THE HEALTH-CONSCIOUS CONSUMER BEHAVIOR APPEARANCE IN FOOD INDUSTRY OF V4 COUNTRIES

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Abstract

In the past two-three decades the concept of sustainability has changed significantly – more and more attention is focused on social welfare, its preservation and increase. The health-conscious consumer behavior has become more important for both individuals and food industry - the realization of the strategy of the domestic food industry increasingly promoting healthy eating for example, consuming natural, domestic, fresh ingredients, prepared foods, in order to improve the overall health. The study is intended to present the change in consumer behavior – how the eating habits of consumers can influence the overall health status of the population in Visegrad countries. Furthermore, the aim was also to investigate the appearance of health awareness, as an increasingly significant factor of sustainability, in eating habits. The paper seeks to understand the main relationships between quality of life and health awareness through the most important correlations in life quality measurement – based on health-related metrics in Hungary compared with the European Union and the Visegrad countries.

Keywords: health awareness, sustainability, food industry, consumer behavior, eating habits

Introduction

WHO defines quality of life (QOL) as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." (WHO, 1997). Quality of life is a comprehensive concept or definition that contains many different dimensions. It encompasses both objective factors – such as health or living conditions – and the subjective perception of each of them (Eurofound, 2012). Measuring quality of life for different countries, regions or populations is a complex and complicated task, therefore, this paper extensively focus on the health-related metrics in Hungary compared with EU (28) and the other Visegrad countries (Slovakia, Czech Republic and Poland).

The research is based on the extensive literature review and Eurostat statistics. To understand the role that health-conscious consumer behavior can play in life quality development it is essential to know the most important definitions – what the health awareness and quality of life means, what kind of health issues (most common chronic diseases) are in the public nowadays, what kind of food categories are in the population's consumption, etc. Furthermore, the paper also focuses on the

different indicators as tools for sustainable development and the consumer-focused health communication as the key of the effective life quality development.

The main objective of the paper is to provide a better understanding of life quality development related to health awareness and its measurement. Moreover, the study also offers a brief introspection into the situation of Hungary in comparison with the European Union and regionally, with the other V4 countries (Slovakia, Czech Republic and Poland).

Research methodology

The base of the study is the extensive literature review and the data analysis related to the regional quality of life. Analyzed data derive from the Eurostat database – health related quality of life metrics between 2005/2010 and 2014 were acquired and analyzed. Thus, the basic scientific methods were used during the study. This paper aims to examine the relevant relationships and differences in quality of life between Hungary and the European Union or the Visegrad countries. Furthermore, the correlation between food consumption and health indicators was analyzed with correlation analysis – based on data from KSH database.

To reach an adequate picture of quality of life, all figures of 8+1 dimensions should be analyzed, however, research data of this paper exclusively refers to the health-related quality of life metrics from the mentioned time period in order to perform an appropriate comparison between countries. Quality of life was examined in case of healthy people (indicators and figures refer to healthy people) – results may be varied in case of people with chronic or other diseases.

Theoretical background

Health, health awareness and health literacy – relations and differences

The most integrated, accepted and commonly used definition of health was defined by the World Health Organization (WHO) in 1948. According to the Preamble to the Constitution of the WHO: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." (WHO, 1948)

It is increasingly recognized fact that health can be maintained and improved not only through the health science and different healthcare services, but also through the smart lifestyle of the individuals or society. Thus, WHO also determined the main elements of health, which include the social and economic environment, the physical environment, and the person's individual characteristics and behaviors. These determinants – that have been found to influence whether people are healthy or unhealthy – include the following key factors:

a) Income and social status: the greater the gap in the social status and income level, the greater the differences in health – linear relationship.
b) Education and literacy: low education level likely means more stressful lifestyle, poorer health and self–confidence level.
c) Physical environment: safe communities, infrastructure, drinkable and safe water, clean air, appropriate work environment and conditions mean better health.
d) Social support networks (social environment): the greater the support from family members, friends and communities, the better the health. Also, culture (traditions, norms, models) can have positive or negative effect to health condition.
e) Genetics
f) Personal behavior and characteristics: balanced or unhealthy diet (fruit and vegetable consumption), physical activity, overweight and obesity, smoke, alcohol consumption, stressful work environment all affect health condition.
g) Health services: the accessibility of healthcare services can help preventing certain diseases, treating easily others and or avoiding different threats.
h) Gender: men and women suffer from different type of diseases at different ages.

