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ORIGINAL ARTICLE

Evaluation of young adults knowledge of risk factors and prevention of colorectal cancer

Ocena wiedzy młodych dorosłych na temat czynników ryzyka i profilaktyki raka jelita grubego

Marta Katarzyna Hreńczuk[1,C-F], **Paulina Sidorczuk**[1,A-C]

[1] *Medical University, Warsaw, Poland*

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Abstract

Introduction and Objective. Colorectal cancer continues to increase its toll and affects a growing population of young people. The solution that can effectively minimize the number of new cases is appropriate prevention and elimination of risk factors, which is why awareness is of major importance in this case. The aim of the study was to analyze the level of knowledge of young people about the risk factors and prevention of colorectal cancer.

Materials and method. 541 people aged between 18–30 living in Poland participated in the study. The research method was a diagnostic survey, and the tool was a self-written questionnaire. Statistical analyses were performed using IBM SPSS Statistics 25.0

Results. A high level of knowledge was achieved by only 5.2% (n = 28) of the respondents, and a low level was found in as many as 66% (n = 357). The older the respondents, the higher their level of knowledge in the field of prevention and risk factors for colorectal cancer (p <0.001). Women and office workers had more knowledge (p <0.001). The place of residence had no influence on the level of knowledge. Over 70% of the respondents would like to broaden their knowledge about prevention and familiarize themselves with the risk factors and prevention of this cancer.

Conclusions. Despite many information campaigns, knowledge about the factors and prevention of colorectal cancer is insufficient. Increasing the availability of information on the subject using appropriate sources could increase the level of knowledge and thus influence health behaviour.

Key words

colorectal cancer, risk factors, prevention, young people

Streszczenie

Wprowadzenie i cel pracy. Nowotwór jelita grubego dotyczy coraz większej części populacji ludzi młodych. Rozwiązaniem mogącym skutecznie zminimalizować liczbę nowych zachorowań na tę chorobę jest odpowiednia profilaktyka i eliminacja czynników ryzyka, dlatego świadomość ma w tym przypadku istotne znaczenie. Celem badania była analiza poziomu wiedzy młodych ludzi na temat czynników ryzyka i profilaktyki raka jelita grubego.

Materiał i metody. W badaniu wzięło udział 541 osób w przedziale wiekowym między 18 a 30 lat, mieszkających w Polsce. Metodą badawczą był sondaż diagnostyczny, a za narzędzie posłużył kwestionariusz ankiety własnego autorstwa. Analizy statystyczne przeprowadzono przy użyciu programu IBM SPSS Statistics 25.0.

Wyniki. Wysoki poziom wiedzy uzyskało jedynie 5,2% (n = 28) respondentów, poziom niski występował aż u 66% osób (n = 357). Im starsi byli badani, tym poziom wiedzy z zakresu profilaktyki i czynników ryzyka raka jelita grubego był wyższy (p < 0,001). Największą wiedzę w badanej grupie posiadały kobiety i osoby pracujące umysłowo (p < 0,001). Miejsce zamieszkania nie miało wpływu na poziom wiedzy. Ponad 70% respondentów chciałoby poszerzyć swoją wiedzę na temat prewencji raka jelita grubego i zaznajomić się z czynnikami ryzyka i profilaktyką tego nowotworu.

Wnioski. Mimo wielu kampanii informacyjnych, jakie są prowadzone, wiedza społeczeństwa na temat czynników i profilaktyki raka jelita grubego jest niewystarczająca. Zwiększenie dostępności informacji na ten temat przy użyciu odpowiednich źródeł mogłoby zwiększyć poziom wiedzy wśród obywateli i w ten sposób wpłynąć na ich zachowania zdrowotne.

Słowa kluczowe

czynniki ryzyka, rak jelita grubego, profilaktyka, osoby młode

INTRODUCTION

Cancer diseases are a growing health problem all over the world. The latest data from the World Health Organization (WHO) emphasizes that in 2020 over 19 million new cases of cancer were diagnosed which resulted in almost 10 million

Address for correspondence: Marta Katarzyna Hreńczuk, Medical University, Warsaw, Poland
E-mail: marta.hrenczuk@wum.edu.pl

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deaths [1]. These are very alarming data, characterized by an upward trend increasing year after year [2].

