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Ocena ryzyka występowania chorób nowotworowych w populacji osób młodych

Risk assessment of cancer occurrence in population of young people

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Słowa kluczowe: choroby nowotworowe, ryzyko, osoby młode

Key words: cancer, risk, young people

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Streszczenie

Wprowadzenie: Dane epidemiologiczne wskazują na narastającą wartość występowania nowotworów w populacji dziecięcej, młodych dorosłych. Według danych GUS wśród nastolatków między 15 a 19 rokiem życia liczba nowotworów złośliwych w 2008 r. wyniosła 396 i była aż „dwukrotnie wyższa niż wśród dzieci w wieku 10–14 lat”. Choroby nowotworowe w populacji 0–19 roku życia były w ostatniej dekadzie przyczyną zgonu około 7% osób, a umieralność z tego powodu zmniejsza się od około 30 lat, lecz mimo to poziom umieralności w Polsce jest ciągle wyższy niż w innych krajach Europy.

Cel pracy: Celem pracy jest ocena stopnia ryzyka wystąpienia chorób nowotworowych w populacji osób młodych.

Materiał i metoda: Badania przeprowadzono wśród 100 losowo wybranych osób zamieszkujących na terenie powiatu Jarosław w wieku między 16 a 20 rokiem życia. Badaną grupę stanowiło 44% kobiet i 56% mężczyzn. In order to obtain the research material, a standardized questionnaire has been applied including interview, enabling assessment and analysis of occurrence of cancer risk factors.

Wyniki: Najczęściej występującym nowotworem w rodzinach badanych kobiet był rak mózgu (3%), rak trzustki (3%), rak płuc (3%), czerniak (3%) oraz rak piersi (2%). W rodzinach badanych mężczyzn był to rak mózgu (3%) oraz rak płuc (2%). Z pośród osób palących papierosy 13% mężczyzn oraz 9% kobiet wskazało, że pali codziennie. Codziennie spożywa alkohol 2% mężczyzn i 1% kobiet. Kontakt ze środkami ochrony roślin ma 21% mężczyzn i 11% kobiet. Korzystanie z solarium wykazano jedynie w grupie kobiet (9%), częściej niż 2 razy w tygodniu 2% kobiet, kilka razy w roku 7%.

Wnioski: Ryzyko wystąpienia nowotworów dotyczy obu płci. Miejsce zamieszkania nie ma wpływ na powstanie nowotworów. Młodzież w bardzo dużym stopniu narażona jest na promieniowanie ultrafioletowe. Ankietowani prowadzą aktywny styl życia. Badana młodzież nie wykonuje badań profilaktycznych.

Summary

Introduction: Epidemiological data indicate growth of cancer appearance in young people and young adults population. According to Central Statistical Office of Poland, among teenagers between 15 and 19 years old, the number of malignant tumors reached 396 in 2008, and was "two times higher than among children aged 10-14". Cancer diseases were the cause of death of approximately 7% of people aged 0-19 in last decade and the mortality rate has been decreasing for the past 30 years. Though, in Poland the mortality rate is still higher than in other European countries.

Action aim: The goal is to evaluate the risk of cancer occurrence in population of young people.

Material and method: Research has been carried out among 100 random people, aged 16-20, residing Jarosław county. The examined group had comprised of 44% of women and 56% of men. In order to obtain the research material, a standardized questionnaire has been applied including interview, enabling assessment and analysis of occurrence of cancer risk factors.

Results: Brain tumor (3%), cancer of pancreas (3%), lung cancer (3%), melanoma (3%), breast cancer (2%) were most frequent types of cancer in examined women families. As for examined men families, the most frequent types of cancer were brain cancer (3%) and lung cancer (2%). When it comes to smokers, 13% of men and 9% of women confess to smoking everyday. Moreover, 2% of men and 1% of women admit drinking every single day. Additionally, 21% of men and 11% of women have contact with plant health products. Only 9% of women had admitted going to solarium in general: more than twice a week 2% of women; once a year only 7%.

Conclusions: Risk of cancer occurrence, concerns both sexes. Place of residence do not influence cancer factors. Youth, to a large extent, are the most vulnerable to ultraviolet radiation. All interviewees lead healthy lifestyle. The examined youth do not do periodic health examinations.

