis<sup>1</sup>.

1.2. *Fitness for work.* Exclusively the prevalence of unfitness for work was compared. The unemployed group consisted of the individuals mentioned in 1.1 and members of the employed group (450 persons: 160 females and 291 males) were active workers of similar age attending fitness for work medical examination at the Work Med Occupational Health Centre in 2003.

## 2. Studies carried out during the world crisis

2.1. 400 unemployed men and women fit to act, aged between 18-61 years were involved in the study when they came to the Ózd Work Centre to attend the obligatory fitness for work medical examination. They were assigned to 4 groups: non-Roma (i.e. Hungarian) men (114 persons) and women (93 persons), as well as Roma men (96 persons) and women (97 persons), respectively.

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<sup>1</sup> Results of studies carried out by our team using the same methods were apt for statistical comparison while data of the Central Statistical Office (KSH) were used only for comparative estimation

2.2. *Evaluation of fitness for work.* We compared the prevalence of unfitness for work among the 210 male and 190 female unemployed attending the fitness for work medical examination in the Ózd Work Centre between 2009-2012 to that observed in the WorkMed Occupational Health Centre during fitness for work/job examination of 430 active employees (195 men and 235 women).

2.3. Exclusively mental health examinations were performed in the WorkMed Occupational Health Centre and the Ózd Work Centre involving further 60 actively employed Hungarian and 60-60 Hungarian and Roma unemployed men and women of similar age, respectively.

*Data recording, data handling, data protection.* Recruitment of the study participants, their involvement into the examinations preceded by oral and written information was strictly on voluntary basis. Examinations of all unemployed persons were carried out (even those performed during the world crisis) before any work activity related to works of public utility came into practice. Data anonymity of the questionnaires were guaranteed by using code numbers, only the occupational health specialist and the interviewer could identify the individuals, the data processing was already anonymous. The study corresponded to the domestic ethical regulations and met the criteria of the Helsinki Declaration<sup>2</sup>.

*Methods.* Self-completed and interview-driven questionnaires as well as occupational health examination methods for evaluating fitness for work were used. The following three questionnaires were used for recording and evaluating

- I. Public health conditions of the unemployed
- II. Health status of the unemployed; Part A: somatic health; Part B: mental/psychic health
- III. Results of the fit for work medical examinations

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<sup>2</sup> The studies before the world crisis were approved by the Research-Ethical committee of Semmelweis University, and the ones during the world crisis, which were extended to compare the public health, health status etc. parameters of the Hungarian and the Roma unemployed people, were approved by the decision No. 35685/2012/EKU (562/PI/12.) of the Research-Ethical Committee of the Council of Health Sciences (ETT TUKEB).

The mental health examinations analysed the results of clinical examinations, detailed case histories, paper-pencil tests and detailed fixed exploration. The following paper-pencil tests were used:

- Scale of life-satisfaction (Diener et al., 1985)
- A validated test system composed of 5 parts (social relations, self-confidence, mood and emotional status, coping ability, stressors e.g. discrimination affecting the unemployed) elaborated by our team to study mental health status
- A 13-item version of the depression questionnaire by Beck (Beck and Beck, 1972)
- Estimation of affectivity by the colour preference test of Lüscher (Lüscher 1948; 1962; 1969)
- Coping and Stress Profile (Olson et al, 1991)

*Statistical methods.* Complying with the requirements, descriptive and analytical, as well as some special statistical methods were used.

*Descriptive methods.* Absolute and relative frequencies of the qualitative questionnaire data, mean values and their standard deviations of continuous parameters, as well as medians and quartiles of variables with non-normal distributions and in some cases the extreme values were also calculated and reported.

*Analytical statistical methods.* Frequency indicators of the study groups (Roma and non-Roma unemployed) were compared by Pearson chi-square test. Continuous variables were compared by Student's t-test or –in case of non-normal distribution –Mann-Whitney's U-test. More than two groups were compared by ANOVA. Statistical significance was determined at level of 5% ( $P \leq 0.05$ ). The role of certain studied factors in the health status was analysed by bi- or multivariable logistic regression, Odds Ratios and their 95% confidence intervals were reported. SPSS 11.5 (2001), then EpiInfo 6.0 and STATA/SE 10.0 programmes were used for the statistical analysis. Special statistical procedures were also applied according to the requirements of the different psychological tests.

