Individual and community-level factors affecting health and health inequalities

The quality of life in Nyíregyháza with respect to health status

Doctoral (Ph.D.) Theses

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Introduction

The quality of life of a country's population, its raising to a higher level have high priority for both the individual and the community (from national communities through local communities to micro communities). The quality of life is determined by several factors. With influencing these factors to positive directions the well-being of the community can be improved. In order to improve the quality of life and to start the necessary changes, the influencing factors that can identify the points of intervention should be known exactly because the development of the related actions and their implementation cannot be realized without them.

The well-being indicator system compiled by the Central Statistical Office using both objective and subjective variables appeared in Hungary in 2014[1]. This indicator tries to map the well-being of the Hungarian population, involving national characteristics along several dimensions. Based on this indicator system the national average of the satisfaction with life is 6.15 (0-10 scale). According to the results, young, 16-24-year old women seem to be the most satisfied (CSO, 2014).

Quality of life is a complex concept. Its determining parts are health, financial situation, housing and social relationships. Among the factors infuencing the quality of life one of the most imfluential dimensions is the health status of the person, which is often divided into „objective" and „subjective" factors (although in reality they do not exist in this clearly separated form).

A very significant part of the research explores how the health status contributes to the prosperity of the person, how it helps to achieve their goals. The primary objective of the research is to improve the health status of the population as well as to reduce the existing horizontal and vertical health inequalities. The improvement in the quality of life can be rationalized as health gain for the society. Its two main indicators are the increase in the life expectancy and in the increased number of life years (Mihályi, 2003; OEFI, 2004).

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[1] For the establishment of the indicatior system the Central Statistical Office used large-scale, stable data deriving from official, statistical data collections. The latest data available in December 2014 were processed, which largely originated from SILC population data collecction that took place in spring 2013.

The health of the Hungarian population is extremely unfavorable in international comparision and it is significantly lower than it can be expected on the basis of the socio-economic development level of the country. According to the Hungarian Central Statistical Office in 2012 the average healthy (that is unrestricted) life expectancy at birth was 60,5 years for women and 59,2 years for men. It is 1.5-2 years lower than the average of the EU member states (CSO, 2014).

To improve the health status of the population, to stop the negative trends have been part of the health policy objectives of the European regions for a long time. In modern societies, it became clear that - despite the huge progress in medicine - health care alone is not able to improve health and the quality of life, it can only cure certain diseases. In improving the health status and the quality of life individuals and local communities play bigger and bigger roles and their activities become more and more important. However, power structures have the most significant impact to both dimensions, namely through policies forming life conditions. It is true even if the institutions, organizations and persons representing this power structure are not aware of it.

Research goals

The overall goal of the research was to study the components of the quality of life of the people living in Nyíregyháza, to examine the life style and social factors influencing health, to investigate how much people use health care services and to explore the health behaviour of people living in the city.

The first step was to study if there are differences between the various parts of Nyíregyháza in the quality of life and in its components. This analysis part served as the basis of further settlement-part level studies regarding health status and socio-economic factors.

Specific objectives of the research

The research and the dissertation include the following specific objectives:

1. The analysis of the self-evaluated health status in Nyíregyháza

2. Introduction of the socio-economic factors and their influence on health status in Nyíregyháza.

3. The analysis of certain elements of the quality of life in Nyíregyháza particularly with regard to health status.

4. To present the differences in health status and the quality of life between people living in different parts of the city.

5. To distinguish the parts of the city that would serve as the basis of the present and further studies as well; to introduce research methodology that is suitable to show the spatial differences in the further research process.

6. To reflect the age groups (and indirectly the groups formed from certain parts of the city) where the incidence of certain illnesses and symptoms is expected to increase.

7. To conduct background investigations for the establishment of a city health plan.

8. To write proposals to determine the directions of the necessary intervention (health plan).

Hypotheses

1. Nyíregyháza does not show a homogenious picture regarding the quality of life and the health status of its population, Significant differences can be registered between the different parts of the city; districts, district-groups can be separated in social, economic aspects.

2. The value of the quality of life index (FT index) developed during the local survey is higher in communities of the city living in more frequented districts from socio-economic aspect.

3. In districts where the average age is higher (50 and 50+) the number of complaints and registered illnesses increases; they are the districts where doctors are visited more often and where the use certain health care services is more frequent.

Methods

Research history

The "Quality of life of Nyiregyháza - Household Panel" research is based on previous international and national studies that followed the so-called household panel methodology.

It primarily collects information about urban households, and secondary about the specified characteristics of their members. It tries to uncover the changes in the same population sample with the same questionnaire, which means the interviewers visit the same households at specific intervals.