Introduction

Presumably, cancer diseases, qualified for diseases of affluence, will cause that in the first decade of current century 1 out of 900 adults aged between 18 and 44 will recover from cancer disease underwent during childhood period [1,2].

In Poland in 1995, rate of people death aged 0-19 affected by cancer, comprised of 5,7%. Having excluded children below 1 year old, death rate reached 13,4% in the above mentioned period. In Poland in 90's within the group of malignant cancer morbidity of 100000 in total, about 1300-1400 fell to a group aged 0-19 [3]. In recent years, malignant cancer incidence among children and teenagers in Poland, had been clinging on the level of 1000-1100 of new cases. Between 1996 and 1998 it reached approx. 110-112/1000000, but in the years between 2001-2002 it reached more than 120/1000000 children [4]. Although the cancer diseases in population aged 0-19 in last decade were a cause of approx. 7% of deaths the mortality rate has been decreasing for about 30 years, however in Poland, it continuous to be higher than in other European countries. According to Central Statistical Office of Poland, the amount of malignant cancer among teenagers between 15 and 19 years of age reached 396 in 2008, and was "two times higher than among children aged 10-14" [6]. It has been stated, that in Poland accounted for 8,5 MN of children, there are 1200 malignant cancer incidents recorded among teenagers under 18 years old annually. There have been 15000 malignant cancer morbidity registered among children up to 14 years old in Europe, while in the group aged 15-24 they

have been continually growing up to 20000. In age grade, 0-4 and 15-19, mostly among male children, there has been a noticeable growth of cancer morbidity. Epidemiological data, indicate on growing value of rare cancers among children, young adults. Rare cancers are primary tumors of histological structure typical for adult group, such as: kidney, adrenal cortex, thyroid gland, nasopharynx, tumors of epithelial origin, skin cancers. In Poland advanced type of cancers among people up to 18 years old are to be estimated on the level of 1,5 % of all malignant cancers occurring among children [8,9].

The aim of the study

The aim of the study is to evaluate risk of cancer occurrence in population of young people.

Material and methods

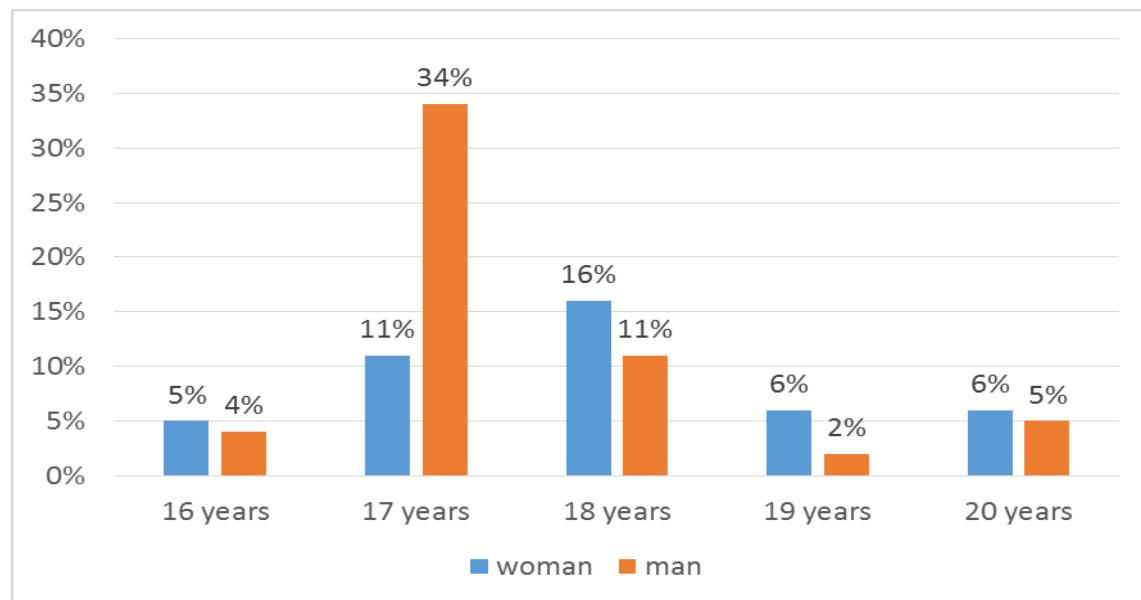
Research has been carried out among 100 random people, aged 16-20, residing Jarosław county. The examined group, had consisted of 44% of women and 56% of men. Rural areas are inhabited by 25% of women and 32% of men, while urban areas are inhabited by 19% of women and 24% of men.