## **Results<sup>3</sup>**

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<sup>3</sup> in the order of the mentioned objectives

*1. Public health, social situation and safety of the unemployed in the Ózd Micro Region before the financial- economic world crisis.*

*1.1. Demographic data, work history, duration of unemployment, social situation.* Vast majority of the studied unemployed living in Ózd Micro Region, which used to be the catchment area of one of the most prominent metallurgical centres of Hungary before the change of regime, had been unemployed for more than 3 years. Majority of them were first generation unemployed but second generation<sup>4</sup> ones were also found in significant proportion (~70% vs. 30%). The prevalence of unemployment/unemployed rose with increasing age. Total income of the households among the unemployed besides financial support and casual work depended on whether their spouses/partners and children had a job and also on the number of dependents. One third of the men's spouses were unemployed, more than one third were supplied by Child Care Benefit (GYES), Child Care Allowance (GYED) and hardly one fifth of them were economically active. Almost two thirds of the unemployed women's spouses were economically active, one third of them were unemployed. Nearly half of the male and female unemployed provided for two or three dependents without any income. 15% of male and 23% of female unemployed provided for 4-4 dependents without income. 5.8% of the unemployed shoulder the extreme burden of providing for 5 or more dependents without income (2).

*1.2. Living environment, environmental health situation.* Almost two thirds of the studied unemployed was town-dweller, one third of them lived in small villages, most of them in their private property. Although according to 43% and 49% of the respondents, respectively, their dwelling was satisfactory or acceptable, we found among others that 14% of the unemployed were living with several others in 4-12 m<sup>2</sup> and 62.3% in 24-32 m<sup>2</sup> flats. In most cases the floor area per person was between 1-5 m<sup>2</sup>. Most of the dwellings (62.3%) were heated by traditional stoves, lit by electricity (98.3%) and supplied with a network of running water (53.9%). We found strongly objectionable that there was no water supply by a network system

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<sup>4</sup> First generation unemployed people were called those whose parents were not unemployed when they became redundant; second generation unemployed persons were called those whose both parents were unemployed when they reached working age and they themselves were unemployed



in 37% of the homes and in 46.5% and 45%, respectively, there was no bathroom or flush toilet, the latter were placed outdoors. 42% of the homes were not supplied with a canal system, 29.9% of them had “house-drains” (2).

*1.3. Education, qualification.* Vast majority of the respondents living in the Micro Region had low level of education (19% of men and 36% of women had not completed even 8 classes). Completed 8 classes of primary school was the highest level of education in case of 49% of both men and women. Vocational training school was completed by 26.5% of men and 12.3% of women, 3.7% of the respondents completed secondary grammar school. There was no one among the unemployed with college or university degree (1).

*2. Personal hygienic conditions, lifestyle, health status, fitness for work and unfitness for work due to health reasons of the unemployed in the Ózd Micro Region before the financial economic world crisis*

*2.1. Personal hygienic practice.* Personal hygienic practice (washing, showering with warm running water, hand washing, brushing teeth, changing underwear) of the unemployed living in Ózd Micro Region was found to be objectionable. Hardly one third of the respondents had a bath every other day and 8% of them only once a week. 23% of the respondents brushed teeth only once a week, while 7.2% of men and 5.5% of women never brushed their teeth at all. Frequency of dental care among men further more decreased with increasing age. This type of oral hygienic habits corresponded to our findings that only 10% of the respondents had intact and one fourth of them incomplete row of teeth. 95% of them did not have their missing teeth replaced. The respondents did not deal properly with the health determining factors depending only on themselves though it would be necessary for prevention of several diseases. (3).

*Lifestyle. Nutrition.* 69% of the respondents had meals three times a day, half of them consumed meat products 3-4 times weekly, one third dairy products daily, only 20% of them consumed vegetables and fruit daily. Fish consumption was reported only in 1% of the households. 5-8% of the

respondents had never or very seldom eaten poultry, 7-10% milk or dairy products, 25% of them did not have breakfast regularly (3).