Taking the international and the national household panel history into account, the household panel study of Nyíregyháza launched on their basis in 2008. The city-level research used the questionnaires of the ECHP (European Community Household Panel), of the EU-SILC (Statistics on Income and Living Conditions) and the MHP (Hungarian Household Panel) conducted by TÁRKI in order to make the local information comparable both on national and international level (Fábián 2009).

The difference between the "Quality of life of Nyiregyháza - Household Panel" research and the research conducted by TÁRKI is that this research surveys households within the frameworks of a municipality. In addition to the traditional data analysis a city-level (local) quality of life index (FT index) has been developed. The survey focuses on the mapping of the self-evaluated health status and it tends to reveal the satisfaction with the support systems and the social department.

Introduction of the participation in the work of the research team

The preparatory and implementing activities (planning, coordination, implementation, data recording, analysis, dissemination) in the "Quality of life of Nyiregyháza - Household Panel" research study was conducted by a research group of the University of Debrecen Faculty of Health in close connection with the Social Department of the Nyíregyháza Mayor's Office.

As a researcher surveying the health status I have been an active member of the research group since 2010 („second wave"). My activities cover the following areas:

- reviewing, updating, modification of the questionnaires between the given interviewing periods with focus on the area surveying health status;
- selection, preparation and coordination of the work of the interviewers participating in the data recording;
- participation in data recording, data cleaning;
- analyzing;
- dissemination of the results

Selection of samples

The selection of samples was based on the methodology of the Hungarian Household Panel in 2015 as well. The randomly selected respondents had to be over 18 and had to be permanent residents of the city. The selection of a random sample, the preparation of a representative address list (according to age, permanent address) of the sample was conducted by the Central Office of the Administrative and Electronic Public Service. In 2008 a major sample and a replacement sample were developed. The latter one can be used if the respondents do not want to answer the questions or drop out of the main sample for some reason. However, the research group had to ask the Central Office for a new sample due to the wearing of the 2008 sample (no response, mobilization). This step is in line with the Household Monitor survey of TÁRKI where because of the previous "sample wearing"experience each survey is conducted on new sample.

Table 1 contains the characteristics of the sample according to the certain interviews

Characteristics				
	2008	**2010**	**2012**	**2015**
item number (person)	1848	1060	1227	754
gender				
male	38.3%	40.0%	42.9%	38.0%
female	61.7%	60.0%	57.1%	62.0%
age				
18-34	24.0%	19.7%	19.0%	18.1%
35-64	58.8%	63.2%	62.4%	60.2%
65 +	17.2%	17.1%	18.6%	21.7%
education				
8 class of elementary school or lower education	19.2%	11.7%	11.0%	11.0%
high school	57.6%	60.2%	60.1%	61.5%
higher education (college, university)	23.2%	28.1%	28.9%	27.5%
marital status				
unmarried (%)	13.9%	11.0%	13.9%	13.8%
married	63.4%	64.9%	63.5%	58.2%
life partner	5.2%	4.5%	5.2%	9.3%
widow/widower	9.3%	9.6%	10.2%	13.2%
divorced	8.2%	10.0%	7.2%	5.4%
economic activity (currently working or not)				
active	52.0%	55.3%	58.6%	54.2%
inactive	48.0%	44.7%	41.4%	45.8%

Table 1. Presentation of the household panel research in Nyíregyháza in the examined years

Districts in Nyíregyháza serving as the basis of the resarch study

In order to reveal the urban spatial characteristics and the inequalities preceisely, at thee beginning of the "Quality of life of „Nyiregyháza - Household Panel" research the research

group divided Nyíregyháza into 14 districts. While drawing the district boundaries the researchers tended to follow the spatial structure of the city. Thus the following city districts were formed: Downtown, Sóstó, Oros, Borbánya, Huszártelep, Örökösföld, Jósaváros I., Jósaváros II., Kertváros, Himes, Nyírszőlős, Ókistelekiszőlő, Újkistelekiszőlő, Scattered farms.

Following the first wave of the Nyíregyháza – household panel research the 14 districts were separated in order to make the urban spatial characteristics and the inequalities measurable.

On the basis of the generally established and accepted cityscape it can be stated that the population lives in typically bourgeois types of apartments and in family housing areas. Sóstó belongs to the most frequented part of the city where the people with higher income and good life conditions live in family houses. The conditions are similar in Jósaváros2 as well. Jósaváros1 primarily means a housing estate zone where the composition of the population is said to be mixed, as people with average socio-economic status, and poorer groups can be found here.