In order to obtain the research material, a standardizes questionnaire has been applied including interview, enabling assessment and analysis of occurrence of cancer risk factors. All the statistical calculations have been performed by use of data analysis software system STATISTICA developed by StatSoft, Inc. (2011), version 10.0. www.statsoft.com., statistical package R version 2.15.1, and Microsoft Excel spreadsheet. Quantitive variables have been characterized by arithmetic mean, standard deviation, median, minimum and maximum value (range), and 95% CI (confidence interval). Qualitative variables have been presented by use of cardinality and percentage value. In statistical analysis the following tests have been applied: Shapiro- Wilk, Levene, Brown- Forsythe, Student's t-distribution, Mann- Whitney U, ANOVE F- test, and Kruskal- Wallis.

Results

Examined group comprised of 34% of men aged 17, 11% aged 18, 5% aged 20, 4% aged 16 and 2% aged 19. Among women, 16% of them were 18 years old, 11% aged 17, 3% of women were 19 and 20 years old, while the least of them, only 5%, were 16 years old (chart1).

Chart 1. Age of the study group.



Brain tumor (3%), cancer of pancreas (3%), lung cancer (3%), melanoma (3%), breast cancer (2%) were most frequent types of cancer in examined women families. As far as examined male families are concerned, the most frequent types of cancer were brain cancer (3%) and lung cancer (2%). The most frequent types of cancer which occurred in examined families from rural areas, were: lung cancer (3%), brain tumor (3%), whereas in urban, cancer of pancreas (3%). 49% of examined man and 27% of women, have not been affected by cancer (chart 2,3).

Chart 2. Presence of cancer in families in the study group.

