

Importance of the peer education in cancer prophylaxis and prevention among high-school students in Poland

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Abstract: Cancer is one of the deadliest groups among non-communicable diseases, with fatalities over 8 million people annually. More than half million Poles live with diagnosed cancer. Despite intensive prophylaxis efforts, cancer morbidity is still increasing. Therefore, authors would like to present the importance and legitimacy of peer education in cancer prophylaxis among high-school students, conducted for 116 youth participants by medical students according to the European Code Against Cancer guidelines. The results show significant increase in performance of knowledge, as well as provision of the opportunity for youth to open up about cancer concerns and health matters in peer-to-peer environment.

Keywords: peer education, cancer prevention, prophylaxis in Poland

1. Introduction

Cancers are a group of diseases included to non-communicable diseases (NCDs) – civilizational illnesses that result from genetic, physiological, environmental, and behavioral factors. Cancer is the second most fatal NCD after cardiovascular diseases, with more than 8 million fatalities each year [1].

According to the Constitution of the World Health Organization (WHO) "Health is a state of complete physical, mental and social well-being and not the absence of disease or infirmity" [2]. In the world of public health, a vigorous discussion is currently held on the new definition of health. Definition, which will also take into account the socioeconomic approach to this most important human good. Within this approach, Health is seen as a Product, generated by the sum of individual, state and healthcare efforts taking care of prevention, early detection and treatment of illnesses in their earliest stages. In the case of cancers, according to the International Agency for Research on Cancer (IARC), more

than 30 to 50% of cancers are prevented, which is mainly related to the elimination of: smoking, alcohol abuse, obesity and physical inactivity, infections, environmental pollution, radiation, occupational carcinogens [3].

Health and cancer prevention are undoubtedly linked to the Sustainable Development Goals 2015-2030 – 17 United Nations priorities which will ensure humanity a balanced existence and harmony of life [4, 5]. In particular correlates to Goal 3 – Ensuring healthy living and promoting wellbeing for everyone of all ages, and Goal 1 – Ending poverty in all forms, in all countries. It has been found that over 60% of cancer deaths occur in low- and middle-income countries [6].

Prevention of lifestyle diseases is also one of the most important priorities of the WHO, which aims to reduce the incidence and premature mortality due to NCDs by 25% by 2025 within the Global Action Plan for Prevention and Control of Non-Communicable Diseases [7].

2. Purpose of the study

The purpose of this study is to present the legitimacy of promotion of health and cancer prevention within peer education, based on the results of the questionnaire regarding European

Code Against Cancer recommendations as well as the subjective questions, feedback and suggestions of participants of the study.

3. Cancer morbidity in Poland

According to the Polish National Cancer Registry, over two times increase of the incidence of malignant tumors has been reported in Poland over the past three decades [8]. Within four years from 2010 to 2014, there was an increase of over 20,000 new cases of malignant cancer diagnoses (up to almost 160,000 diagnoses in 2014) [9]. More than half a million Poles live with cancer diagnosed in the last 10 years.

The most common malignancies diagnosed in men are lung cancer (18.5%), prostate cancer (15.6%) and colorectal cancer (6.8%), while in women most common are breast cancer (21.7%), lung cancer (9.2%) and endometrial cancer (7.4%) [8].

Over the past 60 years, cancer mortality in Poland has also increased almost 2.5 times. In both sexes, the highest rate of mortality is lung cancer (30% in men 17% in women), second in prostate cancer in men (8.4%) and breast cancer in women (13.9%), and colorectal cancer as the third most common cause of cancer death in both sexes – 7.5-7.9% [9].

Comparing the European statistics, the incidence of cancer in Poland is lower than the EU average, which unfortunately does not correlate with the significantly higher malignancy mortality compared to the EU average (20% higher for males, 10% higher for females).