*Smoking.* 77% of the interviewed men and 80% of women smoked. 40% of them were heavy smokers, smoking more than 20 cigarettes daily (3).

*Physical exercise.* Vast majority of the unemployed did not do regular physical exercises (walking, jogging, running, exercise); their physical activity included only household chores, gardening and animal husbandry. More than half of the respondents did not have any possibility to do casual work (3).

*Alcohol consumption.* In harmony with other literature data, the information on alcohol consumption gained by self-completed questionnaires was not thought to be worth evaluating. *Drug abuse* was not mentioned by any of the participants.

*2.2. Assessment of health status by interview driven questionnaires.* Only 2% of men and 5% of women thought their health status to be bad, most of them rated their physical and mental ability excellent, good or satisfactory and felt that they were willing to solve their problems. These data were not in harmony with the results of medical examinations. (see 2.3.)

*Case history, Family and personal history; Recurrent complaints during unemployment.* Bad mood, anxiety, headache, sleep disorder, morning tiredness, irritability, chest compression, mental and physical exhaustion, back pain, bone-joint-muscle pains, gastro-intestinal complaints, cough and expectoration were the most frequent recurrent and chronic complaints. Most of them were of distress nature (3).

*2.3. Fitness for work of the unemployed in the Ózd Micro Region.* Proportion of both the men and women unfit for work was increased. Reasons for not being fit for work were: cardiovascular, metabolic (diabetes), respiratory and locomotor diseases, as well as distress and its consequences, which played an important role in their case history as well. In connection with it we have to remark that mental status of the majority of unemployed was found to be worrisome, 41% felt fatigue and depression, 22% of them were not in the least inclined to do anything at all. Prevalence of feeling depressed was higher with increasing age among both unemployed men and women.

*2.4 Comparison of conditions among the unemployed, some employed and population groups.*

*Proportion of the unemployed requiring medical treatment* was significantly higher ( $P < 0,001$ ) compared to the population groups. This difference disadvantageous to the unemployed of the Micro Region could be observed in comparison to the unemployed living in the capital, and to the groups of workers in big farms, small scale farmers or inhabitants of micro or small villages. The odds ratios showed that the other groups were in a significantly more favourable situation. If we look at this comparison from the opposite angle we can conclude that in Ózd Micro Region the unemployed men had 3-5 times, the unemployed women 2-3 times higher chance of being in need for medical treatment due to their diseases than the compared groups (3).

*3. Public health and social situation, safety of the Roma and non Roma unemployed in Ózd Micro Region during the financial economic world crisis.*

*3.1. Demographic data, work history, duration of unemployment, social situation.* There was a significant difference in age between Roma and Hungarian individuals, the Roma unemployed were much younger. Before becoming unemployed the first generation Hungarian unemployed men worked on average 15.4 years, the Hungarian women 10.0 years, the Roma men 13.0 years and the Roma women 6.6 years. There was no difference in the length of unemployment between the Hungarian and the Roma participants because beginning of mass unemployment (1989-1991) was identical. Duration of unemployment became longer with increasing age. The unemployed of second generation (regardless of their ethnicity, nationality or gender) did not participate in any organised working activity since they reached working age. The high proportion of the Roma is remarkable in the youngest age group (18-29 years) of the second generation unemployed compared to the Hungarians (4, 5).

There was a significant difference in the proportion of the spouses' economic activity between the Hungarian and the Roma women, the spouses of the Hungarian unemployed women were more active economically. Financial support for Roma women was much higher than that of the Hungarian women due to the difference in the distribution of Child Care Benefit (GYES), Child Care Allowance (GYED), Child Care Support (GYET) and Family Allowance. The number of dependents of the Roma unemployed was significantly, 1.5-2.1 times higher than that of the Hungarians. The monthly per capita income of the Roma unemployed was

significantly lower than that of the Hungarians. At the time of our study the Hungarian and the Roma unemployed and their dependents had to live on 53.1% and 42.9%, respectively, of the subsistence level (4, 5).

