

How to take care of health in 21st century?

Jak dbać o zdrowie w XXI wieku?

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Abstract

In spite of high availability of the preventive and screening programs and the healthy lifestyle promotion, care for health in societies of highly developed countries (including Poland) still seems to be insufficient. It may be observed as increasing morbidity due to civilization diseases (among others: cardiovascular diseases, cancer, hypertension, diabetes, obesity, respiratory system and digestion system diseases, and psychiatric disorders) and their high share in statistics of causes of death (up to 80%). Recommended health-promoting actions include: vaccination (obligatory and recommended according to vaccination schedule), including inoculation against oncogenic viruses (HBV, HPV), taking part in preventive and screening programs (mammography, cytology, colonoscopy, low-dose computed tomography of the chest, regular physical examination, biochemical tests, and prenatal screening), limiting the use of stimulants (especially tobacco products), well-balanced diet, regular physical activity, concern for well-being and social relations, as well as choosing an appropriate place of residence. The abovementioned actions lead to increasing the average life expectancy and to better quality of life. They also reduce the prevalence of civilization diseases. Thus, every effort must be made to extend the educational and preventive actions within health promotion.

Key words: diet, physical exercise, prevention, vaccination, screening

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Streszczenie

Pomimo dużej dostępności badań profilaktycznych oraz promocji zdrowego stylu życia dbałość o zdrowie społeczeństw krajów wysoko rozwiniętych (w tym również Polski) wydaje się wciąż niewystarczająca, czego dowodem jest coraz większa częstość występowania chorób cywilizacyjnych (m.in. chorób układu krążenia, nowotworów złośliwych, nadciśnienia tętniczego, cukrzycy, otyłości, chorób układu oddechowego oraz pokarmowego i zaburzeń psychicznych) i ich wysoki udział w statystykach przyczyn zgonów (nawet do 80% wszystkich zgonów). Do zalecanych działań prozdrowotnych można zaliczyć: szczepienia ochronne (obowiązkowe oraz zalecane, zgodnie z kalendarzem szczepień), w tym przeciwko wirusom onkogennym (WZW B, HPV), wykonywanie badań profilaktycznych i skriningowych (mammografii, cytologii, kolonoskopii, niskodawkowej tomografii komputerowej klatki piersiowej, regularnych badań lekarskich i badań biochemicznych oraz badań prenatalnych), ograniczenie stosowania używek (szczególnie wyrobów tytoniowych), zbilansowaną dietę, regularną aktywność fizyczną, dbałość o dobre samopoczucie i relacje społeczne oraz wybór odpowiedniego miejsca zamieszkania. Działania te wydłużają średnie przeżycie oraz polepszają jakość życia, ograniczając jednocześnie częstość występowania chorób, zwłaszcza cywilizacyjnych. Należy zatem dołożyć wszelkich starań, aby rozszerzyć zakres działań edukacyjnych i profilaktycznych w ramach promocji zdrowia.

Słowa kluczowe: dieta, ćwiczenia fizyczne, profilaktyka, szczepienia, skrining

Introduction

The World Health Organization (WHO) defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”.¹ The WHO also emphasizes that health is a right of every human being and that the concern for these values should be an overarching objective of society. However, is that the true state of things? Unfortunately, up-to-date statistics indicate that societies of developed countries, reposing their hopes in a highly specialized curative medicine, tend to forget about the duty to take care of their citizens' health. This problem was described already in 1974 by Lalonde, who in his report indicated that the following components were responsible for health: lifestyle (50%), genetic factors (20%), social and physical environment (20%), and healthcare system (10%), successively. His study initiated health promotion development as a separate discipline.² Although since then numerous educational and preventive programs were implemented, in light of the provided data, it seems that awareness of the enormous impact of a lifestyle on human health remains insufficient.

This study aims to analyze the most frequent causes of death in Poland in the context of available prevention programs, health-promoting behaviors and other factors influencing human health, as well as to draw conclusions from the analysis.