4. Prophylaxis of morbidity and promotion of health in Poland

Measures for the prevention of cancer in Poland have been enacted under the National Program for the Prevention of Cancer of the Ministry of Health. Earlier editions of the Program resulted in, e.g. increase in the availability of radiotherapy throughout Poland, an increase of 31% of patients operated in stage I lung cancer, increase of 5 years survival rate in patients with colorectal cancer by 26% [10÷11]. The program for 2016-2024 consists of five priorities, including (1) health promotion and

primary prevention, (2) secondary prevention, diagnosis and detection of cancer, (3) support for treatment, (4) oncological education and (5) support for the cancer registration system. The project described in the study is organized as part of volunteering without the support of governmental and non-governmental organizations by medical students from the Medical University of Lublin, supports the goal of promoting health and primary pre-vention of cancer among Polish society.

5. Methodology

Within the framework of the undertaken actions, cancer prevention classes were conducted for high school students. Classes in the form of peer education were conducted by students of the Medical University of Lublin in English with simultaneous translation to Polish. Educators have been trained in the methodology of teaching and the subject of the project, including monitoring the effects of educators education (post-training survey) before the initiation of the project. During the seminary for pupils, the recommendations included in the

European Code Against Cancer and the most common misconceptions and myths about cancer functioning in Polish society were presented. The seminar was preceded by a questionnaire covering the most important preventive actions. The survey was repeated after conducting didactic activities in order to monitor the achievements of the didactic objectives. The evaluation of the project included both objective percentages as well as questions and feedback from project participants.

5.1. Peer education

Peer education is a form of health promotion, the main purpose of which is to provide knowledge about health prevention by volunteers – members of the community pre-viously trained in the methodology of conducting didactic classes [12, 13]. Guidelines and recommendations are presented to participants by educators of a similar social profile and experience,

enriched with locally important aspects of functioning in a given society. This aspect consequently provides an accessible form of behavioral change in their lives.

The effectiveness of peer education and its positive aspect is demonstrated by several behavioral theories. In Kelly's popular opinion leader theory, educators play the role of opinion

leaders – people whose opinions shape the worldview of those who respect them [14]. The theory of social learning is based on imitation on the basis of classical conditioning in the

psychological aspect, while the differential association theory is based on the sociological aspect of teaching certain behaviors [15÷16].

5.2. European Code Against Cancer

The European Code Against Cancer is an initiative of the European Commission established in 1987 [17]. The Fourth Edition of the Code currently adopted in years 2012-13, resulted from the project of independent European Union Expert Groups in cooperation with IARC. The aim of the project is to deliver accessible recommendations for citizens of the European Union who can easily prevent the development of cancer in their families and their immediate surroundings. It is also to serve as an information platform containing scientifically proven evidence of a viable lifestyle in accordance with the Code [18÷19].

The Code contains 12 recommendations, which include:

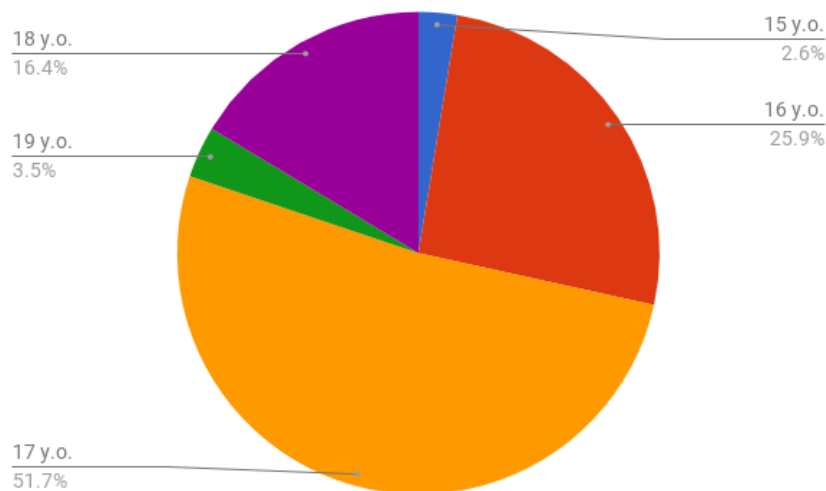
- refrain from smoking tobacco;
- create a tobacco-free environment;

- maintain a healthy weight;
- include physical activity in daily schedule;
- follow the recommendations of healthy eating;
- limit the consumption of alcohol;
- avoid excessive sun exposure;
- protect yourself against carcinogens at work;
- reduce exposure to radon;
- for women – promotion of breastfeeding and reducing hormone replacement therapy;
- vaccine against HBV and HPV;
- participate in early colon cancer, breast cancer, cervical cancer screening programs [20].