3.2. *Comparison of indoor and outdoor living environment and public health situation of the Hungarian and Roma unemployed.* The Roma unemployed were in a significantly more disadvantageous situation than the Hungarian ones as far as indoor and outdoor environment was concerned (building quality, building material, flooring, ventilation, condition of doors and windows, floor area, number of dwellers, running water system in the dwelling, lack of warm running water, washing possibilities, lack of bathroom, flush toilet in the dwelling, outdoor toilets, district heating availability, traditional stove heating, poor lighting). Outdoor environment of the Roma unemployed improved during the past ten years, collection of waste and garbage became organised, though illegal dumps occurred from time to time. Underground carcass containers were terminated 10-15 years ago (4, 5).

3.3. *Comparison of education, qualification and learning conditions of the Roma and the Hungarian unemployed.* As far as the education level was concerned all examined parameters were significantly worse among the Roma unemployed than the Hungarian ones: the ratio of subjects with less than 8 years of education was 26.7% vs. 39.6% ( $P < 0.001$ ), the ratio of male skilled workers was 43.9% vs. 20.8% and that of the female ones was 39.8% vs. 7.2%. The proportion of Hungarian unemployed with final examination was 7.9% vs. 0.0% among the Roma ones. More Roma unemployed completed maximum 8 classes of elementary school than Hungarian ones (men 25.4% vs. 43.8%, women 25.8% vs. 48.5%, in both cases  $P < 0.01$ ) as more Hungarians continued learning in secondary schools (4). Learning conditions were significantly worse among the Roma than the Hungarian unemployed: the floor area was on average  $64.0 \pm 34 \text{ m}^2$  vs.  $32.9 \pm 16.7 \text{ m}^2$ ; ( $P < 0.001$ ); number of persons per dwelling was on average  $3.2 \pm 1.7$  vs.  $4.6 \pm 2.3$ ; ( $P < 0.001$ ); number of school children per dwelling was on average  $1.0 \pm 1.3$  vs.  $2.6 \pm 2.0$ ; ( $P < 0.001$ ); average floor area ( $\text{m}^2$ ) per person was  $26.0 \pm 17.1$  vs.  $9.7 \pm 7.5$ ; ( $P < 0.001$ ); average number of sitting place per capita was  $1.9 \pm 2.4$  vs.  $1.2 \pm 1.1$ ;

( $P < 0.001$ ); and average number of beds per capita was  $1.5 \pm 1.0$  vs.  $1.0 \pm 0.6$ ; ( $P < 0.001$ ) (4).

#### 4. Comparative analysis of the health status and its determining factors, as well as fitness for work of the Hungarian and the Roma unemployed in Ózd Micro Region

4.1. *Personal hygienic practice, situation, and lifestyle of the Hungarian and Roma unemployed. Personal hygienic habits, responsibility.* 84.1% of the Hungarian and 72.5% of the Roma unemployed washed every day ( $P < 0.01$ ). The proportion of Roma unemployed washing every other day was significantly higher (9.2% vs. 23.3%;  $P < 0.01$ ). There were- even if in small number- unemployed in both groups who washed only once a week or more rarely. Washing in cold water was more frequent among the Roma (13.0% vs. 21.2%;  $P < 0.05$ ). There was significant difference ( $P < 0.01$ ) in the frequency of hair washing and tooth brushing between the Hungarian and Roma unemployed to the disadvantage of the latter one. Condition of teeth was strongly objectionable in both groups; 12.9% of the Roma men aged 45-61 had no teeth at all. In the similar Hungarian age group there was no one without teeth. In the same age group 60.8% of the Hungarian men and 87.1% of the Roma men had no tooth replacement ( $P < 0.05$ ). Roma unemployed changed underwear and shirts or blouses less frequently than Hungarians. Majority (87.9%) of Hungarians changed underwear daily and 11.1% every other day. These proportions among the Roma unemployed were 64.3% and 33.2%, respectively ( $P < 0.01$ ). The proportion of those changing shirts or blouses daily was higher in the Hungarian group (81.2% vs. 58.6%,  $P < 0.01$ ) and that of changing only once a week was higher among the Roma unemployed (16.4% vs. 39.9%;  $P < 0.01$ ). Higher proportion of Hungarian unemployed had adequate winter clothing than the Roma ones (90.8% vs. 82.9%,  $P < 0.05$ ). 65.3% of the Roma unemployed never had their clothes cleaned vs. 32.9% among the Hungarians ( $P < 0.01$ ). The Roma unemployed spent less on soaps and detergents. 49.3% of the Hungarians and 31.1% of the Roma unemployed spent more than HUF 3000 monthly on washing and cleaning. One third of the Roma unemployed could spend only less than HUF 1000 on this (10.1% vs. 31.1%,  $P < 0.01$ ) (6).