Cancer diseases are diseases in which appropriate prevention is an important factor that can reduce the number of cases; therefore, awareness is of particular importance [3, 4, 5]. The latest research by the World Cancer Research Fund shows that it is possible to prevent about 1/3 of cases of neoplasms by implementing changes in the daily lifestyle that take into account the elimination of five major risk factors, which include: overweight or obesity, lack of or insufficient physical activity, stimulants, and minimal consumption of raw vegetables and fruits. The initiation and regularity of these activities is entirely dependent on the individual, which gives everyone the opportunity to actively participate in preventing the development of cancer [6]. One of the cancers that occupies the leading position worldwide and in Poland causing morbidity and death is colorectal cancer. Colorectal cancer in Poland is one of the most commonly occurring malignant neoplasms in the population. During the last four decades, the number of cases has increased almost five times in men and more than three times in women.

The number of deaths from colorectal cancer among Polish men has increased since the 1980s more than three times, and has doubled in the female population [7]. Also in the case of this type of cancer, appropriate prevention and reduction of risk factors contributing to its development is highly effective. According to available studies, modifiable nutritional factors are responsible for up to 90% of colorectal cancer cases [8, 9]. Based on data from the American Cancer Society (ACS), there is no proven way to prevent colorectal cancer [10]. However, by controlling modifiable risk factors, one can minimize the risk of developing this disease. Therefore, the choice of research topic is related to the importance and great influence of prevention in minimizing the number of new diagnoses. Since 2000 in Poland, the Screening Programme for the Early Detection of Colorectal Cancer which has been implemented since 2005 from the tasks of the National Disease Control Programme Cancerous [11]. This is a cancer for which the morbidity and mortality statistics continue to increase; therefore, the demand for education is also increasing. According to epidemiological data from 1990–2016, from the analysis of over 143 million people aged 20 -49 in 20 European countries, colorectal cancer is more common in people under the age of fifty. Among twenty-year-olds, the incidence increased threefold, from 0.8 to 2.3 cases per 100,000. inhabitants, with the highest growth dynamics in 2004–2016. The incidence of group colorectal cancer has increased in 12 European countries: Belgium, Germany, The Netherlands, Great Britain, Norway, Sweden, Finland, Ireland, France, Denmark, Czech Republic and Poland. The highest growth dynamics have been recorded in the recent period [12].

OBJECTIVE

The aim of the study was to analyze the level of knowledge of young people about the risk factors and prevention of colorectal cancer.

MATERIALS AND METHOD

The survey was conducted among 541 people living in Poland. The criterion for participation in the study was the age between 18–30 inclusive. The exclusion criterion was a field of study related to medicine and work in a profession directly related to the healthcare sector. Before commencement of the study, each respondent was informed about its purpose, anonymity and voluntary participation, and that completing the questionnaire was tantamount to consent for participation. The research method was a diagnostic survey, and the research tool a self-authored questionnaire made available via Google Forms on the social network (www.facebook.pl). The study lasted from April – May 2021. The questionnaire consisted of two parts: a specific part concerning the knowledge of the surveyed group on the given topic (basic preventive measures and factors increasing the risk of developing this type of cancer), sources of obtaining it, and a second part consisting of questions aimed at obtaining the necessary socio-demographic data of the respondents. The principles of the Helsinki Declaration were applied to the process of conducting this study, and according to the regulations of the local Bioethics Committee, the survey did not require its consent.

Statistical analyses were performed using IBM SPSS Statistics 25. which was used to calculate the analysis of the frequency of responses to particular survey questions. In the next step, summing-up the correct answers to the survey questions served to create an indicator regarding the level of knowledge about risk factors and prevention of colorectal cancer. Selection of less than 50% of correct answers corresponded to a low level of knowledge, 50 -75% to an average level of knowledge, and more than 75% of correct answers indicated a high level of knowledge of the respondent. For the thus created indicator, analysis of the correlation with the age of the respondents (Spearman's correlation) and analysis of the independence between the level of knowledge and socio-demographic variables were conducted using the $\chi 2$ test. The level of knowledge was then compared with the sources from which it was obtained (analysis with the $\chi 2$ independence test). For comparisons of proportions between groups, in order to reduce type I error, a Bonferroni correction was applied. The significance level was $\alpha = 0.05$, and the value of the test probability for the results of individual analyzes was $p < 0.05$.

RESULTS

Women dominated among the 541 respondents. The mean age of the respondents was 23.81 (SD 3.91) years, the youngest participants were aged 18 and the oldest 30 years. The characteristics of the study group are presented in Table1.