As a result, it can be clearly seen that health awareness is influenced by not only the healthcare services and opportunities, but also the prevention of diseases and the personal behavior are essential. Health awareness or health–conscious behavior is all of the individual attitudes, behaviors and activities in order to live longer and remain healthier. To reach these targets, people:

- keep important and enforce their health aspects during their decisions,
- control consciously their habits (e.g. proper nutrition, physical activity, sexual behavior, avoiding the harmful practices and habits) and thus, they are actively involved in the development of health,
- learn basic assistance and self–help skills
- develop and apply an informed consumer behavior in relation to the healthcare system:
  - the knowledge of the nature of the disease and possible outputs
  - the knowledge about the operation of the healthcare system
  - the knowledge of the patients' rights
  - the knowledge of health consumer protection

(WHO, 2016)

When we talk about the health awareness of a certain population it is essential to mention an emerging concept called "health literacy". The term of health literacy is introduced in 1974 and it has become increasingly important in public health. According to the World Health Organization (1998), health literacy means "the cognitive and social skills which determine the motivation and ability of individuals to gain access to understand and use information in ways which promote and maintain good health". Although WHO definition determines the health literacy in an individual level, there are some authors who suggest that this term should be shifted towards in level of a society – for example Freedman et al. (2009) states that health literacy means the degree to which individuals and groups can obtain process, understand, evaluate, and act upon information needed to make public health decisions that benefit the community. Sørensen et al. (2012) made an attempt to combine the available definitions of the diverse resources and identified a new comprehensive definition which encompasses both the public health perspective and the individual approach.

Typical health issues

Chronic diseases are defined by the World Health Organization as "noncommunicable diseases" or "diseases of long duration and generally slow progression" (WHO, 2013). Different chronic diseases are currently the leading causes of the mortality and disability in developed countries; these diseases are responsible for 86% of all deaths in the European Union. Busse et al. (2010) state that chronic diseases also have an important effect on people' performance and productivity both in their private life and in their workplace. Chronic diseases can reduce the earnings, the participation ability in diverse tasks and thus, the labour productivity. Similarly, these problems can increase the early retirement and disabled lifestyle. However, the impact is beyond the individuals' life, as the society also suffers because of the chronic diseases. "Disease-related impairment of household consumption and educational performance has a negative effect on gross domestic product (GDP)." (Busse et al., 2010) The consequences of chronic diseases are very serious: current forecasts demonstrate that the population aged over 65 will rise from 87.5 million in 2010 to 152.6 million in 2060, and chronic diseases has significant effect more than 80% of people in these ages. (Council of the European Union, 2013) Moreover, WHO (2005) suggests that chronic diseases are no longer considered only the elderly individuals' problem, as its project estimated that 72% of all deaths before the age of 60 years in 2002 were due to the noncommunicable illnesses in high-income countries. Therefore, it is clearly seen that the governments, health organizations and practitioners need to deal with the prevention of main chronic diseases.

The diverse resources (Busse et al., 2010; OECD, 2012; Cancer Research UK, 2009) mention the same diseases, as chronic diseases. Traditionally, chronic diseases include the following diseases: cardiovascular disease, diabetes, asthma, chronic obstructive pulmonary disease, cancer, HIV/AIDS, mental disorders (such as depression or dementia) and multiple sclerosis. Although the prevention of

HIV/AIDS is a big challenge worldwide, it causes more serious problem and needs better solution in case of the societies of developing countries. Similarly, BBC (2013) mentioned almost the same diseases organized into different categories as the five big killers in the United Kingdom: heart diseases, respiratory diseases, stroke, cancer and liver disease. Table 1 demonstrates the disease burden and deaths from noncommunicable or chronic diseases in the WHO European Region by cause:

Table 1: Disease burden and deaths from chronic diseases

Groups of causes	Disease burden		Deaths	
	DALYs (millions)	Proportion from all causes (%)	Number (millions)	Proportion from all causes (%)
Selected noncommunicable diseases				
Cardiovascular diseases	34.42	23	5.07	52
Neuropsychiatric conditions	29.37	20	0.26	3
Cancer (malignant neoplasms)	17.03	11	1.86	19
Digestive diseases	7.12	5	0.39	4
Respiratory diseases	6.84	5	0.42	4
Sense organ diseases	6.34	4	0	0
Musculoskeletal diseases	5.75	4	0.03	0
Diabetes mellitus	2.32	2	0.15	2
Oral conditions	1.02	1	0	2
All noncommunicable diseases	115.34	77	8.21	86
All causes	150.32	100	9.56	100

Source: Adapted from Busse et al., 2010

It is also the interest of the national economy to increase the health level of the population, which can be highly affected by supplying quality food and by promoting healthy consumption habits. Inadequate nutrition and inactivity together result in obesity and cardiovascular diseases, which are sadly more and more common in our society.

DALY (disability-adjusted life year) is a measure of the overall burden of chronic disease and developed by WHO. One DALY equals one year of healthy life lost (WHO, 2005).

Summarizing and evaluating the available resources TOP10 health issues can be easily determined, and organized into main disease categories:

1. Cardiovascular diseases
   a) Coronary heart disease
   b) Stroke
   c) High blood pressure
2. Cancer
   a) In case of women: breast cancer
   b) In case of men: prostate and bowel cancer
3. Respiratory diseases
   a) Asthma
   b) COPD (Chronic Obstructive Pulmonary Disease)
4. Diabetes
5. Mental disorders
   a) Depression
   b) Dementia such as Alzheimer
6. Multiple Sclerosis

In health communication, it is essential to talk about the risk factors which are responsible the above-mentioned chronic diseases. Globally, the major risk factors derive from the individuals' or

societies' bad habits and the unhealthy or unsafe behaviors and lifestyle: overweight and obesity, unhealthy diets (low fruit and vegetable intake), smoking or tobacco use, alcohol consumption, high cholesterol level, hypertension and physical inactivity.

