

Health Literacy of the Inhabitants of easter Slovakia regarding Disease of Civilization – survey Results

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Abstract:

Introduction: Diseases of civilization represent a group of diseases that have common risk factors as a result of long-term exposure to an unhealthy lifestyle, an unhealthy diet, smoking, a lack of physical activity and stress.

Aim of the research: To find out whether random respondents who took part in the “Days of Health” event at the Bardejov Spa have basic knowledge about diseases of civilization. Based on the findings, draw recommendations for practice.

Research sample group: 398 respondents: 305 women and 93 men. The average age of the respondents was 56.4 years (+12.8 years).

Methodology: On a voluntary and anonymous basis, the patients filled out a questionnaire focused on their knowledge

about diseases of civilization. The questionnaire contained both closed and open questions.

Results: The authors of the article analyzed respondents' answers. The results were statistically processed.

Conclusion: Our results show that there is a need for repeated interventions by health care workers (doctors, nurses) and public health workers to spread awareness about diseases of civilization and the possibility of their prevention. Increasing the level of health literacy is a good prerequisite for a healthier population.

Biography of the first author

I graduated from the Comenius University Faculty of Medicine in Bratislava in 1999. From 1999 to 2010, I worked in Bratislava as a doctor and a senior assistant at the Slovak Medical University. I earned a PhD title in 2004, and in 2010 I received the title of Associate Professor in Public Health. Since 2010 I have been acting as an expert guarantor of the outpatients clinic Remedium s.r.o. at the Bardejov Spa, and I taught at St. Elizabeth University of Health and Social Sciences from 2010-2022. Since January 1, 2023, I have been working at the Faculty of Public Health at the Slovak Medical University in Bratislava. At the Bardejov Spa, I have created a place for non-pharmacological treatment of obesity in adults and a doctor's office for non-invasive diagnosis of liver diseases. I am the president of the Slovak Society of Practical Obesitology. I attended several study stays abroad, organized 9 interdisciplinary conferences with international participation and I regularly give lectures at domestic and foreign specialized events.

Introduction

Diseases of civilization represent a group of diseases that have common risk factors as a result of long-term exposure to an unhealthy lifestyle, an unhealthy diet, smoking, a lack of physical activity and stress. The issue of diseases of civilization is a complex societal problem (1, 2).

Every year, 39.5 million people die from chronic diseases. If the current situation is maintained, by 2030 the number of deaths caused by chronic diseases will increase to 55 million (3). In terms of causes of death in the Slovak population, diseases of civilization occupy a dominant place (1).

Diseases of civilization become more common in ageing societies (4). The frail elderly (5)

sooner or later lose the ability to care for themselves (6) and become dependent on others (7) or disabled (8). This requires extensive support and care in their local environment and often ends up with institutionalization (9). Otherwise they are at risk of neglect or suicide (10). The elderly suffer from multiple crippling chronic diseases, and therefore they require medical treatment that utilizes modern medical technologies (11), is often intensive and prolonged (12), is burdened with complications (13) and is thus also more expensive (14).

Health literacy is a concept that is starting to appear more and more often in today's world. Health literacy is the ability of an individual to obtain, process and understand basic information about health and health care services, which is necessary for making the right decisions regarding one's health (15). Increasing the level of health literacy is a good prerequisite for a healthier population based on the assumption that people will approach their health more responsibly and make greater use of prevention (16).

In the modern world where access to information relies more on computer systems and the Internet with each passing year (17), digital literacy, which refers to people possessing the set of skills that allows them to use electronic resources, becomes crucial for obtaining information on health and health services (18). In addition, people need to be able to use it in a safe (19) and secure way (20), to properly document things for administrative use (21) or legal proceedings (22). Telemedicine has been proving its usefulness for many years (23), but finally it was confirmed during the COVID-19 pandemic (24). Unfortunately, these skills are especially scarce among the elderly. This is known as digital exclusion, and improving these skills on a large scale requires systemic approach (25).