Oros, Borbánya, Hímes, Kertváros, Nyírszőlős and Újkistelekiszőlő are regarded as suburban-type parts of the city, while Örökösföld is a housing estate. The most disadvantaged citizens live under very poor housing conditions in segregated circumstances in Huszártelep where the rate of the Roma population is very high. From socio-economic point of view Ókistelekiszőlő is also one of the most disadvantaged part of Nyíregyháza with high Roma population. In the scattered farms on the basis of socio-economic factors the residents live iunder average conditions in rural environment. The above characteristics are not the results of the official classification, but were formed by taking the generally accepted urban characteristics into consideration in order to provide an overview of the city's established districts to readers who do not know Nyíregyháza very well.

Method of data collection

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During the research process the theoretical research was combined with empirical-questionnaire research in interdisciplinary (health science, sociology, psychology) approach. The questionnaire, which was developed in 2008, was reviewed and adapted to the changes, or, if it was necessary was modified and completed in relation to specific issues. In 2015 a

completely new element, the emotional well-being dimension (Oxford Happiness Scale Test) was involved, which is appropriate to make the quality of life model more complete.

This paper, based on the 2015 survey[2], primarily processes the topic of health status.

The interviewers were the students of the University of Debrecen Faculty of Health. They had been prepared for this job and the respondents had been informed about the purpose and date of the interviewers' visit.

The block of the questionnaire examinig the health status contains 29 questions. The questionnaire is continuously developed between the interviewing periods.

Exploring the quality of life and the health status includes the following topics (relevant parts from the point of view of the dissertation):

- Subjective well-being: self-evaluation of health, chronic diseases, use of the health care system.
- Health behavior: smoking from among risk behaviors; nutritional status.
- Social relationships: family, friend relations, community activity
- Emotional well-being: self-evaluation of the emotional state
- Background factors: demographics (gender, age, education), social inequalities (subjective and objective socio-economic situation of the family), economic activity.

In addition to the binary response options the questionnaire also had three and five-point Likert scales. The self-evaluated health status scale ranging from 1-5 is an example of one of the Likert scales. Due to low response rates some of the questions were recorded into a 3-point scale. For example measuring self-evaluated health status the „very good" and the „good" categories and the „bad" and „very bad" categories were merged.

Similarly on the Oxford Happiness Scale values between 1-2 is „unhappy", for 1-3 is „not happy", values between 3-4 show people are „"average, partly happy"; value between 4-5 "somewhat happy"; and values 6 above it indicate „very happy" during the re-classification.

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[2] The topic of the dissertation was based on the the results of the 2015 survey, as compared to previous studies, this time a new sample address list was applied. This decision is justified by the objective of the research team to be able to provide the decision makers with the most recent data available that can serve as a basis for a city-level intervention.

Statistical methods, evaluation criteria

The processing and the analysis of the data take place with the application of SPSS for Windows statistical software package.

SPSS was used for all analyses with the significance level set at 0.5.

While reporting the results the nomination conventions of the "American Psychological Association" (APA) were taken into account.

The frequency and distribution of the values of the variables that considered to be relevant by the researchers were analyzed and then the deeper connections were investigated by one and two-variable mathematical-statistical methods (Two-sample t-test, analysis of variance, cross tabulation analyzes, test of independence, regression models).

Results

To examine the quality of life differences between the districts the first step was to develop a binary logistic regression model. The dependent variable in the model was developed from the continuous FT index, and divided the sample into two parts. The bottom 20% of the FT index that includes 144 respondents and the top 80% with 579 respondents. The independent variables were: the district where the respondent live, age of the respondents, self-evaluated health status, number of GP visits, number of friends. score on the Oxford Happiness Scale and gender.

In *Table 2.* the value of the Cox & Snell R Square index, measuring the relationship of the variables in the model is 0.226; the value of the Nagelkerke R Square is 0.352. These values indicate a weaker than average model relationship.[3]

In terms of the objective of the analysis the most important finding is the significant relationship of the FT 20-80 variable on the district. In addition self-evaluated health status and that of the Oxford Happiness Scale proved to be significant predictors. (Similar results occurred even in the case where the district variable was evaluated as categorical variable in the model).

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[3] When presenting the two indicators in each case the literature emphasizes that these values cannot be interpreted as accurately as the values of the coefficient of determination in the regression models – they just provide information about the model's explanatory power.

It can be concluded that the district a person lives in is a significant predictor of the FT quality of life index (highlighted in the table).