Table 2 shows the deaths and DALYs as a function of the chronic disease risk factors. It is clearly seen that smoking is one of the most important risk factor, because smoking is the responsible for 4.80 million deaths globally (8.5% of all deaths).

Table 2: Major chronic disease risk factors

Chronic disease risk factors	Low- and middle-income		High-income		Worldwide	
	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs
	(millions)		(millions)		(millions)	
High blood pressure	6.22	78.06	1.39	13.89	7.62	91.95
	(12.9%)	(5.6%)	(17.6%)	(9.3%)	(13.5%)	(6.0%)
Smoking	3.34	54.02	1.46	18.90	4.80	72.92
	(6.9%)	(3.9%)	(18.5%)	(12.7%)	(8.5%)	(4.7%)
High cholesterol	3.04	42.82	0.84	9.43	3.88	52.25
	(6.3%)	(3.1%)	(10.7%)	(6.3%)	(6.9%)	(3.4%)
Low fruit and vegetable intake	2.31	32.84	0.33	3.98	2.64	36.82
	(4.8%)	(2.4%)	(4.2%)	(2.7%)	(4.7%)	(2.4%)
Overweight and obesity	1.75	31.52	0.61	10.73	2.36	42.25
	(3.6%)	(2.3%)	(7.8%)	(7.2%)	(4.2%)	(2.8%)
Physical inactivity	1.56	22.68	0.38	4.73	1.94	27.41
	(3.2%)	(1.6%)	(4.8%)	(3.2%)	(3.4%)	(1.8%)

Source: Adapted from Busse et al., 2010

Though alcohol consumption or alcohol abuse is missing from the table, this bad habit cause certain chronic illnesses such as alcohol dependence, hypertension and various types of cancer. Overweight and obesity is also a main problem, and not only in case of adults, but also an increasing number of children is affected. Novotny (2008) found in the study performed by the London Obesity Task Force that 18% of children in Europe were overweight. Overweight and obesity are usually derived from the unhealthy diets and the lack of physical activity: both adults and children consume less fruits and vegetables, and do less exercises than they should in order to live healthier.

Therefore the main task of the chronic disease management and health awareness knowledge management is the communication of these risk factors, the health promotion, the building of health awareness, the prevention and early detection. Effective health awareness campaigns try to pass messages of all level of prevention to the appropriate target groups. Moreover, these messages and campaigns are crucial in order to change the consumers' behavior. For example, due to the media campaigns percentage of smokers declines by 5-10% depending on how the messages are targeted at specific groups. (Busse et al., 2010) Through the appropriate health awareness knowledge management also quality of life can be effectively improved.

Quality of life

Quality of life is a broader concept than healthy life or living conditions and refers to the overall social welfare (Eurofound, 2012). The measurement of quality of life is relatively new, and will be further developed with new indicators. Quality of life indicators should be evaluated through a multidimensional framework developed by the Eurostat. The framework consists of the following dimensions:

- Material living conditions (income, consumption and material conditions e.g. net national income)
- Productive or main activity (e.g. working hours, balancing working and non-working life)

- Health (e.g. life expectancy, the number of healthy life years)
- Education (e.g. the number of early school leavers)
- Leisure and social interactions (e.g. how often citizens spend time with people at sporting or cultural events or if they volunteer for different types of organizations)
- Economic and physical safety (e.g. the number of homicides per country)
- Governance and basic rights (e.g. satisfaction with public services and the lack of discrimination)
- Natural and living environment (e.g. individuals' own perceptions, the amount of pollutants present in the air)
- Overall experience of life (life satisfaction, affect, eudaemonics) (Eurostat, 2011)

Life quality development is an increasingly relevant question nowadays since some researches demonstrated the relationships between the different dimensions of quality of life framework. For example Acemoglu and Johnson (2006) state in their study that the increase in life expectancy led to a significant increase in population. Moreover, they found a small initial positive effect of life expectancy on total GDP, and they predict this effect grows somewhat over the next 40 years, but not enough to compensate for the increase in population.

Results and discussion

The correlation between food consumption and health indicators

Based on Pearson's correlation analysis, we can observe *significant and strong* correlation between the female and male life expectancy and cereal consumption (women:r=-0.833; men: r=-0.816), fat consumption (women: r=-0.884; men: r=-0.920), and sugar (women: r=-0.838; men: r=-0.844), on a regional level. It means that if the consumption levels of such food stuffs decrease, we can statistically prove that it has a positive effect on indicators of life expectancy. Also, there is a medium-strong correlation between consuming these products and birth- and death related indicators (Table 3).