Analysis of the most frequent causes of death

In developed countries, including Poland,³ as the most frequent cause of death (approx. 80%) is considered a group of diseases heavily related to improper lifestyle – the so-called diseases of affluence. These include, among others, obesity, coronary disease, diabetes mellitus, hypertension, cerebral apoplexy, myocardial infarction, bronchial asthma, chronic obstructive pulmonary

disease (COPD), tuberculosis, acquired immunodeficiency syndrome (AIDS), malignancies, mental diseases, and digestive system diseases.⁴

In Poland in 2014, the most frequent causes of death were diseases of affluence or their complications, i.e., circulatory system diseases (45.1%), malignancies (25.4%) and respiratory disorders (5.4%). It should be also emphasized that among the statistics regarding the causes of death, the share of suicides (1.5%) was considerably higher than, for example, transport accidents (<0.8%).^{5,6} In total, this constitutes more than 75% of causes of death in Poland, and yet the abovementioned 3 groups do not cover all diseases whose emergence and course may be modified by proper health-promoting behaviors. The most frequent reasons behind hospitalization in 2014 also included circulatory system diseases (15%), malignancies (9.2%) and respiratory disorders (6.8%).⁵ Adding to the statistics the patients hospitalized due to other diseases of affluence, this group constitutes more than 1/3 of all causes of hospitalization in Poland. It should also be noted that approx. 40% of adult Polish people suffered at some point in their life from some mental disorders and the most frequent of those were abusing alcohol, panic attacks and depression.⁷

Health-promoting actions with proven effectiveness in reducing the emergence of diseases of affluence

Preventive vaccinations

Preventive vaccinations provide immunity or ensure a course form of disease in a vaccinated person by creating acquired immunity. They are also much safer as compared to suffering from the disease against which they protect. The diseases against which vaccinations are made include viral diseases (e.g., measles, rubella,

chickenpox, polio, rotavirus infections), which cannot be efficiently causally treated and which can have a severe, life-threatening form. Even if the causal treatment is available, it is often a long-termed method (e.g., in the case of tuberculosis) or the disease has a severe course (e.g., in pneumococcal infections or *Haemophilus influenzae* type b – HIB), so vaccinations are an optimal form of protection against those infections.^{8,9} Preventive vaccinations reduced the mortality caused by the infectious diseases against which they were invented by nearly 95%. However, the condition of such high efficiency is the emergence of the so-called herd immunity, i.e., when immunization reaches the level of at least 95%.^{8,9} In Poland, in recent years a dangerous drop in this index could be observed, which is related to the current fashion for anti-vaccination. This involves mainly vaccines against measles, mumps and rubella – in this case, the immunization index dropped below 95% already.¹⁰

According to the statement of Chief Sanitary Inspectorate,¹¹ obligatory vaccinations in Poland include vaccinations against: tuberculosis, hepatitis B, diphtheria, tetanus, pertussis, polio, HIB, measles, mumps, rubella, pneumococci, and chickenpox. The recommended vaccinations include vaccinations against: hepatitis A, influenza, rotaviruses, meningococci, human papilloma virus (HPV), and tick-borne encephalitis. People travelling to the areas where certain diseases endemically occur should vaccinate as well against cholera, typhoid, rabies, and yellow fever.¹¹

Cancer vaccinations

A special group of vaccinations are vaccinations against oncogenic viruses, i.e., viruses capable of causing a mutation leading to tumor formation in human. Eliminating the risk of getting infected by these viruses excludes the risk of developing the tumor in this way, although it should be remembered that a given type of tumor, e.g., squamous cell carcinoma (SCC), may be caused by other factors than virus infection. Cancer vaccinations include vaccinations against hepatitis B and HPV, responsible for hepatocellular carcinoma and SCCs (carcinoma of uterine cervix, vulva, anus, or oral cavity), respectively. Research shows that these vaccinations are safe and efficient. In the case of HPV, it is important to choose the polyvalent vaccines, which protect against a greater number of strains of oncogenic viruses.^{8,12,13}

Screening and preventive examinations

The idea of screening is to diagnose a disease in its early stage and begin treatment, which will result in the reduction of mortality caused by the given disease as well as of severe complications. In order to reach a high efficiency of screening, however, it must cover all qualified population, which cannot be achieved in Polish conditions.