5.3. Study group

The study included 116 students from 4 high schools. Classes were held in groups of up to 20 and 30 people. 64% of the respondents were women, 36% men. The average age

of respondents is 17 years (the youngest respondent 15, the oldest 19). 56% came from small and medium-sized towns, 48% from large towns (over 250,000 inhabitants).



Picture 1. Age distribution in study group participants. Source: prepared by the authors.

5.4. The most important aspects of the Code Against Cancer discussed in the survey

5.4.1. Tobacco smoking

Smoking is one of the most important factors for lifestyle diseases. Every 6 seconds, one person suffers from smoking-related disease. In addition, over 90% of lung cancer cases are caused by this addiction. At the age of 18-24 most people start smoking habitually. Each cigarette is a loss of 11 minutes of one's own life, and is able to lead to: lung, tongue, lips cancer, chronic obstructive pulmonary disease,

myocardial infarction, hypertension, aortic aneurysm, urinary cancer and esophageal cancer [21, 22].

Poland has banned smoking in public places since 2010, which has resulted in a significant reduction in exposure to tobacco smoke – according to the Sanitary Inspectorate, more than double decrease of the exposure in food and beverages premises [23].

5.4.2. Breast cancer

Breast cancer is responsible for about 22% of the cases of women cancer in Poland [8]. The risk of developing the disease is increasing by the age of 50, the occurrence of the cancer is also increasing in younger patients. The most important risk factor is the genetic predisposition

associated with BRCA1 and BRCA2 mutations. Hormonal factors and age-related increases can not be ruled out [24]. Even in the absence of genetic mutation, primary prophylaxis should be performed – breast self-examination, breast ultrasound and mammography [25].

5.4.3. Colorectal cancer and healthy diet

Colorectal cancer is responsible in Poland for 12% of cancers in men and 10% of cancers in women. For almost 30 years there has been an almost fourfold increase in morbidity in the Polish population [8÷9]. The most important risk factors include: age (increase in morbidity after 50), genetic factors, diet (excessive red meat consumption, lack of fiber rich foods, vegetables and fruits), physical inactivity and smoking [26÷27]. In Poland several stereotypes about the

disease exists, e.g. that this is a malignant disease only, only invasive screening methods are available and it is only an incurable cancer [28].

Modern medicine offers variety of non-invasive screening programs such as latent blood in stool screening and screening recommended after 50 years or earlier if there are cases of colorectal carcinoma in first-degree relatives, as well as invasive screening such as classic and virtual colonoscopy [29].

5.4.4. Physical activity

Regular physical activity, a minimum of 30 minutes of intensive or 60 minutes of moderate intensity training per day affects oncoprotectivity of every organism [30]. Not only because of the reduced risk of obesity, which is the second most common cause of non-communicable diseases, but also for individual types of cancer, there is a lower risk of occurrence in people who regularly exercise than people leading sedentary lifestyle (from 25% to even 50 lower risk of colorectal cancer, 25% lower risk of breast cancer in postmenopausal women, 20% lower risk of endometrial cancer) [30÷31]. According to the 2012 Central Statistical Office, about 50%

of Poles declare participation in sports and leisure activities, 48.8% of men and 43.3% of women – a significant increase of 8% compared to 2008 [32]. Few respondents, however, in their motivational aspect quote health purposes (9.9%) and maintaining proper physical fitness (17.8%). The majority of participants in this study mention pleasure and entertainment as the most important aspect which physical activity provides (66%). According to the TNS study in 2015, Poland is still below the average for physical activity for EU countries. Cycling (53%), jogging (33%), swimming (29%) are the most popular sports among Poles [33].

5.4.5. Carcinogens in chemical substances

Carcinogenic substances are primarily found in tobacco smoke, automobile exhausts, industrial areas as well as in household chemicals such as e.g. paints, pesticides. The most important recommendation of the Code for these substances is their conscious and careful

use in accordance with attached instructions, preferably outdoors or in well ventilated areas. Another important aspect is the responsible disposal of chemicals to prevent soil and drinking water contamination [17].