Table 3: The strength of the linear correlations and the explanatory power of the regression model

Basic food category	r (correlation strength)	r square (explanatory power of the model)
Y= Average life expectancy for women		
X=Cereals	-0.833	70%
X=Sugar	-0.838	70%
X=Fat	-0.884	78%
Y= Average life expectancy for men		
X=Cereals	-0.816	67%
X=Sugar	-0.844	71%
X=Fat	-0.920	85%
Basic food category	r (correlation strength)	r square (explanatory power of the model)
Y= Number of live births		
X=Cereals	0.593	35%
X=Sugar	0.643	42%
X=Fat	0.451	20%
Y= Number of deaths		
X=Cereals	0.602	36%
X=Sugar	0.692	48%
X=Fat	0.509	26%
The explanatory power of the regression model, in %		

Source: Authors' own calculation based on data from the KSH

The partial correlation further increased the existence and strength of the correlation. The two-variable linear regression analysis brought the expected results. There is a model-valued cause-effect relation between life expectancy at birth and cereal, fat and sugar consumption. Based on the regression models, consuming cereals played an important role in the case of women (70%, $r^2=0.694$) and men (67%, $r^2=0.665$) as well in how their life expectancy changed. Consuming sugar has a significant effect on life expectancy (women: 70%, $r^2=0.703$; men: 71%, $r^2=0.713$). The consumption of fat has even greater impact on this indicator, especially in the case of men (women: 78%, $r^2=0.782$; men: 85%, $r^2=0.846$). Consuming fruits and vegetables does not affect life expectancy significantly, according to our investigation. The reason behind this is possibly due to the fact that consuming these products in adequate quantities is important for the optimal maintenance of our body, and consuming too much of them does not pose as much threat for our health as food products containing high amounts of carbo-hydrate and fat. The regression lines can be seen on Table 6, which shows that they are suitable for projecting accurate predictions and are valuable for drawing up models, thanks to the low SEE (Std. Error of the Estimate) values of the ANOVA tables. The results of the One-Sample Kolmogorov-Smirnow Test also prove the viability of the model at significance level.

The regression lines give an overall picture about how the life expectancy at birth in the cases of both men and women would change by the changing levels of consumption of cereals, fats and sugar (Table 4). This prediction must be taken into account with careful judgment, because there are other factors influencing health as well, beside the ones describing food consumption in a quantitative way. Such indicators are the healthy lifestyle (doing sports, cycling to work, etc.), other nutrition-related factors and biological properties. However, we believe that the results of the investigation are very indicative.

Table 4: The estimation of regression coefficients between cereals, sugar, fat consumption and average life expectancy

Coefficients					
Women	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Cereals, total (kg/capita)	-.042	.013	-.833	-3.365	.020
(Constant)	82.178	1.022		80.433	.000
Men	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Cereals, total (kg/capita)	-.073	.023	-.816	-3.153	.025
(Constant)	77.828	1.887		41.241	.000
Women	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Fat, total (kg/capita)	-.260	.061	-.884	-4.232	.008
(Constant)	82.937	.991		83.663	.000
Men	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Fat, total (kg/capita)	-.478	.091	-.920	-5.245	.003
(Constant)	79.593	1.471		54.121	.000

Women	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Sugar, total (kg/capita)	-.211	.061	-.838	-3.436	.019
(Constant)	81.760	.880		92.907	.000
Men	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Sugar, total (kg/capita)	-.375	.107	-.844	-3.521	.017
(Constant)	77.252	1.529		50.538	.000

Source: Authors' own calculation based on data from the KSH

We can observe the amount of food consumption of households per capita in different regions and settlements on Table 5. The direction of changes of consumption levels between 2010 and 2014 was indicated by different colours. The consumption levels changed minimally on country- and Hungarian regional levels. The fact that in certain regions the consumption of fruits and vegetables increased, while cereal and fat consumption dropped, indicates that the health-awareness of the population is positively changing.

Table 5: The amount of food consumption of households per capita in different regions and settlements (2010, 2014), (kg/capita)

Name of region	Total cereals		Total meat		Total milk, cheese, egg		Total oils and fats		Total fruits		Total vegetables and potatoes	
	2010	2014	2010	2014	2010	2014	2010	2014	2010	2014	2010	2014
					kg/capita							
Hungary	85	78	53	54	17	16	38	39	77	75	14	14
Central Hungary	74	64	48	46	16	13	42	36	79	65	12	10
Central Transdanubia	82	75	52	52	17	15	33	39	69	71	15	14
Western Transdanubia	87	74	50	49	17	15	32	38	60	67	15	13
Southern Transdanubia	92	**94**	51	**64**	17	16	39	**45**	80	**99**	14	16
Northern Hungary	91	87	53	56	19	18	34	36	81	78	15	15
Northern Great Plain	86	90	54	60	19	**19**	35	39	72	82	16	**17**
Southern Great Plain	99	84	67	61	18	16	42	41	95	83	14	14
Budapest	60	60	41	44	13	12	42	**42**	69	64	8	8
Cities with county rights, larger rural towns	78	73	53	51	16	15	40	41	74	72	11	12
Other towns	88	78	55	52	18	15	40	37	82	71	15	15
Villages	99	**92**	58	**62**	19	**18**	33	38	79	**88**	17	**17**
The consumption:												
decreased				*increased*				*stagnated*				