Nowadays in Poland, there are prevention programs implemented related to the following afflictions: breast cancer, colorectal cancer, tuberculosis, circulatory system diseases and COPD, as well as prenatal screening. Data shows that in our country breast cancer prevention program covers only 37.35% of women and the carcinoma of uterine cervix prevention program – only 16.65% of them.¹⁴

Breast cancer prevention consists in conducting mammography every 2 years in women at the age of 50–69 years (40–75 years for women from high-risk groups) and marking gene mutations *BRCA1* and *BRCA2* in women whose first-degree relative had breast cancer or this mutation detected.^{15,16}

The carcinoma of uterine cervix prevention consists in conducting Pap smear every 3 years in women at the age of 25–59 years or since the 3rd year after their sexual initiation. In addition to detecting precancerous and cancerous lesions, this test aims particularly to detect koilocytosis related to being infected with HPV.¹⁷

Colorectal cancer prevention consists in performing a one-time colonoscopy in persons at the age of 50–65 years (from 40 years of age in the case of persons whose first-degree relative was diagnosed with colorectal cancer or from 25 years of age in patients with detected genetic load related to familial adenomatous polyposis (FAP) or with hereditary non-polyposis colorectal cancer (HNPCC)).¹⁸ A less sensitive alternative to this is the fecal occult blood test or immunochemical stool tests carried out once a year in patients from the same age groups.¹⁹ However, in Poland, they are not used currently due to the colonoscopic examination program being implemented.

Tuberculosis prevention means district nurses gathering questionnaires from persons from high-risk groups and from persons who had direct contact with a person ill with tuberculosis and then, based on these, deciding on the further diagnostics toward the disease.¹⁴

The prevention of circulatory system diseases consists in performing a medical examination and biochemical tests (e.g., marking lipid profile and glucose concentration) and blood pressure measurements in persons at the age of 35–55 years who were not diagnosed with a circulatory system disease before but who are burdened with risk-factors of its emergence. The risk factors include: hypertension, disorders in lipid profile or glucose tolerance, smoking, low physical activity, excessive weight or obesity, increased concentration of fibrinogen or uric acid, too much stress, wrong diet, male gender, and genetic load.¹⁴

The COPD prevention means conducting spirometry in persons over 18 who smoke and were not diagnosed with this disease before.¹⁴

The prenatal screening program is dedicated to pregnant women that meet at least 1 of the following criteria: age above 35 years, chromosomal aberration occurrence in a previous pregnancy, structural chromosomal aberrations detected in the pregnant woman or in child's father, identified higher risk of genetic disease in a child, or

identified higher risk of chromosomal aberration or fetal defect based on ultrasound or biochemical tests. The program consists in prenatal diagnosis that includes ultrasound tests, biochemical tests and genetic tests of child's parents and of the child.¹⁴

Lung cancer prevention program is planned as well. It would consist in performing a one-time computed tomography (CT) scanning in persons who smoke (at least 30 pack-years) and are at the age of 50–74.²⁰

The prevention should also provide genetic tests in persons who were diagnosed with a genetic disease or cancer.²¹

Quitting drugs and smoking tobacco products

Tobacco products are considered the most harmful legal drug (70 substances out of several hundred they contain are carcinogenic) that initiate or contribute to the development of many diseases affecting nearly all systems of a human body, including cancers. The most frequent causes of death related to smoking tobacco products include: coronary disease, myocardial infarction, cerebral apoplexy, lung and upper respiratory tract cancer, COPD, as well as miscarriage. Other afflictions related directly to smoking include: cancers of head and neck (especially those of oral cavity), digestive system, prostate and breast, blindness, deafness, back pain, Alzheimer's disease and dementia, atherosclerosis, congenital defects or hypoplasia in fetus, and lowered fertility. All the abovementioned diseases are also a risk to passive smokers. At the same time, it should be emphasized that smokers constitute 23% of the population (32% men, 7% women) and in Eastern Europe – 31% (42% men, 22% women).^{22–24}