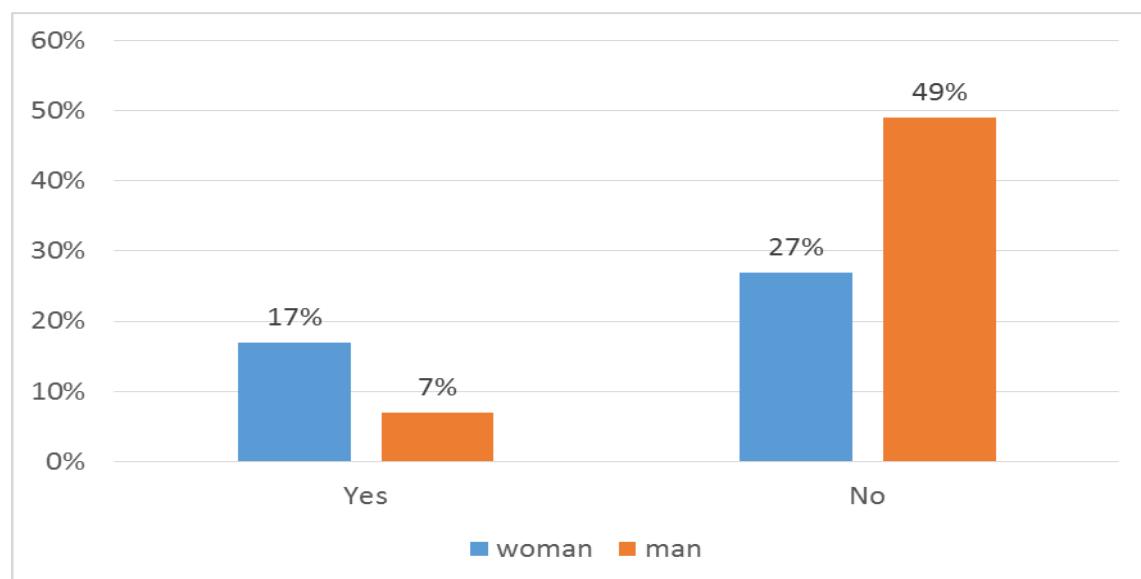
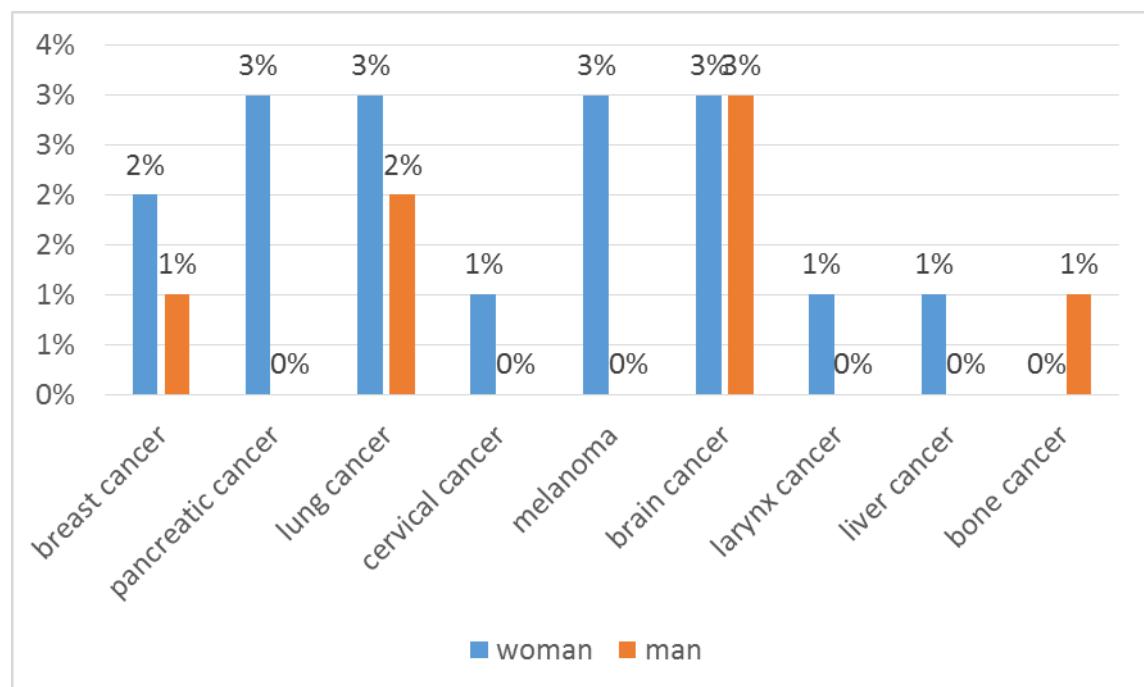
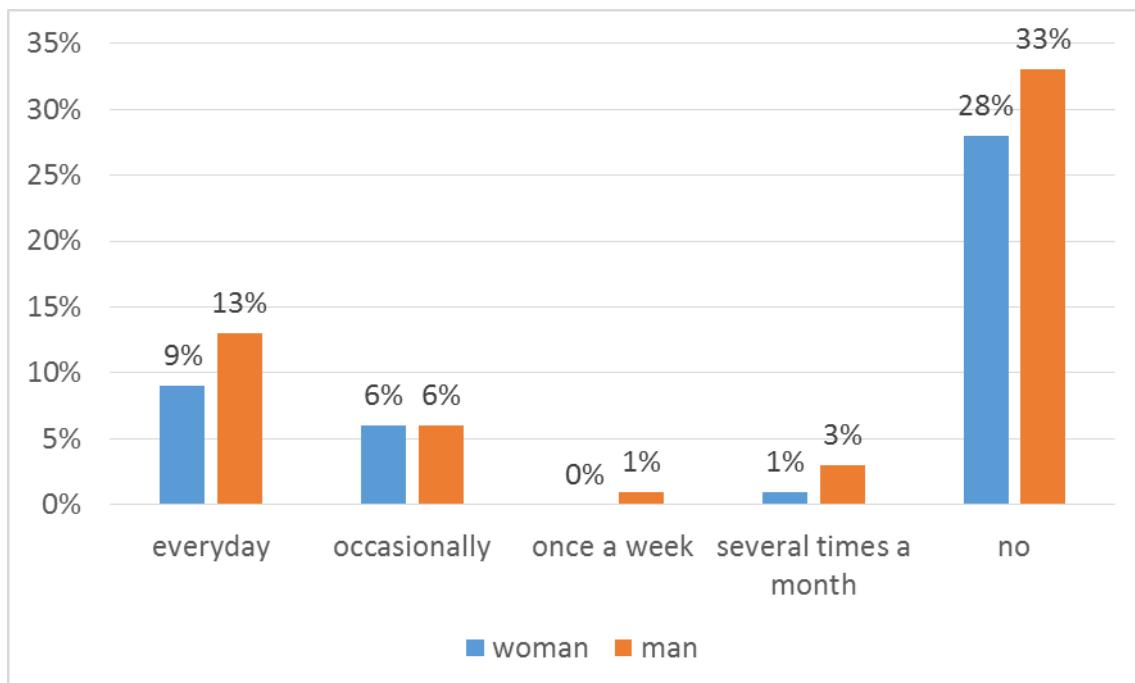