5.4.6. Hepatitis type B

The hepatitis B virus (HBV) infected already more than 2 billion people worldwide [34]. About half a million people are infected in Poland, with more than 1,500 annual new infections being reported [35]. HBV is a virus 100 times more infectious than HIV (only one drop of infected blood can lead to infection), counts also as one of the most important carcinogens in the population – causing more than 80% of cases of hepato-cellular carcinoma [36]. In case of HBV infection, it is not possible to eradicate it afterwards. The treatment aims at suppressing the replication of the virus, spreading of the further disease and consequently reducing the risk of liver lesions, cirrhosis and hepatocellular carcinoma. HBV infection is caused by exposure to blood contaminated by the virus, also on sharp tools – such as needles, knives, but also toothbrushes; through sexual contacts and vertically during childbirth [37, 38].

Prevention of hepatitis B infection in Poland includes basic infant vaccination – 3 doses in the schedule – 24h postpartum (including tuberculosis vaccination) then after 1 month and 6 months. Revaccination is recommended for people close to HBV infected patients, healthcare workers exposed to potential virus infected material, people traveling to regions of increased HBV infections (Central and Southern Africa, South-East Asia) to people sharing syringes and HIV-positive patients. Additional vaccination is specifically indicated in patients with immunosuppressive treatment, immunodeficient patients and diabetic patients, depending on serum antibody levels [39÷40].

In primary prophylaxis attention is drawn to the need for vaccination and the avoidance of exposure to contaminated materials.

5.4.7. Human papillomavirus

Human papillomavirus (HPV) is the most common sexually transmitted pathogen. Transmissions occur in more than 50% of men and women [41]. Out of more than 100 types, the most dangerous are HPV 16 and 18 – types of high oncogenic risk responsible for cervical cancer [42].

In Poland more than 40% of early diagnosed cases of cervical cancer equal with progressive stage and indications for only palliative treatment [9]. While the EU countries (Sweden, Great Britain) managed to increase

the rate of cytology performed by over 60-70%, in Poland despite common preventive campaigns, only about 30% of Polish women perform cytological screening [8].

Prophylaxis is primarily a vaccination against human papillomavirus, included in the National Vaccination Program as one of the additional vaccines suggested to conduct before sexual initiation. Vaccination is carried out free of charge in numerous Polish cities for children aged 14-15 [40].

5.5. Questionnaire

The single choice test questionnaire included questions on oncoprotection: physical activity, healthy eating, responsible use of harmful substances, and prophylaxis for colorectal cancer, breast cancer, cervical

cancer, hepatocellular carcinoma, and lung cancer. In addition, data on gender, age and place of residence of respondents were obtained.

5.6. Results

5.6.1. Pre-questionnaire

Correctness of response in the survey before the study was 18% (13% lowest response, 33% highest). The most common correct answers in the pre-survey were to physical activity (62% correct answers) and a healthy diet questions (44% correct answers). In remaining questions, most of the

participants failed to get the correct answers, which remained at 4-8% of the correct answers. In questions about documents and regulations related to cancer prevention recommendations, only 5% of respondents knew about the existence of a European Code Against Cancer.

5.6.2. Post-questionnaire

Post-survey results presented as follows – average score of correct answers 83.6% (highest score 100%, lowest score 73%). The highest score was obtained by 35 people (30% of respondents). The most common errors were questions about the prevention of HBV, HPV

infections. 100% of the respondents after the seminar were able to identify documents containing recommendations for cancer prevention, in particular the European Cancer Code.

Table 1. Results of the study

| | Pre-questionnaire | Post-questionnaire | Increase |
|---------------------|-------------------|--------------------|----------|
| Average correctness | 18% | 83,6% | 65,6% |
| Highest score | 33% | 100% | 67% |
| Lowest score | 13% | 73% | 60% |
| ECAC knowledge | 5% | 100% | 95% |

Source: Prepared by the authors

As shown in the table 1, the general increase in knowledge as a result of conducted peer education was 65.6%.