47.5% (n = 257) of the respondents were aware of a family history of colorectal cancer, 20.7% (n = 112) provided a negative answer, and 31.8% (n = 172) had no such knowledge. 45.8% (n = 248) of the respondents could not determine whether they were at risk of developing colorectal cancer, 29.8% (n = 161) indicated that they were in this group. As risk factors, the respondents most often indicated improper nutrition, genetic factors, and the presence of polyps of the large intestine. They also often mentioned overweight or obesity, and inflammatory bowel diseases. The least frequently mentioned

Table 1. Characteristics of the study group

Gender	n	%
female	309	57.1
male	232	42.9
Place of residence		
urban	267	49.4
rural	274	50.6
Professional status		
neither working or studying	42	7.8
physical workers	76	14
office workers	182	33.6
university students	104	19.3
high school students	137	25.3

n – number of respondents

factors were gender, smoking, air pollution, excessive alcohol consumption and UV radiation.

Seventeen and four-tenths of the respondents (n = 94) answered that colorectal cancer affects men more often, and 15.2% (n = 82) indicated to women. The remaining respondents maintained (67.5%; n = 365) that gender did not matter. The two most frequently mentioned age groups affected by colorectal cancer were >65 years of age (43.4%; n = 235) and the range between 55–65 years (33.8%; n = 183). 16.5% (n = 89) indicated to the 40–55 age group, and 6.3% (n = 34) indicated the 30–40 age group. Colonoscopy (48.3%; n = 262) and gastroscopy (38.9%; n = 211), as well as complete blood count (33.2%; n = 180), were the most commonly mentioned screening tests for the detection of colorectal cancer. The least frequently indicated tests were: pelvic ultrasound (USG) (4.8%; n = 26) and faecal occult blood test (24.4%; n = 132).

Among the most frequently indicated activities, which, in the opinion of the respondents, are aimed at preventing colorectal cancer, the following were noted: performing screening tests, avoiding red meat in the diet, taking care of systematic physical activity, and a high-fiber diet.

Thirty-six percent (n = 195) of respondents believed that colorectal cancer could be prevented by elimination of risk factors and maintaining an appropriate lifestyle. Almost half of the respondents (48.6%; n = 263) answered negatively, and the remainder (15.4%; n = 83) did not know the answer to this question. More than half of the respondents (58.8%; n = 318) indicated that early detection of colorectal cancer has an impact on the effects of treatment and full recover (22%; n = 119) were of the opposite opinion, and the rest answered that they did not know.

Information on risk factors and prevention of colorectal cancer was sought by 33.8% (n = 183) of respondents, and they were further asked about the sources they used. The most frequently mentioned were the Internet (50.3%; n = 92) and family or friends (30.1%; n = 55). The press, doctor / nurse and television were the least frequently mentioned sources. More than half of the respondents (52.3%; n = 283) pointed to the lack of publicly available information on the prevention and risk factors of colorectal cancer 5.2% (n = 28) indicated that the availability of such materials was sufficient. At the same time, 73.9% (n = 400) declared that they would like to broaden their knowledge of risk factors and colorectal cancer prevention, 23.7% (n = 128) were indifferent, and 2.4% (n = 13) had no such a need.

Analysis of the knowledge of the respondents showed that only 5.2% (n = 28) of the respondents had a high level of knowledge, the average level represented by 28.8% (n = 156), and a low level was found in as many as 66% (n = 357) of the respondents. In order to check whether the level of knowledge of the respondents differed depending on whether they had experienced colorectal cancer in the family, an analysis using the Pearson $\chi 2$ test (independence test) was carried out. It showed significant differences in the response rate, $\chi 2$ (4); = 65.37; p <0.001; V = 0.25. *Post hoc* analysis using the proportion test showed that among those who did not know about the occurrence of colorectal cancer in their families (88.4%; n = 152), the level of knowledge was low in a greater percentage of respondents than among those who answered positively (59.1%; n = 152) or negatively (47.3%; n = 53). Among people with an average level of knowledge, the highest percentage were those who either had or did not have a family history of colorectal cancer – both of these groups differed significantly in terms of their size from those who replied that they did not know. The percentage of those with a high level of knowledge in the group who did not know if any of their family members had a history of colorectal cancer, was significantly lower than among people who did not have cases of cancer in the family (Tab. 2).