Chart 3. Incidence of cancer in the study group.



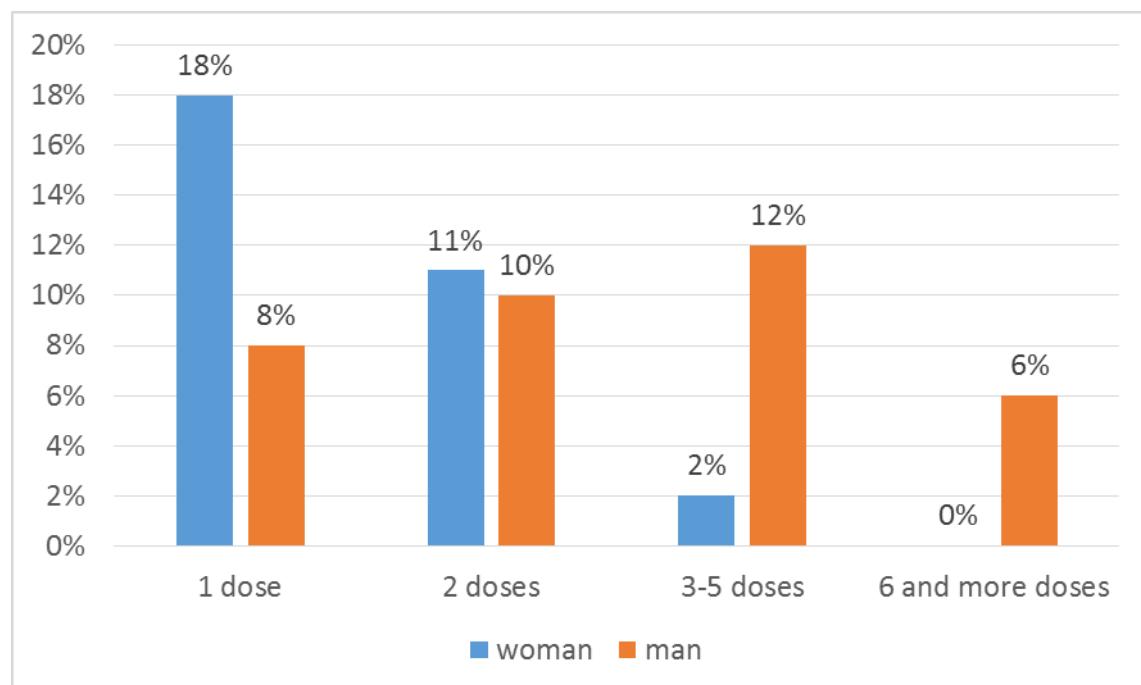
Having taken into consideration relatedness of people who were affected by cancer, in male group, the situation looks as follows: grandfather (57%), grandmother (29%), mother (14%). When it comes to women, statistics read as follows: aunt (23%), grandfather (23%), mother (18%), father (18%) and grandmother (12%). Interviewees from rural areas, had indicated that grandfathers (37%) and mothers (27%) were mainly affected by a cancer disease. While, urban respondents had pointed out, that mostly affected by cancer were: grandfathers (32%) and grandmothers (23%). Having analyzed the exposure of examined group to cancer factors, risky behavior has been estimated (as hazardous). 33% of man and 28% of women, had never smoked. Within smokers group, 13% of men and 9% of women had indicated, that they are chain smoker, whereas 6% of men and 6% of women smoke occasionally. There are 38% of rural interviewees and 23% of urban responders who are non-smokers. The higher index of regular smokers has been noted in town (14%), on the other hand, 8% of interviewees living in the countryside, smoke regularly. Studies show that 27% of men and 11% of women are environmental tobacco smokers (ETS). There are 22% of women and 18% of man exposed to ETS, however 11% of men and 7% of women are exposed to occasional inhaling tobacco smoke. 21% of rural inhabitants and 19% of urban residents are exposed to a tobacco smoke everyday (chart 4).