5.6.3. Questions and feedback

Apart from objective estimation of the results of conducted activities, authors found also very important to analyze the questions and the feedback of the project participants. The most commonly asked questions included possibility of "cancer infection" in the presence of HBV or HPV, as well as genetic predisposition for breast cancer, colorectal cancer, lung cancer. The presence of volunteers was significantly important. Volunteers combined qualities of both student community members with whom participants more easily identify themselves as well as representatives of future health care professionals, with more comprehensive medical responses than high school textbooks. Medical students provided participants with opportunity to ask even very personal questions about their own and family health. Volunteers answered questions in accordance with the guidelines of the Code Against Cancer and their knowledge, but always stressed out that it is important to

contact your GP or specialist for any oncological distress.

In the feedback received from the participants, 100% of the respondents considered the project as an accessible form of obtaining knowledge, as well as 93% indicated their willingness to participate in other editions of the project on other medical education courses offered by educators. 83% of the respondents did not have any problem understanding the content of the English version with the simultaneous translation into Polish. Any doubts of the participants were dispersed during the last questions and answers session and with didactic materials prepared by the educators in Polish language (27% of participants with few problems with the understanding of the presentation, after the completion of the project, the questions session and the materials considered measures taken sufficient to fully understand the topic).

5.7. Discussion – challenges of peer education

Peer education is a form of learning with many advantages – primarily peer health promotion from volunteers – peers with whom a given age group can easily identify, providing knowledge in an accessible way, enriching it with locally important aspects of functioning even unknown to teachers or physicians. These factors will facilitate and

enable accessible the introduction of specific changes in participants' behavior.

The most commonly mentioned challenges include:

- few peer education reports;
- lack of standardized global guidelines and performance statistics;

- need of monitoring peer volunteers knowledge with the help of experts or experienced people in the particular field.

Peer assisted learning (PAL) – a form of peer-to-peer tutoring, a concept already known since antiquity and "Archons" – peers from Aristotle's School, accompanies medical education since its early beginning [43]. Attempts of the didactic regulation of this form of education began in 1973 at the University of Missouri-Kansas City, at the UMCK-SI Center, main purpose of which is to train senior students in imparting knowledge to junior students [44-45]. Similar centers were also established in the United Kingdom, and in 2003 new medical education standards in UK were introduced, according to which medical university graduates need to understand the principles of medical education in the education cycle, learn a variety of teaching and learning techniques, and assume responsibility for supporting their peers in education [46]. Peer

assisted learning has been recognized in the United States and the UK as one of the most valuable learning and development methods – both for tutees and for tutors [47-49].

In the case of peer education, international structuring is a difficult task. Due to the cultural and traditional aspect of health prevention activities, the methodology of ongoing projects to achieve the best possible learning outcomes can vary widely between countries or regions. This makes it impossible to compare and universalize this form of education. Nevertheless, the authors of this project wish to pay particular attention to the need to carry out numerous studies comparing teaching methods in terms of short and long term learning outcomes – increasing knowledge and introducing behavioral change. The authors express their hope that their research will have an impact on increasing the interest in the method and its refinement through the monitoring of learning outcomes.

5.8. Conclusions

In the case of the presented project, peer education was based on the principles of PAL, introduced in the aspect of health promotion and education on medical topics to students not originally associated with medical sciences. The knowledge was provided to tutors in accordance with the latest data available in the Polish nomenclature and statistics and in accordance with the European Code Against Cancer.

The results presented by both the objective part – increasing the knowledge about presented medical issues by more than 60%, as well as the interest of the participants in the knowledge of the projects carried out testify to the success of the method, the need for social initiatives in the field of medical issues and the need to continue actions for the prevention of cancer and health promotion.

5.9. Summary

Cancer is one of the most important challenge in the eradication of non-communicable diseases, largely dependent on many environmental and behavioral factors. Peer assisted learning is a teaching method already known since ancient times, accompanying medicine since its beginnings, and in the form

of peer education – prevention and health promotion – used since the 80-90s of the previous century. The presented paper showcases the success of the method in the fight against false beliefs and social conditions which are conducive to the development of cancer and inadequate prevention.

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