	B	S.E.	Wald	df	p	Exp(B)	95%CI for EXP(B)	
							bottom	**top**
district	-,159	,047	11,611	1	**,001**	,853	,779	,935
age	-,009	,012	,506	1	,477	,991	,967	1,016
self-evaluated health status	-,839	,227	13,655	1	*,000*	,432	,277	,674
visiting the GP	-,045	,032	1,978	1	,160	,956	,899	1,018
number of friends	,000	,013	,001	1	,975	1,000	,976	1,025
Oxford Happiness Scale	,652	,228	8,154	1	*,004*	1,919	1,227	3,001
gender	-,369	,338	1,190	1	,275	,691	,356	1,342
Constant	3,324	1,400	5,641	1	,018	27,775		

Table 2. The relationship of the bottom 20% and the top 80% of the FT quality of life index and variables in the model by districts. Binary logistic regression model

To confirm the results FT index by districts was examined both by parametric using a one-way analysis of variance (ANOVA) and using the non-parametric Kruskal-Wallis (R-W) test. In order to meet the requirements of the analysis districts with a small number of responses were excluded. Even after leaving out districts with a low response rate differences were found between parts of settlements in quality of life. These findings support that the different health status and socio-economic status between settlement parts should be surveyed for further investigation concerning the component of the quality of life model on districts.

Of those in the city 39.7% (largest group) evaluated their health acceptable, followed by those who say their health is good (36.1%) and those who judge their health very good is the smallest group (10.9%). Only 8.2% regard their health as poor and the percentage of those who think their health is very bad only 2.8%.

For the 14 districts no significant difference was found in the self-evaluated health status. If categories are consolidated and the data are analyzed excluding the districts with a low response rate (Huszártelep, Új- és Ókistelekiszőlő, Hímes, Jósaváros2), most respondents who regard their health status as good live in Örökösföld (62.2%), while the fewest with the same opinion live in Oros (29.2%). The percentage of those who consider their health status poor is the highest in Sóstó (13.7%), while it is lowest in Örökösföld. (4.4%). Significant differences were found between the districts regarding the incidence of certain diseases and age (ANOVA

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F (1,13) = 2.970, p = 0.000). In certain districts of the city it is also true that the older the residents are more disease is likely to occur. The older the people are the more often they visit their doctors. A more detailed analysis of the data, and constructing regression models provide a more accurate picture.

Regression models. The dependence of the healh status, symptoms reflecting to illnesses, complaints and the number of diseases on age was analyzed by linear and non-linear regression.

In the calculations the first step was to determine the average number of symptoms/illnesses *(Table 3. Coloumn 3)* using 5 year age intervalls *(Table 3. Column 2.)*.

	age group	average	95% CI bottom	top	variance	n	average differences
0	**0-20**	**,3077**	**-,0733**	**,6887**	**,63043**	**13**	
1	**20-25**	**,5263**	**,2536**	**,7990**	**,82975**	**38**	**0,2186**
2	**25-30**	**,9333**	**,5687**	**1,2979**	**1,21356**	**45**	**0,4070**
3	**30-35**	**1,1702**	**,7491**	**1,5914**	**1,43435**	**47**	**0,2369**
4	**35-40**	**1,3143**	**,9477**	**1,6809**	**1,53739**	**70**	**0,1441**
5	**40-45**	**1,4235**	**1,0660**	**1,7810**	**1,65743**	**85**	**0,2194**
6	**45-50**	**1,6429**	**1,1166**	**2,1691**	**2,20694**	**70**	**0,1753**
7	**50-55**	**1,8182**	**1,2386**	**2,3977**	**2,14382**	**55**	**1,1675**
8	**55-60**	**2,9857**	**2,2820**	**3,6894**	**2,95126**	**70**	**0,1156**
9	**60-65**	**3,1013**	**2,5279**	**3,6747**	**2,56002**	**79**	**1,1295**
10	**65-70**	**4,2308**	**3,3650**	**5,0966**	**3,10985**	**52**	**0,7126**
11	**70-75**	**4,9434**	**4,0190**	**5,8678**	**3,35362**	**53**	**0,0951**
12	**75-80**	**5,0385**	**3,3460**	**6,7310**	**4,19028**	**26**	**0,0615**
13	**80+**	**5,1000**	**3,5522**	**6,6478**	**3,30709**	**20**	

Table 3. The average incidence of complaints/illnesses in different age groups among respondents, 2015 – linear model

The next step was to develop a regression model. Age groups were used to predict (according to Table 3. from 1 to 12) the average number of symptoms / diseases. The results of the linear model can be seen on *Figure 1*. The value of the R^2 coefficient of determination was 0.919, indicating a very good fit.