Chart 4. Smoking cigarettes by the study group.



The research result show, that the biggest group of interviewees, were the occasional alcohol drinkers, both women (26%) as well as men (23%), while 28% of them were rural residents and 21% were urban inhabitants. 2% of men and 1% of women consume alcohol every day. Having estimated, the amount of units of alcohol consumed at once: 3-5 units had been consumed by 12% of men and 2% of women; 2 units by 10% of men and 11% of women, however 1 unit had been consumed by 8% of men and 18% of women. Urban residents (8%) have most frequently been willing to consume alcohol whereas rural inhabitants (6%) less often (chart 5).

Chart 5. Alcohol consumption by the study group.



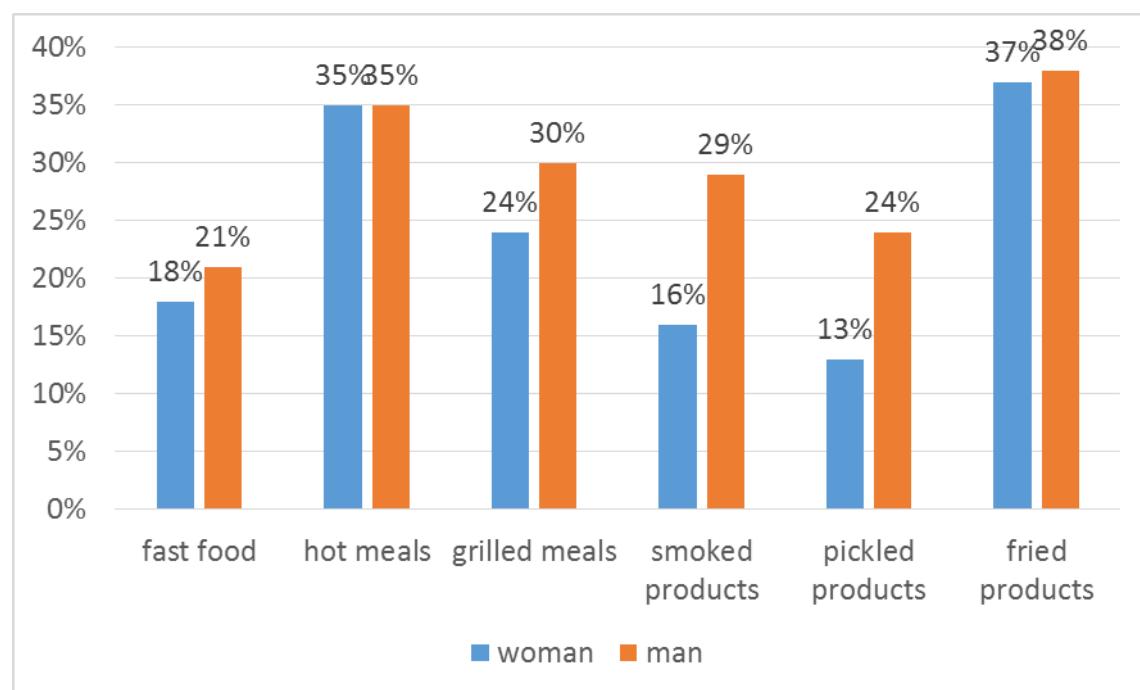
Research data indicate that, 56% of men and 27% of women do not use hair dye containing ammoniac. 17% of female respondents had pointed out that they used hair dye with ammoniac. 46% of rural interviewees and 37% of urban respondents, used ammoniac free dye hair. Dye hair with ammoniac has been commonly used by rural residents (11%), less frequently (6%) used by urban inhabitants. Only 7% of men and 5% of women had admitted using incense sticks. Almost every rural respondent (55%) and 33% of urban, had declared not using incense sticks.