Table 2. Awareness of the occurrence of colorectal cancer in respondents› families and the level of knowledge

Level of knowledge	Has any member of your family had colorectal cancer at any time?					
	No		Yes		I don't know	
	n	%	n	%	n	%
Low	53_a	47.3	152_a	59.1	152_b	88.4
Average	46_a	41.1	92_a	35.8	18_b	10.5
High	13_a	11.6	$13_{a,b}$	5.1	2_b	1.2

Columns that do not share the letter index differ from each other at the level of p <0.05 (Bonferroni correction); n – number of respondents

In order to establish the relationship between age and the level of knowledge, was an analysis was performed using the Spearman correlation. The results showed a weak and positive relationship between the variables (rs = 0.23; p<0.001). The older the subjects, the higher their knowledge of risk factors and prevention of colorectal cancer. In order to check the relationship between gender and the level of knowledge of the respondents, analysis using the Pearson $\chi 2$ test was performed. The results showed a significant relationship between these variables ($\chi 2$ (2); = 2.64; p <0.001; V = 0.21). In the group of women, the percentage with high and average levels of knowledge was higher than in the group of men. In turn, the group of men had a higher percentage with a low level of knowledge than in the group of women (Tab. 3).

Table 3. Gender of respondents and level of knowledge

Level of knowledge	Gender			
	Women		Men	
	n	%	n	%
Low	179_a	57.9	178_b	76.7
Average	107_a	34.6	49_b	21.1
High	23_a	7.4	5_b	2.2

Columns that do not share the letter index differ from each other at the level of p <0.05 (Bonferroni correction)

The analysis did not show any relationship between the place of residence and knowledge ($\chi2$ (2); = 3.74; p = 0.154; V = 0.08). This means that regardless of the place of residence, the level of knowledge about the risk factors and prevention of colorectal cancer was similar. Both among rural and urban dwellers, the highest percentage of respondents (over 60%) showed a low level of knowledge.

Analysis with the Pearson $\chi2$ test showed a significant relationship between the professional status of the respondents and their level of knowledge ($\chi2$ (8); = 41.74; p <0.001; V = 0.20). Detailed *post hoc* analysis showed that among the unemployed, students and physical workers, a greater proportion of respondents had a low level of knowledge compared to office workers, among whom 50% had a low level of knowledge. Among office workers, the percentage of respondents with an average level of knowledge was higher than in the group of physical workers and students (Tab. 4).

Table 4. Professional status of respondents and level of knowledge

Level of knowledge	Professional situation									
	I am not working		Physical worker		Office worker		University student		High school student	
	n	%	n	%	n	%	n	%	n	%
Low	32_{a}	78.6	58_{a}	76.3	89_{b}	50.0	$69_{a,b}$	66.3	108_{a}	78.8
Average	$9_{a,b,c}$	21.4	13_{c}	17.1	79_{b}	44.4	$28_{a,b,c}$	27.4	$26_{a,c}$	19.0
High	0_{a}	0	4_{a}	6.6	14_{a}	5.6	8_{a}	6.3	3_{a}	2.2

Columns that do not share the letter index differ from each other at the level of p <0.05 (Bonferroni correction); n – number of respondents

The analysis showed a significant relationship between the awareness of being in the risk group and the level of knowledge of the respondents ($\chi2$ (4); = 64.20; p <0.001; V = 0.24). Among people who were aware of the risk, the percentage of respondents with a high level of knowledge was higher than in the group who did not know whether they were at risk. Among those aware of being in the risk group, there was also a higher percentage of respondents with an average level of knowledge, compared to people who were not aware or did not know whether they were in the risk group. The percentage of respondents with a low level of knowledge was significantly higher in the group of people who did not know whether they were at risk than in the other two groups, and among the people with no awareness – it was higher than among those who were aware. On this basis, it can be concluded that among people who had the news of being in the risk group, the level of knowledge about risk factors and prevention of colorectal cancer was higher than in the other groups (Tab. 5).