Using the mdel the number of sympotms/diseases (1,2, etc.) can be predicted by age group. Thus one indicated symptom/disease is characteristic of the 30-35-year-old age group, two is

characteristic of the 40-45-year-old age group, three for the 50-55-year-old age group, four for the 65-70-year old age group an five can be expected in 75-80-year-old age group.
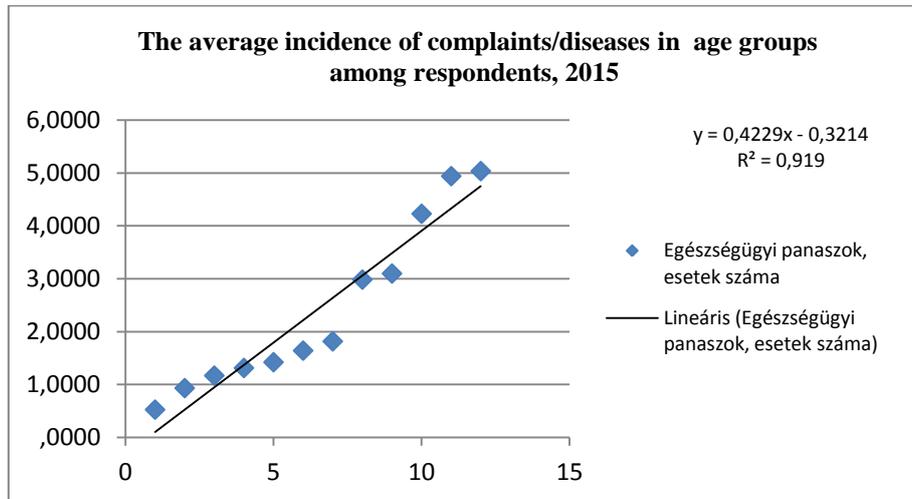

Figure 1. Average incidence of complaints/diseases in age groups among respondents, 2015 – linear model

A fourth-degree polynomial model was also developed, where the independent variable was again age group and the dependent variable was averagenumber of symptoms / diseases. *(Table 3; Figure 2.)* The model equation helps to indicate the age groups where 1, 2, 3, etc. number of disease is typical.
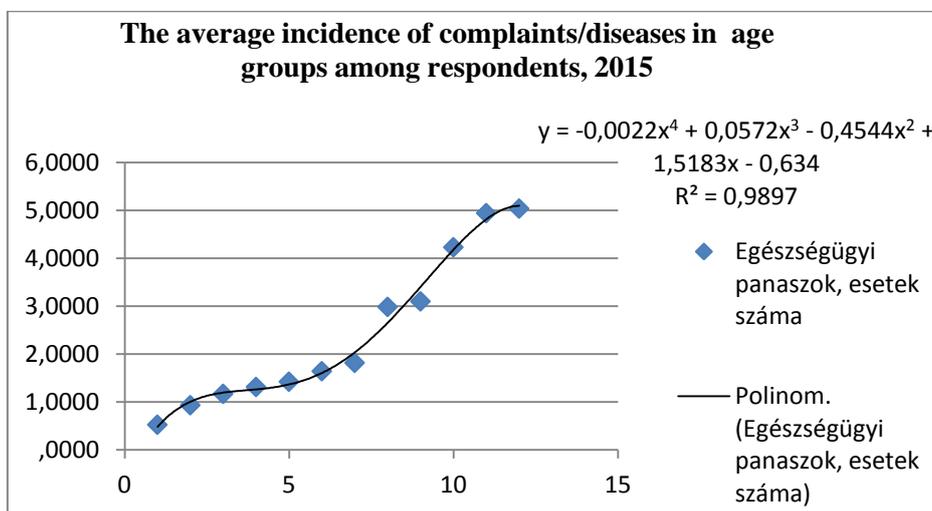
Figure 2. Average incidence of complaints/diseases in age groups among respondents, 2015 - fourth-degree polynomial model

Baed upon this incidence of one symptom/disese group is characteristic in 25-30-year-old age group, two in 45-50-year-old age group, three in 55-60-year-old age group, four in 60-65-year-old age group and five in 65-70-year-old age group.

Regression models, both the linear and the fourth-degree polynomial model are prediction models and can be used to reflect the changes in the average number of symptoms/diseases that occur as individuals age.

Table 3 and *Figures 1-2* indicate that the numbers of symptoms, diseases increase significantly in the 50-55-60-year-old age groups. This tendency continues into the next age groups with the appearance in the curve of saturation. Both the linear and the fourth-grade estimation is that there will be three or more than three symptoms/diseases for those over the age of 55. The estimation difference between the linear and the fourth-grade model can be seen in the figures. The fourth-grade model describes the changes in the symptoms/diseases more accurately. The average number of symptoms/diseases inceases more rapidly in the oder age groups than in the younger age groups.