As stated 21% of men and 11% of women had contact with plant health products. Rural residents (24%) are the one who had contact with such products most frequently, and only 8% of urban residents use them. 31% of women and 14% of men, of which 25% were rural and 13% urban residents, had contact with formaldehyde.

Only 9% of women had admitted going to a solarium in general: more than twice a week 2% of women; once a year only 7%. More than half (56%) of women using solarium, did not exceed 5 min duration of the session; 33% spent 6-12 min while 11 % of them spent 13-20 min. The longest duration of the session (13-20 min) had been practiced by 11% of female urban inhabitants. It has been noticed that sunburn occurred in 19% of women and 24% of men, with higher frequency of urban population (23%) than the rural one (20%). Naevi were found in the group of 41% of men and 34% of women, with higher frequency of rural (47%) population than urban one (28%). Taking into consideration place of living, 39% of rural

residents and 18% of urban, had not been using sunscreen; as for gender index 44% of man and 13% of women do not use sunscreen. Having evaluated the effect of ionizing radiation on an examined group, only 18% of women and 10% of man, had an x-ray once a year, however it was being used more often by 4% of man. 15% of men and 14% of women live nearby high-voltage line; 20% are rural residents and 12% urban. Analyzing lifestyle, it has been proven that sedentary lifestyle is led by 7% of women and 6% of man, of which 3% live in rural and 10% in urban area. Fried food is consumed by 38% of man and 37% of female respondents. Having taken into consideration place of living, interviewees living in rural area consume: deep-fried products (40%), hot meals (40%), smoked products (30%), grilled food (20%). On the other hand, urban residents consume: deep-fried products (35%), hot meals (30%), stewed products (25%), grilled products (25) (chart 6).

Chart 6. Style of nutrition of respondents.



There was an attempt made in the examination to estimate the occurrence of early and abnormal symptoms of cancer disease. The majority of examined men (36%) and women (20%), had not observed any alarming symptoms. Those mentioned by the examined group, were: prolonged tiredness, weakening (9% of men, 14% of women), chronic cough (8% of men, 11% of women), painless lymphadenopathy (1% of women), sudden weight loss (1% of men, 2% of women), pending fever (1% of men), frequent morning sickness, emesis (1% of men), dyschezia (1% of men). Having taken into consideration place of living, the most

frequent symptoms were: prolonged tiredness (17% of rural residents), chronic cough (11% of rural inhabitants, 8% of urban residents), loss of appetite (9% of rural and 5% of urban inhabitants).

Discussion

Growing up, in the world of ongoing globalization, causes noticeable threats in health and psychosocial state of mind among children and teenagers [9]. Civilization development, despite positive changes, has become cause of internal homeostasis disorder on grounds of a unstoppable interaction of various harmful external factors, which entails with civilization development. Moreover, civilization development had triggered that human is exposed to influence of carcinogenic factors, responsible for malignant cell transformation at each stage of his life. According to Central Statistical Office of Poland, the amount of malignant cancer among teenagers between 15 and 19 years of age reached 396 in 2008, and was “two times higher than among children aged 10-14” [5]. Germ cell tumors were most frequently diagnosed among boys (53 cases), whereas among girls (30 cases) malignant thyroid gland. Second most frequent type of cancer, among men as well as women, was Hodgkin’s lymphoma (55), which occurred amid girls insignificantly often. 44 people were diagnosed with malignant neoplasm of brain [5]. Cancer among teenagers and young adults occur quite seldom, GP may diagnose such cancer once in his working career, however, due to health, social, economic consequences as well as epidemiological predictions “one out of three persons in his life will have cancer” [11,12], what makes it a significant civilization problem [13]. In highly-developed countries, cancer is, not accidentally, the most frequent death cause among young people between 15-24 years old. Cancer types most often occurring in this age group, are: leukemia, lymphoma, cancer of central nervous system, skeletal system and leiomyosarcoma [13]. Numerous studies both in Poland and worldwide, had proven that identification of cancer risk factors and regular screening, allowed to identify risk groups, mainly among population of young people, as well as lowering risk of morbidity on cancer diseases [14,15].

Environmental factors are those having greatest significance in cancer occurrence.