A positive effect of quitting smoking is observed at every age, although the earlier exposition to the given drug is stopped, the stronger the effect is. It is estimated that quitting smoking may prolong life even by 25% in comparison with continuing smoking. Other advantages resulting from quitting smoking tobacco products include: reducing the risk of myocardial infarction and cerebral paralysis considerably after only 1 year since quitting smoking the tobacco products, levelling off the risk of neoplastic diseases related to smoking, then its slow gradual decrease (especially when quitting smoking under the age of 35), reducing the number of severe seizures that require hospitalization in the case of COPD, reducing the level of stress felt and drop in the frequency of occurrence of mood disorders.^{23,24}

It is estimated that the risk of malignant neoplasm occurrence in persons who smoke tobacco products is approx. 50% higher than in persons who have never smoked and approx. 25% higher than in persons who have definitely quit smoking. Mortality caused by malignant neoplasms is increased by 120% in comparison to persons who never smoked and by 60% in relation to persons who have quit smoking. The strongest correlation is ob-

served for lung cancer, which is on average 13 times more likely to occur in smokers than in the general population and the risk of death of this cause is 11.5 times higher. For persons who have quit smoking tobacco products, the risk of lung cancer occurring and being the cause of death is 4-times higher than in the general population (the longer time since quitting, the lower the risk).²⁴

The research on comparing the impact of e-cigarettes to that of standard tobacco products is still ongoing; however, due to the lack of legal regulations on the rules of manufacturing e-cigarettes, the results are inconclusive. Nevertheless, it should be stated firmly that e-cigarettes are not health-indifferent because they contain a great number of the same toxic substances that are present in "classical" tobacco products. Lower doses of these toxins in e-cigarettes speak in their favor, although the disadvantages of e-cigarettes are the following: higher doses of nicotine (causing poisonings and having a high addictive potential), frequent use of e-cigarettes by adolescents and young adults and persons who want to quit smoking, as well as a tendency to use other tobacco products alongside. These products are not present on the market long enough to provide fully reliable epidemiological data for them, as in the case of "classical" tobacco products.²⁵

Quitting consumption of ethyl alcohol

For an adult, 20 g dose of ethanol per day is considered the highest "safe" amount but no amount at all is recommended. Regular consumption of more ethyl alcohol per day than indicated above (especially over 60 g per day) increases the risk of occurrence of malignant neoplasms (breast cancer, colorectal cancer, esophageal cancer, and cancer in the area of head and neck, especially within oral cavity) and cirrhosis, and it increases the overall risk of death. However, most often alcohol causes adverse events leading to death, such as accidents, injuries and violence, which proves that it constitutes a social problem first of all and not only an idiopathic risk factor behind the abovementioned illnesses.^{26,27}

Healthy, balanced diet and supplementation of possible nutritional deficiencies

A diet compliant with the so-called nutrition pyramid is recommended. According to its rules, each meal should contain fruit and vegetables (pyramid base), as well as water as a drink. In addition, cereal products and (whole wheat) bread, dairy, and olive oil should be consumed every day (pyramid middle). Tea and coffee are allowed as well. However, potatoes, meat, fish, eggs, dried fruit, and sweets (pyramid top) should be eaten on a rarer basis. Especially, the intake of fat meat and red meat should be limited. In particular, refined starches and oils, hydrogenated fats, additionally sweetened products, and

processed food with a long expiration date obtained by using a large amount of preservatives are not recommended.^{28–30}

Portion size and total calorific value of meals are also very important for health because both nutritional deficiencies and overweight/obesity constitute key risk factors for many illnesses. Overweight and obesity correlate the most with the risk of circulatory system disorders, atherosclerosis, diabetes mellitus type 2, some neoplasms, as well as an increased overall risk of death.^{26,28} Unfortunately, the number of children and adults with overweight and obesity in Poland is continuously increasing, which should be understood as a disproportion between excessive supply of calories resulting from an unhealthy diet and insufficient physical activity.³¹ Statistical data indicates that 62.8% of adult men and 54.7% of adult women in Poland are overweight, and 23.8% and 26.7% are obese, respectively.³²