Source: Authors' compilation based on data from the KSH

Figure 1 presents the final consumption expenditure of households of the Visegrad countries compared with the EU (28) between 2000 and 2015. We can observe the households' final consumption expenditure was the lowest in EU (28) during the analysed time period, however, the value decreased in all V4 countries between 2000 and 2015. The largest difference was in Slovakia, and the lowest one was in Hungary. It is interesting that the value was continuously decreasing between 2000 and 2015 only in Poland compared with the other Visegrad countries.
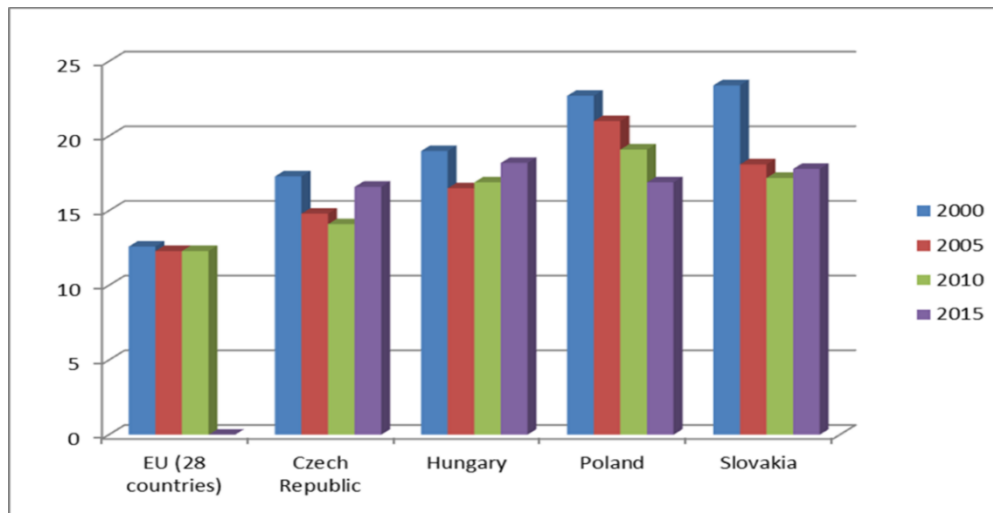
Figure 1: Final consumption expenditure of households, by consumption purpose
Source: Authors' compilation based on Eurostat database

Analysis of quality of life in V4 countries

There are different metrics for measurement of quality of life (for example net income can influence the quality of life). However, this study exclusively examines the following health related metrics based on the Eurostat database:
- according to outcomes (between 2010 and 2014):
  - life expectancy by age and sex
  - healthy life years in absolute value at birth and in percentage of total life expectancy
- according to drivers of healthy and unhealthy behaviors (in 2008):
  - body mass index (BMI) by sex
  - daily smokers of cigarettes by sex and age