Prevention includes a wide range of activities and interventions aimed at reducing risks and threats to the health of society. This is characterized as a state with the highest possible level of health and the smallest possible inequalities when it comes to the health of members of society, which can be achieved by taking into account the socioeconomic level and the level of health care of the given community. It requires an organized effort by society as a whole that is ensured through public and community policy (26).

It is also important to maintain a healthy lifestyle, which is a set of voluntary human activities, reactions to external stimuli, behavior in various life situations, and ways of solving problems and satisfying personal needs that are based on individual choices from various options. The main principles of a healthy lifestyle include a varied and balanced diet, an appropriate choice of exercise, and avoiding smoking, harmful substances and alcohol. One should have good quality sleep, optimism, be in a good mood, avoid stress and get regular rest (27).

Due to the need to spread awareness about diseases of civilization, in 2022 in cooperation with other partners (Bardejov Spa, a.s., town of Bardejov, the Regional Public Health Office with the seat in Bardejov, General Health Insurance, Dôvera Health Insurance, Union Health Insurance), the Slovak Society of Practical Obesityology organized another edition of an event under the name "Days of Health" for the lay public in the colonnade of the Bardejov Spa. All examinations were carried out on a voluntary basis, anonymously and free of charge (28).

Aim of the research

To find out whether random respondents who took part in the "Days of Health" event at the Bardejov Spa have basic knowledge about diseases of civilization. Based on the findings, draw recommendations for practice.

Research sample group

398 respondents: 305 women and 93 men. The average age of the respondents was 56.4 years (+/-12.8 years).

Methodology

The participants of the event had the opportunity to have their blood pressure, pulse, waist

circumference and hip circumference measured and to have the measurements taken on a Tanita scale. The Tanita SC-240 MA scale is a portable body analyzer that has a weighing capacity of 200 kg and an accuracy of 100 g. It works on the principle of bioelectrical impedance, which determines body fat content by calculation after measuring body resistance. Body resistance changes according to the content of fat and water (29).

In addition, we examined the values of glycemia, the fat spectrum, CRP (C reactive protein), antibodies against hepatitis C (rapid diagnostic test Turklab), vitamin D and TSH (thyroid stimulating hormone) from capillary blood. The participants of the event received the book *Liver and Nutrition* with information about liver diseases and recipes for a basic liver diet.

Health insurance companies prepared counselling on diabetes mellitus, breast cancer prevention (education and guidance on a breast model), prevention of occult bleeding and weighed people on an InBody scale. In addition, they also took measurements of cholesterol, uric acid, blood glucose and hemoglobin levels.

The patients filled out a questionnaire focused on their knowledge about diseases of civilization on a voluntary and anonymous basis. The questionnaire contained both closed and open questions. The total number of questions was 32 (including demographic ones). The questions focused on their diet (e.g., how many times a day respondents eat; whether they eat breakfast, lunch, dinner; how many times during a week they consume fruit, vegetables, meat products and fish. We also asked about the variety of their diet), drinking regime (how much fluid they drink per day; whether they consume non-alcoholic sweetened beverages and with what frequency; whether and, if so, how often they consume alcohol). We also asked respondents about their physical activity, whether they are satisfied with their weight and what knowledge they have about obesity, their own blood pressure, cholesterol level, blood glucose level and diseases such as diabetes mellitus. We received interesting answers to the question asking where the respondents get information about obesity and other diseases of civilization. We processed the results statistically.

Results

Our research sample group consisted of 398 respondents: 305 women and 93 men. The average age of respondents was 56.4 years (+12.8 years). 227 respondents (57%) had secondary school education, 110 respondents had university education (27.6%) and 61 respondents had completed either elementary school or secondary school without a school leaving examination. In our sample group, 175 respondents (44% of the group) had normal weight, and 223 respondents (56% of the group) were overweight or obese (135 patients were overweight, 88 patients were obese). 55% of the group reported dissatisfaction with their weight, and around 34% of respondents admitted to having problems with obesity. 69% of the respondents were convinced that Slovakia belongs to countries with a high prevalence of obesity.