Differences between the groups of city parts (”A-”; ”A”; ”B”; ”C”)

Duncan's post hoc analysis was used to determine the source of variance and resulted in identifying four groups. Combining districts with similar age groups, subgroups the city was divided into new, ”A-”; ”A”; ”B”; ”C” parts. The examination of the age characteristics *(Table 4)* served as the basis of the separating the districts.

District	n	1	2	3	4
Huszártelep	8	36.63			
Örökösföld	85	43.38	43.38		
Jósaváros2	12	46.08	46.08		
Újkistelekiszőlő	11	46.18	46.18		
Oros	24		49.88	49.88	
Downtown	212		50.96	50.96	50.96
Small farms	44		51.07	51.07	51.07
Kertváros(Suburb)	50		51.14	51.14	51.14
Borbánya	56		52.30	52.30	52.30
Nyírszőlős	34		52.32	52.32	52.32
Sóstó	52		53.13	53.13	53.13
Jósaváros1	80		53.64	53.64	53.64
Ókistelekiszőlő	12			58.33	58.33
Hímes	12				62.00

Table 4. The introduction of the 4 groups separated on the basis of Duncan's post hoc distribution

The most significant areas of the results conducted on the level of the groups of city parts[4] is summarized below. District "A-" with the lowest number of responses was excluded from the comparison.

There is a significant difference (x^2= (4, N=683)=20,294 p=0,001), between the percentage of age groups in the districts. The differences can be seen in *Table 5*.

	18-34	35-64	65+
"A" group	27.8%	62.0%	10.2%
"B" group	16.0%	59.7%	24.3%
"C" group	4.2%	58.3%	37.5%

Table 5. The age composition of the different districts

The table clearly shows that the rate of the 18-34-year-old age group decreased from "A" to "C". The percentage of the 35-64-year-old age group is approximately the same, while the percentage of people over 65 is increasing from "A" to "C", indicting the proportion of young people is the lowest and the percentage of the old is the highest in group "C".

With regard to the gender ratios, the predominance of women is typical in each group *(Table 6.)*, however, significant differences were not found.

	male	female
"A" group	37.2%	62.8%
"B" group	38.7%	61.3%
"C" group	33.3%	66.7%

Table 6. The gender ratio of the respondents in the groups

The percentage of completion of education levels (qualification) in groups "A", "B" and "C" can be found in *Table 7*. There was no significant difference.

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[4] The paper will use „group" and the appropriate letter e.g. group „A" instead of groups of city part.

	elementary education	high school education	higher education
”A” group	7.3%	70.0%	22.7%
”B” group	10.5%	61.6%	28.0%
”C” group	20.8%	45.8%	27.3%

Table 7. Completion of education level (qualification) of the respondents by groups

The table clearly shows that from group ”A” to group ”C” the percentage of people with elementary education is increases and the percentage of people having high school education decreases.

There are significat differences related to the health status between the groups. Group "C" is much different on self-evaluated health status *(Figure 3.).*
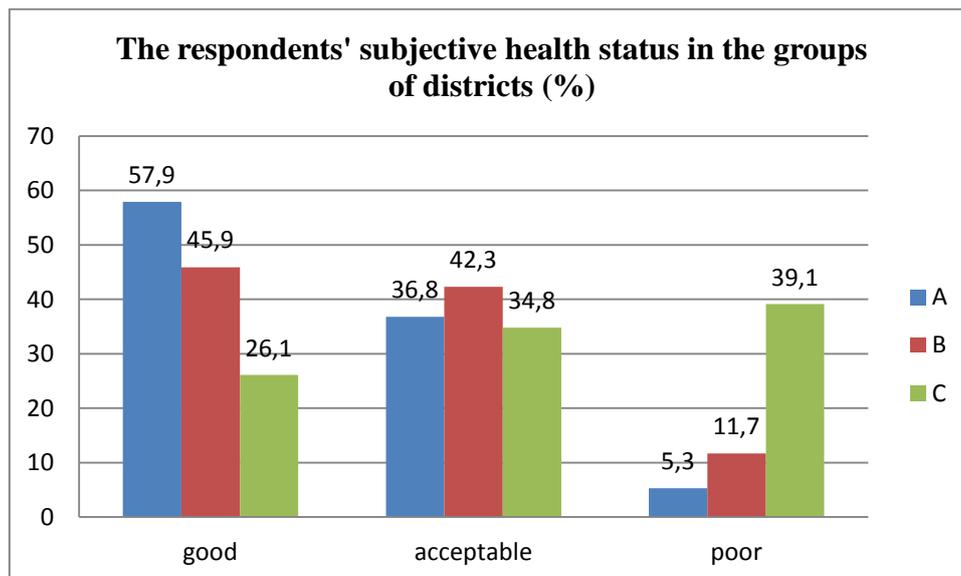
Figure 3. Respondents' subjective health status by groups of districts