Life expectancy increased in all countries in case of both females (Figure 2) and males (Figure 3) from 2005 to 2014. If total values are compared by V4 countries and EU (28), total life expectancy increased exactly by 1 year between 2010 and 2014. It is necessary to mention that total life expectancy increased substantially in all Visegrad countries compared with EU (28), however, the highest growth was in Slovakia and Poland (1.4 years between 2010 and 2014). Among the V4 countries Hungary is in the worst, and Czech Republic in the best situation in all categories. In 2014, total life expectancy was 76 years in Hungary, and 78.9 years in Czech Republic (similarly, males: 72.3 and 75.8; females: 79.4 and 82), the difference is around 3 years. Life expectancy is higher in female population than in males in all countries.
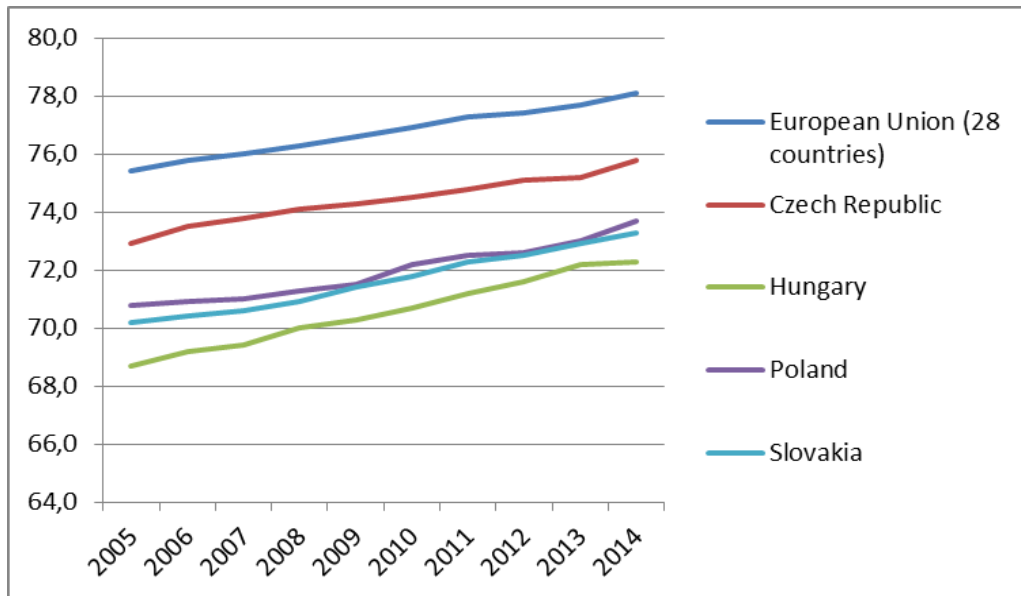
Figure 2: Life expectancy by age in females between 2005 and 2014
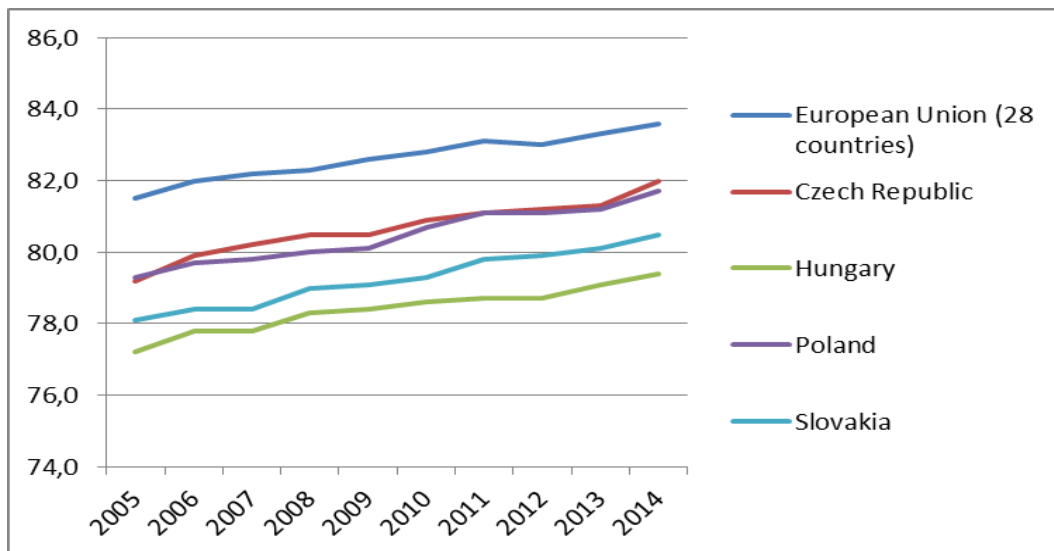Source: Author's compilation based on Eurostat database

Figure 3: Life expectancy by age in males between 2005 and 2014
Source: Author's compilation based on Eurostat database

Figure 4 presents the healthy life years in absolute value at birth by sex and countries. Healthy life years can be analyzed and evaluated in percentage of the total life expectancy or in absolute value. When it comes to the analysis based on absolute value at birth it is clearly seen that both the male and female population can count the highest figure in Czech Republic among the Visegrad countries. Although the life expectancy is the lowest in all groups in Hungary, it is an interesting fact that healthy life years is the least in Slovakia. Therefore, the population of Slovakia spend more years in different diseases during their life. In other words, the development of life quality through health awareness would be the most important task in case of Slovakia. The difference was relatively high between the lowest (Slovakia – males: 55.5, females: 54.6) and highest (Czech Republic – males: 63.4, females: 65) value in 2014 (males: 7.9, females: 10.4).
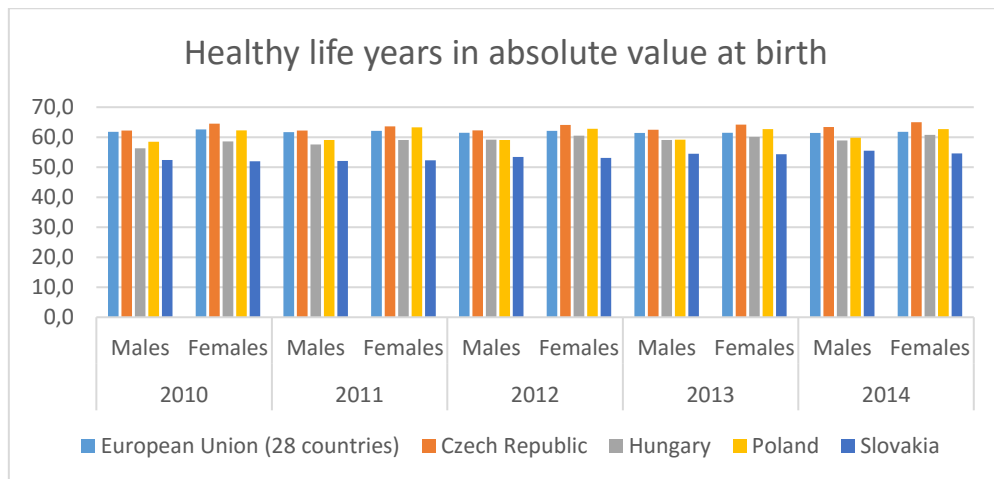
Figure 4: Healthy life years in absolute value at birth between 2010 and 2014
Source: Author's compilation based on Eurostat database