*Lifestyle. Nutrition – eating habits.* Almost half of both Hungarian and Roma unemployed (46.9% vs. 46.1 %) had three meals a day. 29.5% of the Roma and 15.9% of the Hungarian unemployed had only two meals a day

( $P < 0.01$ ). Less than 6% of both groups had only one meal a day. 45.4% of the Hungarian and 34.2% of the Roma households used exclusively oil for cooking ( $P < 0.05$ ). Roma respondents re-used both oil and fat several times in a higher proportion than Hungarians (40.6% vs. 62.2%;  $P < 0.01$ ). Half of the respondents consumed meat products 3-4 times a week, there was significant difference in milk and fish consumption. 38.2% of the Hungarian and 21.8% of the Roma families drank milk every day ( $P < 0.01$ ). Majority of Roma families never or very rarely consumed fish (58.9% vs. 78.8%;  $P < 0.01$ ). 27.1% of the Hungarian and 14.5% of the Roma unemployed had vegetables and fruits every day ( $P < 0.01$ ) (6).

*Physical activity, sports.* Majority of the unemployed did not pursue any physical activity, sports on a regular basis. Even so the Hungarian men (25.4%) and women (16.1%) did regular physical activity significantly ( $P < 0.05$ ) more frequently than the Roma men (14.6%) or women (6.2%). Unfortunately high proportion of the respondents (32.4% of Hungarians vs. 65.3% of Roma;  $P < 0.01$ ) never did any sports (6).

*Smoking.* Proportion of smokers was significantly different between the Hungarian and the Roma groups (57.5% vs. 68.4%;  $P < 0.05$ ). Roma unemployed started to smoke at a younger age than Hungarians (18.3 vs. 15.3 years;  $P < 0.01$ ). The proportion of heavy smokers was higher among the Roma unemployed; 20.1% of the Hungarian women smoked more than 20 cigarettes per day vs. 41.2% among the Roma women ( $P < 0.05$ ). (6).

*Alcohol consumption.* It could not be evaluated. *Drug abuse* was not mentioned by any of the respondents.

4.2. *Comparison of health status (self-evaluated and by clinical examination, respectively) of the Hungarian and Roma unemployed.* Becoming unemployed was more influenced by the Roma's health status than that of the Hungarians. This difference was especially apparent when comparing responses of the Hungarian and the Roma unemployed women (12.9% vs. 26.8%;  $P < 0.05$ ). Majority of the respondents considered their own health status good or moderate and only in some cases bad. Whereas, at the same time, majority of both the Hungarian and the Roma unemployed men thought their work ability to be bad (79% vs. 71.9%;  $P > 0.05$ ) from the point of view of a possible physical work (like public work to be introduced, or seasonal work depending on their own decision). Intellectual work ability was thought to be bad by majority of the unemployed. (6).

*Case history – Family history.* There was no difference in the proportion of living parents between the Hungarian and the Roma unemployed. Deceased parents of the Roma men had significantly shorter life than those of the Hungarian men. During exploration of case history the most frequent recurring complaints were the following: bad mood, anxiety, sleep disorder, mental and physical exhaustion, tiredness, dizziness, tachycardia, chest compression, irritability, bone-joint-muscle pains, headache, neck-ache, back pain, gastro-intestinal complaints. There were differences in the frequency of the various complaints between the Hungarian and the Roma unemployed, and also among the various age groups. Complaints were more and more frequent with increasing age. (6) Results of the occupational medical examinations showed that unfitness for work was caused by cardiovascular (28.9%), respiratory (13.7%; diagnosed mainly among Roma unemployed), locomotor (27.0%), gastro-intestinal (6.1%) or other (9.2%) diseases. Compared to the period of 2000-2006, proportion of the main disease types changed only to a non-significant degree. Vast majority of the diseases being the reason for unfitness for work was of psycho-somatic origin.