Studies carried out by American Cancer Society indicated that, smoking is causally connected with at least 16 types of cancer diseases. Regular smokers are exposed to more than 4000 substances that can be found in tobacco smoke, of which the most carcinogenic, are: benzene, dimethyl nitrosamine, ethyl nitrosamine, diethyl nitrosamine, nitroso pyrrolidine, hydrazine,

vinyl chloride [16,17]. Studies carried out by United Kingdom proved that risk of malignant cancer occurrence among children of mothers smoking during their pregnancies is relative. Studies conducted by Sweden, had indicated significant growth of acute lymphocytic leukaemia morbidity amid children of mothers smoking during their pregnancies. Meta-analysis conducted by Boffetta and Co-workers, shown that risk of malignant cancer of haematopoietic, lymphatic tissue, non-Hodgkin lymphoma and other lymphoma, malignant cancer of central nervous system and leukaemia among children of mothers smoking during their pregnancies is relative [18]. Alcohol consumption, including both high alcohol content, as well as those of lower concentration (10-12%), constitute higher factor of cancer morbidity. Latest studies have presented that systematic and long-lasting application of mouth rinse containing alcohol, is favorable factor, as far as development of head and neck cancer is concerned, despite habitual smoking and alcohol consuming. International Agency for Research on Cancer (IARC) had acknowledged that alcohol is 1st class carcinogen of liver tumor [19,20]. Studies conducted by Sweden indicated risk of oral cancer occurrence when consuming more than 50 grams per day. According to the number of researchers, the major significance as risk factor, has wine drinking. With consumption of 35-55 glasses of wine a week (i.e. 11 of wine daily) risk of morbidity total of $OR=1,9$ (95% CI=0,9-3,7) [19]. It had been proven that excessive exposure to ultraviolet radiation, significantly increased risk of pigmented and non-pigmented carcinoma- melanoma and squamous cell cancer [21,22]. Overuse of solarium increase potential risk of melanoma and squamous cell caner occurrence. International Agency for Research on Cancer classified in 2009, solar lamps radiation as carcinogenic factor in relation to skin cancer, equally with other carcinogenic factors, such as arsenic azide, coal tar and soot [23,24,25]. National Institute of Environmental Health Science group of experts claimed in 1998, that there existed limited proof on how exposure to magnetic field had been carcinogenic. World Health Organization (EMF-WHO) claims that magnetic field of value 50/60 Hz is thought to be presumable cancer factor [26]. Ionizing radiation is one of the most frequently mentioned carcinogen, which may induct cancer in all organs where cancer diseases appear independently. Diagnostic radiological images made amid pregnant women, increase the risk of child cancer morbidity, while risk is dependent on radiation dose and number of exposures [27,28]. Exactly identical values of risk were gained in reference to laryngeal cancer occurrence [19]. Formaldehyde was classified by International Agency for Research on Cancer (IARC) as another substance with proven carcinogenic impact on human. IARC had acknowledged, that formaldehyde has impact on nasopharyngeal cancer and leukaemia occurrence among people working in industry [29].

Much attention, as far as identification of carcinogenic factors is concerned, is focused on inappropriate diet. Presumably, approx. 30% of all malignant cancers, are diet dependent as they have impact on nutritional factors. The cancers are as follows: colorectal, breast, oesophagus, stomach and pancreas cancers. High energy consumption and obesity resulting from it, high fat consumption, insufficient amount of dietary fiber, low calcium consumption and antioxidant vitamins, as well as, high sodium intake are nutritional factors, that may cause above-mentioned cancer diseases [29,30]. Diet rich in red and processed meat, increases risk of colorectal morbidity. It is probably connected with the usage of nitrite or nitrate preservatives, heterocyclic amine and polycyclic hydrocarbons, utilized during heat treatment and the amount of heme oxygenase stimulating production of N-nitrosamine compounds in alimentary system, what may lead to cancer development [31]. Other carcinogenic factors are: vitamins deficiency, especially vitamin A and iron, which foster oral cavity cancers [17]. As far as dietetic factors having carcinogenic impact are concerned, the following factors should be listed: high dose of nitrite or nitrate, salted, smoked, corned as well as, fatty or hot food [32,33].

Results

1. Risk of cancer morbidity concerns both sexes
2. Place of residence do not have impact on cancer occurrence
3. Teenagers are highly exposed to ultraviolet radiation
4. Interviewees lead healthy & active lifestyle
5. Examined group of teenagers do not practice periodic health examinations

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