Further interesting things can be discovered if we can analyze the data based on the healthy life years in percentage of total life expectancy which is presented in Figure 5. Healthy life years is higher in males than in females considering the percentage of the total life expectancy.
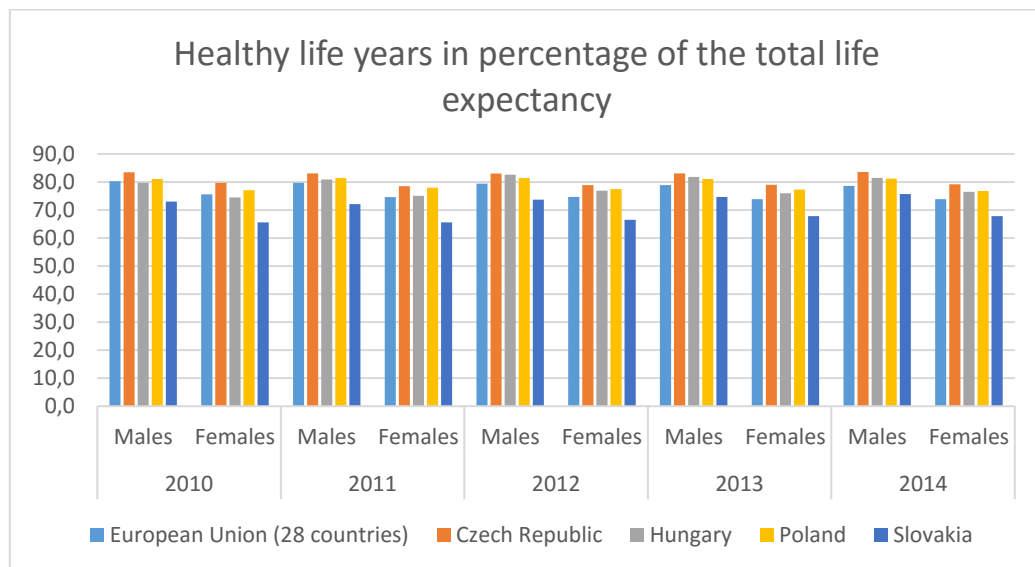

Figure 5: Healthy life years in percentage ot the total life expectancy between 2010 and 2014
Source: Author's compilation based on Eurostat database

Definition of body mass index (BMI) is determined by the World Health Organization as a "simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m2)" (WHO, 2016). Data of Czech Republic, Hungary, Poland and Slovakia are available for males, females and total population in each category (presented by Figure 6). Although, the most amount of people belonged to the normal category in case of each countries in 2008, it is important to mention that more than 50% of the total population was overweight or obese. As researches emphasized the relationship between obesity and chronic diseases – such as diabetes or cardiovascular diseases – it would be highly relevant task to decrease the proportion of obese and overweight people through building health awareness in the population in each country. Compared the V4 countries with each other it is obvious that the largest proportion of the population (46.7%) belonged to the category of normal weight in Slovakia, and the smallest proportion (40.9%) was in Czech Republic. The proportion of obese people was the largest (20%) in Hungary and the smallest (15.1%) in Slovakia. The proportion of obese males and females is almost the same, however, there were more overweight men than women in each country.
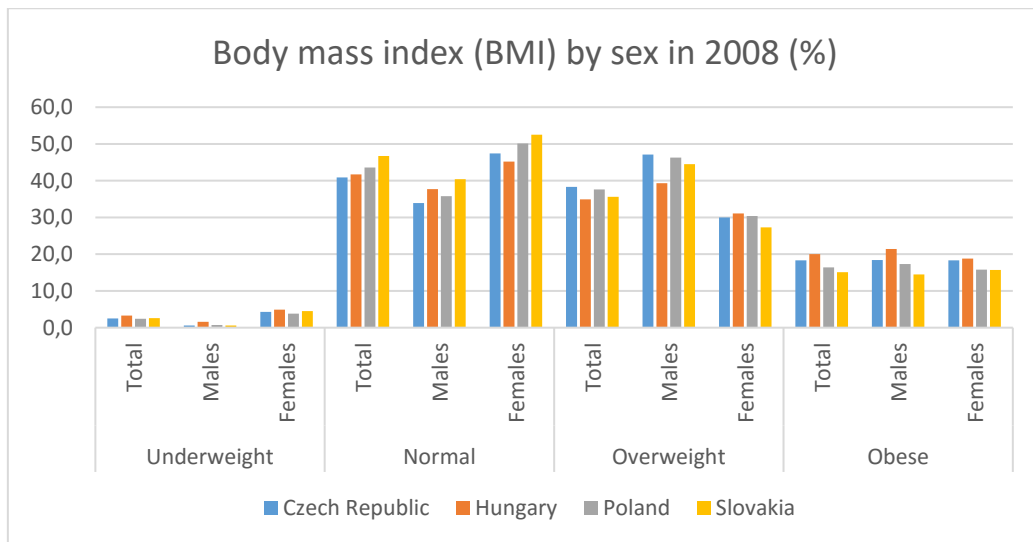
Figure 6: BMI by sex in 2008
Source: Author's compilation based on Eurostat database