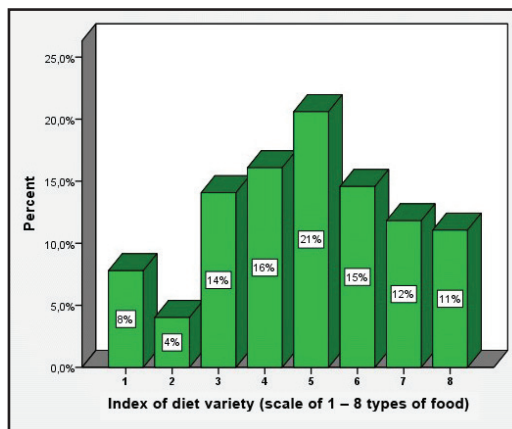
One part of the questions in the questionnaire was focused on eating habits: 54% of respondents said they eat 3 times a day. The fact that 69.8% of respondents eat breakfast daily was very pleasing. 81.9% of the group has lunch daily, and 74.6% of respondents have dinner every day. We wanted to know if the COVID-19 pandemic affected the respondents' diets in any way. 26% of the group believed it did, and 54% did not feel any change in their diet. Some of the respondents could not answer the question or had not thought about it. We also asked the respondents about the variety of their diet. They could choose more options (dairy products, eggs, fruit, vegetables, smoked meat products, cereals, white meat - chicken, turkey, red meat - beef, pork and pastries). They had the opportunity to list other foods that they often consume. 28% of respondents stated that they had 1-3 types of the listed foods in their menu, and 37% of respondents stated that they had 4-5 types of the listed foods in their menu. 38% of respondents said that they had 6-8 of the listed types of foods in their diet. The results are displayed Graph 1.

At the same time, we analyzed whether the variety of a diet is related to the incidence of obesity among respondents. We found that obesity is statistically significantly more common in respondents with a low variety in their diet ($p = 0.049$). The results are displayed in Graph 2.

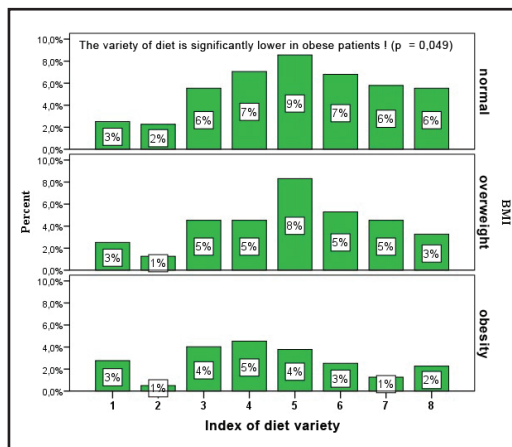
When analyzing the relationship between the frequency of fruit/vegetable consumption

and the occurrence of obesity, we confirmed our assumption that the lower the consumption of fruit/vegetables, the more frequent the occurrence of obesity (Pearson = 0.128**).

Graph 1 Index of variety of respondents' diets



Graph 2 Index of dietary diversity and the connection with the development of obesity

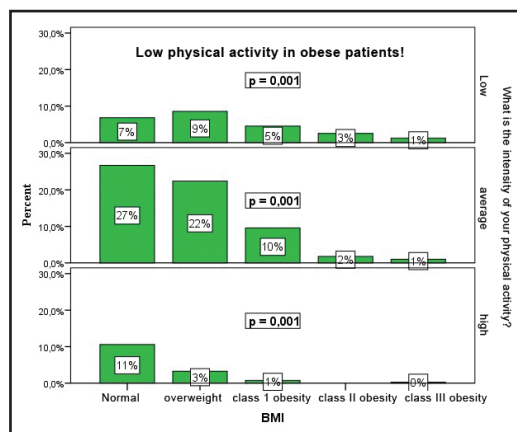


The answers about their drinking regime were not very satisfactory: only 59.5% of respondents drink 1-2 liters of liquids per day, and 20.1% of the group drink less than 1 liter per day. 36.7% of the group stated that they drink sweetened soft drinks, of which 19% drink them 1-2 times a week. 239 respondents (60%) stated that they consume alcoholic beverages (14% regularly, 46% occasionally).