A healthy human should obtain all necessary nutrients from food. Only in case of an existing, diagnosed malabsorption, a supplementation with artificial preparations may be considered. An example may be supplementation of iron most often resulting exactly from the malabsorption.^{33,34} An exception from this rule is supplementing vitamin D – such necessity in Poland results from climatic conditions and insufficient synthesis of this vitamin in the period from October to April. In this period, a recommended dose for an adult is 800–2000 IU/day. Vitamin D might also be safely consumed in the period from May to September, especially when the exposure to the sun is low, although then a smaller dose should be considered.³⁵

Regular physical activity

Regular physical activity of at least 500 MET-min/week (500 times the energy needed per a minute spent at rest) is recommended, preferably of aerobical nature. Nevertheless, any activity, even of lower intensity and duration, affects the health positively, reducing the incidence of more than 25 various afflictions, such as circulatory system disorders, neoplasms (especially breast cancer and colorectal cancer), diabetes mellitus type 2, hypertension, cerebral apoplexy, and cholelithiasis, as well as the mortality caused by them.³⁶ Physical activity positively affects mental health as well. It has been proven that doing sports may reverse the already existing mental disorders.³⁷

Care about mental health, social life, family life, and the choice of a place of residence

Taking care of mental health seems equally important as of physical one. It has been proven that a low intelligence quotient (IQ) and mental disorders cause even a several-times increase in the risk of a disability or death before the age of 35. Similarly, mental disorders, such as

depression, increase the risk of death by even 50%. This phenomenon is especially clear and dangerous when a person suffering from such a disease fears stigmatization and hides the illness instead of treating it.^{38–40}

It has also been observed that social isolation and loneliness increase the overall risk of death. This is especially true for elderly people, although it translates, at least in part, to the entire population. Within the group of seniors, this problem is crucial due to usually rarer opportunities of making new acquaintances than in other age groups. At the same time, it has been observed that high satisfaction with life considerably decreases the risk of death.^{41,42} Regardless of these observations, it has been proven that persons who are not in permanent relationships have a higher risk of death but this dependence did not apply to divorced and widowed people.⁴³

It has been observed that the risk of occurrence of circulatory system disorders and some neoplasms, as well as the causal risk of death, is also related to a place of residence. Analyses indicate that residing in rural areas decreases the risk of occurrence of circulatory system diseases but the mortality in persons from these regions caused by these afflictions, as well as by neoplasms, is greater. An increased risk of death in the case of rural areas is explained by worse access to healthcare.^{44,45}

Summary

Nowadays, diseases of affluence are a cause of death even in approx. 80% of cases. By taking a proper care of health, it is possible to significantly limit the overall risk of death by reducing the risk of incidence of diseases of affluence. What is especially important is to undertake actions in with regard to prevention and a healthy lifestyle, such as: preventive vaccinations (including cancer vaccinations), participating in screening tests, quitting drugs, following a balanced wholesome diet, maintaining the right body weight, regular physical activity, and living a satisfying social and family life. Unfortunately, social awareness of a great impact on health exerted by other factors than curative medicine, especially a lifestyle, still remains insufficient. In Poland, it is clearly visible, for example, in a still very low report rate of participation in prevention programs, the lowering immunization index or the high percentage of people smoking tobacco products. Another issue that should be highlighted is the observed disproportion between high-calorie diet and insufficient physical activity, which results in an increased number of persons suffering from overweight and obesity. More problems that lead to a decreased efficiency in a widely understood health promotion is also a quick development of curative medicine, which on one hand, provides new possibilities of treatment and related hopes and expectations; however, on the other hand, it causes also costs – both of the development itself and of new

expensive treatments. In turn, growing costs of health services limit further development of medicine. Thus, the so-called Cochrane's anomaly is created. It means there is a disproportion between social expectations on improving health quality related to higher financial costs invested in healthcare and the self-care of one's own health.

Conclusions

The main conclusion that can be drawn from the above analysis is the necessity of providing a yet wider health education as part of health promotion to broaden knowledge on health-promoting behaviors and encourage participation in prevention programs. It might result in both health improvement and lowering the costs of curative medicine, as statistical data indicates that self-care of one's health among Polish people remains at an insufficient level.

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