Figure 7 shows the other driver of healthy and unhealthy behavior: the daily smokers of cigarettes in females/males/total order in each age categories in 2008. In Poland, more than 40% of the male population between 45 and 54 years smoked in 2008 – the highest value belonged to this category (42%). Females smoked less in daily level in all countries and all age groups and most people smoked between 45 and 64 years. Slovakia was in the best situation in 2008 – approximately only 20 % of total population smoked in daily level.
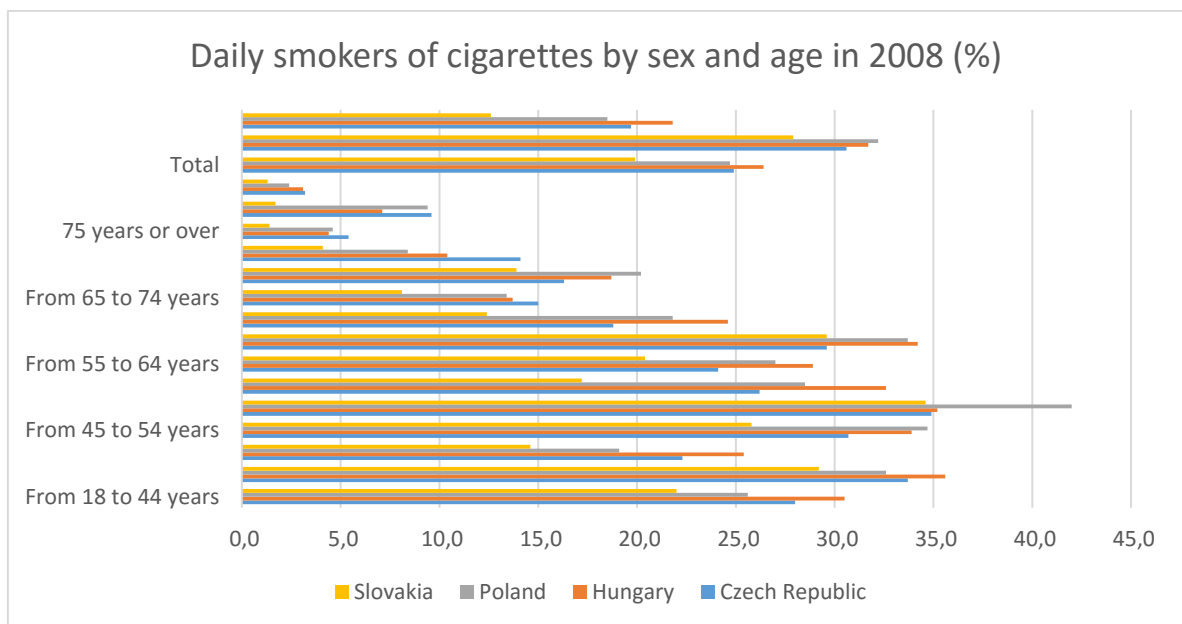

Figure 7: Daily smokers of cigarettes by sex and age in 2008
Source: Author's compilation based on Eurostat database

Overall, we can identify some important differences among the V4 countries:

- In measurement based on outcomes (life expectancy and healthy life years) Czech Republic led the list – the rate of both life expectancy and healthy life years was the highest in Czech Republic and the lowest in Slovakia.
- However, when we examine the figures based on the drivers of healthy and unhealthy behavior, the situation significantly changes – the proportion of both obese people and daily smokers of cigarettes was in Slovakia in 2008. It would be useful to examine the newest data, however, Eurostat database includes figures only for 2008 in case of healthy and unhealthy consumer behavior. It is also true, that the differences can be

influenced by other metrics (e.g. GDP per capita, net income of households etc.), however, this study examined only the health-related figures.

Conclusions

Theoretical background summarizes the most relevant scientific resources in relation to the health awareness, life quality development and food consumption. Furthermore, the paper summarizes the most important correlations between the regional countries' quality of life – data could be a general base of Hungary's life quality development. Based on the regional comparative analysis, it is clearly seen the health status of the population in Visegrad countries is not so bad, however, there are several opportunities to improve it with a well-designed and structured life quality development process.

In order to improve the quality of life it would be necessary to analyze, evaluate and change the population's consumer behavior related to health awareness – not only the food consumption factors, but also the healthy life factors. The key of change is the appropriate life quality development process by influencing the population's eating habits and reducing the main risk factors – the most important tasks are collected and summarized in the following list:

Food consumption factors:
- to decrease the consumption of fat and sugar -> it can reduce the cholesterol level
- to increase the consumption of vegetables, fruits and cereals
- to change our eating habits -> the population should reduce the quantity of unhealthy food and consume more quality food instead.

Healthy life factors:
- to reduce the mentioned risk factors (such as smoking, high blood pressure, obesity etc.) in order to avoid the different chronic diseases by
  - increasing the physical activity of the population
  - decreasing the number of daily smokers or amount of smoking
  - decreasing the rate of overweight and obese people

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