*4.3. Comparison of the prevalence of unfitness for work of the Hungarian and the Roma unemployed.* Prevalence of health related unfitness for work among the unemployed in the Micro Region was higher than the country's average and due to their health status the expected prevalence among the Roma unemployed was twice as high as that of the Hungarians. Prevalence of unfitness for work was higher among the first than the second generation unemployed and it became higher with increasing age. Proportion of unfit for work among the unemployed aged 45 and over was 3.15 times higher than that among the 30 years younger ones. Unfitness for work was more frequent among women than men. Frequency of unfitness for work was not related with the length of unemployment though the risk of being unfit for work was 30 times higher among the unemployed than the employed individuals (6).

*5. Analysis of mental hygiene condition of the Hungarian and the Roma unemployed and comparison of their mental health status.*

*5.1.* Frequency of mental and psychic health impairment among both the Hungarian and the Roma unemployed was increased. In the very deprived Micro Region of mixed ethnicity we could demonstrate showing the stressor or a series of stressor effects caused by unemployment, partly by

anamnestic exploration and clinical examinations and also by paper-pencil tests indicating stressor effects, that vast majority of the diseases resulting in unfitness for work among the unemployed were of psycho-somatic origin. We established that unemployment effects as a stressor or even a continuously changing series of stressors. It was concluded that unemployment can cause distress and (through this) consequently developing psycho-somatic, behavioural and in certain cases psychiatric diseases.

5.2. Further significant differences in mental health alterations were found between the Hungarian and the Roma unemployed. Roma men had more than 13 times, Roma women more than 3 times higher chance of having worrisome mental health than Hungarians. Essential difference was found between the two ethnic groups regarding perception of discrimination to the Roma's disadvantage. Frequency of feeling exhausted was growing with increasing age, especially among the Roma unemployed. Self-confidence of the Roma unemployed was decreased, it was 3 times lower among men and 2.5 times lower among women than that of the Hungarians. Social relations of the Roma were found to be poorer than those of the Hungarians. Roma women had 3.5 times less chance to develop appropriate social relations than Hungarians. We had the impression that young Hungarians were more shocked (though statistically not to a significant degree) by unemployment than young Roma unemployed. Lüscher test results indicated that coping of the Hungarian unemployed was more logical and practical while that of the Roma ones was rather more emotional (7).

*6. Changes in living conditions and life quality of the (particularly Roma) unemployed living in extreme poverty in Ózd Micro Region after Hungary's joining the EU and during the years of financial-economic world crisis.*

According to the results of our two studies performed in Ózd Micro Region with a 8-10 year interval we found on the one hand that proportion of unemployed without a completed 8 year education significantly increased (especially among the Roma ones) during the years of EU membership, on the other hand we observed a significant decline in smoking frequency (4).

## **Conclusions**



1. Public health situation of the unemployed in Ózd Micro Region is worrisome and jeopardizes public health and epidemiological safety of the Micro Region. The level of public health and epidemiological safety of Ózd Micro Region is below the country's average and this is related to the significantly higher proportion of Roma population living in this region than the country's average and also to the Hungarian unemployed people living in extreme poverty. Majority of the Roma people live in Roma colonies (frequently in hovels) or in colony-like arrangements while a smaller portion lives integrated with the Hungarian population. Both their indoor and outdoor living environment is objectionable. The hygienic conditions and crowdedness of dwellings in the colonies not only endanger public health and epidemiological safety but also prevent proper rest and learning. Lack of learning conditions is the main cause of unemployment conservation and expansion of second generation unemployment and also of drifting of the Roma and the Hungarian minority living in extreme poverty to margins of society and at the same time it also counteracts the catching up of these people with the rest of society. We believe that only provision of adequate education could guarantee that people drifted to margins of society could break out of this situation which destroys their mental and physical health and could catch up with middle class as a long term prospective. According to our results we concluded that the precondition for this would be to create a living environment suitable for learning. We are convinced that closing up training of adequate level (in Hungary this kind of training is about to be introduced from 2014/15 school year) and integrated high level education can be sufficiently satisfactory if learning conditions are guaranteed. These conditions are not available either in Roma colonies or in dwellings of most other unemployed people in Ózd Micro Region and they are not likely to be available in the near future without outside support. Roma colonies (according to our definition) should be terminated and their inhabitants should be provided with suitable housing. Besides appropriate indoor environment civilized outdoor living environment is also necessary. Although some detectable