In groups ”A” and ”B” the highest number of respondents feel their health status good or acceptable, while in group ”C” most people 39.1% consider their health status to be poor. The difference is significant (x^2= (4, N=699)=25,072 p=0,000). Examining how many times they visited their doctors during the last 12 months members of group ”A” averaged seeing their doctors two times (1.71), those in group ”B” three times (2.47), and those in group ”C” five times (4.60). This difference is significant (ANOVA F(2)=10,899 p=0,000). Group ”C” visits

the doctor much more often. There is also significance in the average numbers of nights spent in inpatient institutions between the groups.

Members of group "A" averaged nine (9.47) nights in hospital during the past 12 months, those in group "B" only four (4,44) nights, while those in group „C" thirteen (12.75) nights (ANOVA F(2)=10,508 p=0,000). No significant differences were found regarding the number of visiting to their General Practitioners or the number of visits to outpatient care or in their smoking habits. The percentage of those who smoked every day was 16-17% in the groups. Regarding body mass index, overweight was typical of groups. In group "A" the value of the BMI was 25.16 (kg/m2), in group "B" 25.82 (kg/m2), in group "C" it was slightly higher, 27.08 (kg/m2). The differences were not significant.

Using the previously detailed regression model the symptom/illness number of the consolidated districts can be estimated (*see Table 8.*). Both the linear and the fourth-grade estimation fit the lower age groups, however ("C" group of city part) they underestimate the average number of the symptoms/illnesses.

age group	group of city part	linear estimation	fourth-grade estimation
36 year	**A-**	**~1**	**over 1**
43-46 year	**A**	**~2**	**~2**
49-53 year	**B**	**~2**	**over 2**
58-62 year	**C**	**~3**	**~3,4**

Table 8. The comparision of the estimated and actual symptom/disease numbers typical in each age group and model

Comparing the hypotheses and the results

- The first hypothesis sating that Nyíregyháza does not show a homogeneous picture regarding the population's quality of life and health status and in terms that there are differences between the various parts of the city, has been proved because significant

differences between districts and groups of districts have been proved in several ways. The binary logistic regression model showed that belonging to a district is a significant influencing factor of the quality of life in Nyíregyháza. Differences can be shown in groups of city parts as well. In Újkistelekiszőlő belonging to group 'A' problems emerged in connection with the health status, because most people feel their health 'only' as acceptable and more than 12% consider it to be poor. The relatively young population visits the doctor with symptoms/diseases four times in average (3.8%). According to the data targeted preventive interventions (eg. screening) should be planned in this district. In terms of health status indicators Nyírszőlő, Sóstó and Oros can be mentioned in group 'B' where preventive services should be highlighted as well. Community programs can be effictive in these district, especially in Orosi, taking the activity of the community into account. On the basis of the results of the latest survey the focus of the problems has shifted to the consolidated districts of Hímes and Ókistelekiszőlő where in terms of health status and in socio-economic aspects communities are struggling with difficulties.

- The second hypothesis stating that the value of the quality of life index (FT index) developed during the local survey is higher in communities living in more prosperous districts from socio-ecoomic point of view has not proved true. The locally developed FT quality of life index, based on the 2015 wave, showed differences between the districts, however, not according to our expectations, because the high quality of life index is not necessarily associated with better socio-economic status. Results indicate that it is not only the financial, economic status that has significantly affecting role, but the various dimensions of the quality of life (like family, health status, mental well-being, etc.) can also be regarded as determining factors.

- The third hypothesis proved true again. According to it in districts where the average age is higher, the number of the population's complains and the number of the recorded illnesses as well as the use of certain health care services and the frequency of visiting the doctors also get higher. Together with aging the number of certain symptoms/diseases is getting higher. It has been proved by linear and nonlinear regression analysis. These calculations go beyond the normally accepted 'together with aging the number of diseases increase' picture, as the data can help to quantify these statements. Regression models indicate that in Nyiregyhaza the age of fifty can be considered as a "threshold" above which complaints, sympoms associated to certain

diseases significantly increase. The same can be applied to the use of health services as well.