We also asked the respondents about their physical activity: 24% indicated low physical activity, 61% average physical activity and 15%

high physical activity. We analyzed the mutual connections between physical activity and the incidence of obesity. According to our expectations, it was confirmed that obesity is statistically significantly more frequent among respondents with low physical activity ($p = 0.001$). The results are shown in Graph 3.

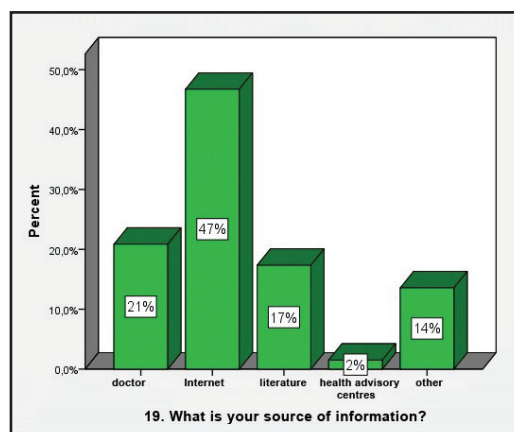
Graph 3 Connection between the development of obesity and the intensity of physical activity



In the next part of the questionnaire, we asked the respondents about their knowledge of diseases of civilization. When asked if it is necessary to prevent diseases, 96% of respondents gave a positive answer. From other answers we selected the following: 31% of respondents knew their blood pressure values, 51% of respondents knew their cholesterol level and 63% knew their blood glucose level. We believe that the higher knowledge percentage of the answers was due to the fact that the respondents attended the “Days of Health” event and had the opportunity to have their blood sugar and cholesterol levels measured. Probably not everyone had their blood pressure measured.

We were rather surprised by the respondents’ answers regarding the source of information on diseases of civilization. Around 47% of respondents obtain information from the Internet, only 21% get it from a doctor and only 2% of respondents get information from health advisory centers that work at RÚVZ (regional public health offices). The respondents’ answers are shown in more detail in Graph 4. These answers make us think about improving the care of our patients.

Graph 4 Source of respondents’ information about diseases of civilization



Discussion

Adequate nutrition is a fundamental pillar of healthy human development. The results of many international and national epidemiological studies confirm that harmful nutritional factors such as a positive energy balance, increased intake of saturated fatty acids and reduced intake of unsaturated fatty acids, fiber and antioxidants, insufficient intake of minerals, especially calcium, potassium, magnesium, iodine and some micronutrients such as selenium, and excessive sodium intake have a significant impact on the occurrence of diseases of civilization of non-infectious origin (30).

The most common diseases of civilization include overweight, obesity, heart and vascular system diseases, myocardial infarction, diabetes mellitus (DM), fat metabolism disorders, high blood pressure, atherosclerosis, sudden strokes, cancer, depression, Parkinson’s disease, immune disorders, allergies, asthma, chronic obstructive pulmonary disease, neurological and mental diseases (burnout syndrome and chronic fatigue syndrome), Alzheimer’s disease, osteoporosis, arthritis, joint diseases, chemical sensitivity syndrome, sick building syndrome, fibromyalgia, sleep disorders and constipation (31).

In recent decades, fundamental changes in society have significantly affected behavioral patterns at all levels of the human population. Constantly changing living conditions increase the demands on human adaptability - the neuropsychic load increases, but physical activity is, on the contrary, on the decline. According to

data from the World Health Organization, 30 to 70% of the adult population in the European region is overweight (30, 32).