improvement has already been achieved optimal hygienic environment still seems to be only a long-term objective.

2. *Unemployment increases the prevalence of health impairment. Health determinants of the unemployed, their indoor and outdoor environmental health conditions, personal hygienic habits, lifestyle, social situation (and other so called moderators influencing health, like poverty, lack of education) are worrisome and explicitly more disadvantageous than those of the employed. Health status of the unemployed living in Ózd Micro Region is worse than that of the unemployed living in other areas of the country (e.g. county town, capital). This fact is related first of all to the big proportion of the Roma unemployed living in the Micro Region. Health determinants of the majority of them are significantly worse than those of the Hungarian unemployed living in the Micro Region. Our conclusion is supported by results of logistic regression analysis according to which the risk of health impairment of the Roma unemployed is twice as high as that of the Hungarian unemployed.*

3. Unfitness for work due to health reasons of the unemployed is significantly more frequent than that of the employees. According to the results of logistic regression analysis the chance of being unfit for work is 30 times higher among the unemployed in the Ózd Micro Region than that of the employees.

4. We demonstrated the direct adverse health effect of unemployment and concluded that the diseases resulting in unfitness for work are related to the stressor effect of unemployment and most of them are of psycho-somatic and behavioural origin<sup>5</sup>.

5 *Unemployment causes significant mental-hygienic, psychic health impairment.* There are quantitative and qualitative differences in terms of mental and psychic health impairment between Roma and Hungarian unemployed. The most important difference from public health aspect is

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<sup>5</sup> This result is in harmony with our team's conception worked out more than two decades ago according to which unemployment is a source of stressors and series of stressors thus it must bring about distress related diseases. It is also in concordance with results of recent (published in 2014) surveys according to which in the USA frequency of psycho-somatic diseases during a 15 year period was found to be closely correlated to changes of the unemployment.

the significantly higher frequency of psycho-somatic diseases among the Roma unemployed than the Hungarian ones. We verified one qualitative difference i.e. while Hungarian unemployed deal with their problem of becoming unemployed from a logical point of view, the Roma ones look at it from an emotional standpoint. However their views are identical in the complete refusal of unemployment itself.

6. The diseases of the unemployed being more prevalent than those of the employed ones are caused by the consequences of unemployment (poverty and lack of education – both being health damaging in themselves-, living environment unsuitable for learning, worrisome public health and epidemiological safety, unsatisfactory personal hygiene, objectionable lifestyle and other factors, so called moderators), which add up or even potentiate the effects of all these elements. As a result of all these connections vicious circles or vicious circle systems may develop which may have irreversible adverse physical and mental health effects and may cause new diseases or speed up progression of other ones. According to our hypothesis vicious circles develop in the following way: uneducated unemployed people become poorer and poorer, poverty creates second generation unemployment, increases duration of first generation of unemployment, there is no surplus income, thus poverty further increases, which together with living environment not providing proper conditions for learning drifts the unemployed people more and more to the periphery of society and makes catching up practically impossible. N.B. (see point 4): unemployment as a source of stressor or series of stressors causes diseases even if other factors are missing; in this case it causes exclusively health impairment connected to distress.

*7 .If the costs of a programme are known, analyses similar to those demonstrated in the thesis are suitable not only for estimation of the efficiency but also the economy of a programme.* Efficiency of various ambitious EU and domestic programmes aiming at elimination of poverty and support of Roma population should be regularly controlled. Analyses of public health and health protection situations of smaller or bigger regions will be necessary in the future, and their results make it possible to compare the estimated and the locally spent costs. This way activities can be presented and evaluated in a value related way.

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