Suggestions

To improve the quality of life in Nyíregyháza, including those living in certain parts of the municipality, intervention is necessary in several areas. The suggestions for a comprehensive measure will particularly focus on health status. Based on the results of the 2015 wave of the "Quality of life of Nyiregyhaza - Household Panel" research study those points will be identified that may greatly facilitate the development of an intervention and with the implemetation of these steps the health status of the city's population may be influenced in a positive way.

In the districts the aim is to encourage the participation of the citizens in the implementation of the health promotion programs and in individual health planning that will support healthy life style and spending free time actively. The target group can be reached and involved effectively through various methods. It is likely that the population in parts of the town where community activity is typical (e.g. Oros) people can be convinced much easier to participate in these programs, while in districts, where people's lifestyle is rather "closed" (e.g. Hímes), inclusion and motivation will be more difficult. However, further research will be necessary (particularly in the districts involved in the present research with low numbers of elements, and there where problems could be shown) that will provide information about the population groups' section specific behaviour, for example about the inappropriative preventive health behaviour and about its causes. As the effectiveness of the individual-level prevention is limited, health promotion programs should also be given priority. After the identification of the disadvantaged groups the nature of their vulnerability should also be identified. The 'Quality of life of Nyíregyháza – Household panel' research with repeated tests with higher number of elements and their results seem to be suitable for this. After the present and after the specified fact-finding results a section- and district-specific program should be developed that targets a specific part of the population and in addition to the health status it takes the further dimensions changing the quality of life into consideration. It will be followed by obtaining the resources but continuous monitoring and, if necessary,changes will aslo be important parts of the effective implementation.

The health promotion of Nyíregyháza's population is the common concern not only of the city, but of the primary care, the specialist care, the social welfare system and the population as well. It is a professional team which, with the help of the research results, is able to develop the necessary intervention with taking the opinion and the experience of the previously listed participants into consideration

Positive changes in the health status of the city's population can be achieved on the basis of a health plan developed by professionals. In addition, however, individual health planning is also important. After addressing patients one by one, these individual health plans should be managed by General Practitioners in order to have efficient and effective results.

Summary

The aim of the study is to introduce the examination of the quality of life in Nyíregyháza, especially the quality of life of people living in various parts of the city. The study focuses on the factors influencing the quality of life with particular attention to health status.

Nyíregyháza does not show a homogenious picture regarding the quality of life and the health status of its population, differences are typical between the various parts of the city. In terms of the quality of life, 14 parts of the city showed significant differences compared to the city average (6.76). The quality of life index of the respondents is the highest in Huszártelep (9.14), followed by the quality of life index of those living in Örökösföd (8.29) and in Oros (7.72). The lowest index value could be experienced in Ókistelekiszőlő (3.78) and in Hímes (4.83).

Regarding the self-evaluated health status it can be said that those who consider their health status acceptable belong to the biggest group (39.7%), followed by those who think their health status is good (36.1%), while only 10.9% of the inhabitants believe their health status is very good. The percentage of the respodents who evaluated their health state bad is 8.2%, however, only 2.8% of them regard their health status very bad. The percentage of those who think their health status is good is the highest in Huszártelep (87.5%) and the lowest is in Ókistelekiszőlő (18.2%). The highest percentage of those who believe their health status is bad live in Hímes (41.7%), while in Jósaváros2 nobody's health status is considered to be bad.

In economic terms Jósaváros2 seems to be the most active in the comparision of the districts, where the percentage of the working population is 69.2%. It is followed by Borbánya (60.0%) and Oros (58.3%). In Ókistelekiszőlő most of the population does not work (90.9%) and the percentage of those who do not work is high in Huszártelep (75.0%). The percentage of the economically inactive population is 66.7% in Hímes.

In 2015 the average net income per capita was 85.000 Ft in Nyíregyháza.

The city residents have 5.92 friends in average.

Studies have prooved that in addition to health status, income and regional characteristics also influence the expected lifetime and that the quality of life is in close connection with habits and spatial abilities as well (Chetty, Raj et al, 2016). The extensive analysis and the description of the factors influencing the quality of life of the population in Nyíregyháza contribute to plan the possibly necessary positive changes. The exploration of the health and socio-economic indicators of people living in certain districts of the city will help to develop measures that will improve the health status and the quality of life of the inhabitants in Nyíregyháza both in different parts of Nyíregyháza and in the whole city as well.

The "Quality of life of Nyiregyháza - household panel" research study, as a regular fact-finding study, by exploring the certain dimensions of the quality of life can serve as a basis for monitoring the quality of life of the inhabitants in Nyíregyháza. In the long term it may support health-oriented decisions and the improvement of the health status of the population, which has medium and long term impact on the quality of life of city dwellers and on the competitiveness of the city.

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