In our research sample group, 175 respondents (44% of the group) had normal weight, and 223 respondents (56% of the group) were overweight or obese.

It is realistic to believe that the global COVID-19 pandemic, lockdown and subsequent measures and restrictions could have also had a positive impact by increasing interest in home cooking, which could have a positive as well as a negative impact on lifestyle, especially when it comes to eating. This fact corresponds with our results that show 69.8% of respondents eat breakfast daily and with the results of research (33) focused on university students, who during the COVID-19 pandemic did not show such frequent skipping of breakfast as the first meal of the day as they did before the global COVID-19 pandemic.

When analyzing the composition of respondents' diets, we determined whether the variety of a diet is related to the occurrence of obesity. We found that obesity was statistically significantly more frequent in respondents with a low-variety diet ($p = 0.049$). The respondents' drinking regime was not optimal: only 59.5% of respondents drank 1-2 liters of liquids per day. Around 40% of respondents (36.7%) stated that they drink sweetened soft drinks, of which 19% drink them 1-2 times a week. Sugar-sweetened beverages can represent an average of up to 356 kcal per day in addition to the consumed food (approx. 19% of the total daily energy intake). Even a reduction of 100 kcal brings the positive effect of a decrease in body weight. Therefore, replacing drinks of this type with non-caloric ones significantly contributes to a decrease in body weight (34). Fruit juices and sweetened lemonades contain the most energy. One liter of 100% fruit juice labelled as "sugar free" contains the energy equivalent to approximately 30 sugar cubes. Such fruit juice has an average energy value of 2000-2500 kJ. The title "sugar-free" means that no beet sugar is added, but the fruit juices already contain fruit sugar - fructose (35).

In general, the population of the EU, Slovakia included, shows an increasingly lower level of physical activity, which ultimately causes an increase in the incidence of overweight and obesity (30).

24% of respondents in our research sample group indicated having a low level of physical activity and 61% indicated an average level. According to our expectations, the statistical analysis of the set confirmed that obesity was statistically significantly more frequent in respondents with low physical activity ($p = 0.001$).

Physical activity is a critically underutilized preventive strategy with extensive health benefits. This is not only true regarding prevention in healthy people (36), but also with patients with several chronic non-infectious diseases of civilization. Hypokinesia increases the possibility of the incidence of 35 chronic diseases. In order to maintain, strengthen and support health, physical movement is essential and necessary. It is also beneficial for existing health problems. For this reason, it is necessary to make efforts to educate the lay public and point out the importance of including physical activity in individuals' lifestyles at all social levels (37).

We were rather surprised by the respondents' answers regarding their sources of information on diseases of civilization. Around 47% of respondents obtain information from the Internet, only 21% get it from a doctor, and only 2% of respondents get information from health advisory centers. It is necessary to promote the activity of these centers, as they perform a meritorious activity for the population.

Primary care providers also have the opportunity to positively influence the level of health literacy; they can pay attention to prevention and support as well as the development of the health literacy of their patients (16). We do expect to reduce the prevalence of overweight and obesity as well as that of other diseases of civilization by increasing the level of health literacy and the level of education achieved by the population.

Conclusions

The World Health Organization defines health literacy as cognitive and social skills that determine the ability and motivation of individuals in the population to be able to obtain relevant information, understand it and then use it to positively influence their health (16).

Our results show that there is a need for repeated interventions by health care workers (doctors, nurses) and public health workers to spread awareness about diseases of civilization

and the possibilities of their prevention. Events focused on prevention where the lay public has an opportunity to meet these kinds of professionals are of great benefit to them. For this reason, direct education is also necessary in this area (38). At such events, there is the possibility to have direct contact with medical professionals, have examinations without a long wait, get a consultation about one's examination results, obtain education directly on the spot and receive educational brochures. Of course, such events also contribute to increasing the health literacy of a population.

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