Table 5. Awareness of being in the colorectal cancer risk group and the level of knowledge

Level of knowledge	Do you think you are in the risk groupfor developing colorectal cancer?					
	No		Yes		I don't know	
	n	%	n	%	n	%
Low	81_{a}	61.4	72_{b}	44.7	204_{c}	82.3
Average	41_{a}	31.1	77_{b}	47.8	38_{c}	15.3
High	$10_{a,b}$	7.6	12_{b}	7.5	6_{a}	2.4

Columns that do not share the letter index differ from each other at the level of p <0.05 (Bonferroni correction)

Among the respondents who acquired their knowledge from the Internet, the percentage of those with a high or average level of knowledge was higher, and in the group of people who did not use the Internet to broaden their knowledge it was lower. The second correlation occurred for people obtaining information from the press – the percentage of people with a low level of knowledge was significantly higher in this group, and the percentage of people with an average and high level of knowledge was significantly lower than among those who did not use this source. For the remaining sources, the differences in the distribution of the level of knowledge proved to be statistically insignificant. This means that regardless of whether the respondents used television, leaflets, or acquired their information from family and friends of from a doctor / nurse, in order to expand their knowledge, the level of their knowledge was similar.

DISCUSSION

The probability of developing colorectal cancer is about 4–5%, and there is no doubt that this is related not only to individual conditions such as gender, age, family history of this illness, history of chronic diseases, but also to a large extent that this disease depends on lifestyle [13]. In 2019, the European Commission established the fight against cancer as its top priority for the healthcare sector [14], and supports the activities of the Member States by actions aimed at cancer prevention and early detection. An important step towards improving the health situation in the field of oncology is persuading young people that the belief that colorectal cancer is 'an old man›s disease' is not true. Erroneous thinking may be the cause of limited self-care and lack of interest in this subject. Appropriate education in the field of risk factors and prevention of colorectal cancer addressed to this age group will allow the earlier implementation of appropriate measures, and thus minimizing the number of new diagnoses.

In the analyzed group, almost half of the respondents could not determine whether they were at risk of developing colorectal cancer. Such people should even more so deepen their knowledge and avoid factors predisposing to the development of the disease. Unfortunately, only one-third of the respondents searched for information on the topic under study, and the lack of knowledge makes adequate prevention impossible. It is an optimistic fact that over two-thirds of the examined group would like to broaden their knowledge; therefore, they should be supported in doing so. This is of particular importance as nearly half of the respondents had a positive family history of colorectal cancer. It is disturbing that as many as 48.6% of the respondents believed that appropriate prevention is insufficient to prevent colorectal cancer. Other results were obtained by Markowska et al. [15] who examined knowledge of selected social groups on the prevention of colorectal cancer. In the study, the percentage of respondents who did not believe in the advisability of prevention was only 5%. As many as a quarter of respondents, in their own analysis, did not believe that early detection of colorectal cancer has an impact on treatment and recovery, which may result in the lack of mobilization to perform screening tests.

An important issue is the fact that dietary factors are responsible for 30% of cancer diseases, and in the case of

colorectal cancer, proper nutrition is able to prevent as much as 90% of cases [8,9]. In the author's own study, the vast majority of respondents knew that improper nutrition is a risk factor for increasing the risk of developing colorectal cancer. Unhealthy diet was the risk factor identified by only 32.3% of undergraduate students in Jordan, 18.2% of whom studied medicine [16]. People studying or working in the medical sector were excluded from this study because, for obvious reasons, they would have a greater level of knowledge. In another large study involving 20,710 people from 21 European countries, 70% were aware of dietary factors [17]. The above data are completely different from those in a study by Smelik-Markiewicz et al. [18], where as many as a quarter of the respondents did not see a relationship between the food consume and the risk of developing cancer. In a meta-analysis by O'Sullivan et. al. [19], significant risk factors for the early development of colorectal cancer included a first-degree relative's history of illness, hyperlipaemia, obesity, and alcohol consumption (high significance compared to non-drinkers). While smoking was a suggestive risk factor, the association was not statistically significant. In studies from Ghana, only 7.5% of participants had a good level of recognition of risk factors, with smoking being the most frequently identified, and dietary factors the least [20]. Studies from China also indicate a low level of knowledge in the field of knowledge of risk factors for colorectal cancer [21]. In many studies, smoking has been the most commonly recognized cancer risk factor [22–27].

In addition to risk factors, screening is also important in the prevention of colorectal cancer, and can help prevent 60–90% of colorectal cancer cases [28]. In the 2004 European Population Survey, 51% of respondents had knowledge about screenings [17]. Unfortunately, in the current study, only 48.3% of respondents indicated colonoscopy as a screening test for colorectal cancer, and only 24.4% stated that the examination of faeces for occult blood is also included in this group of tests. The respondents did not demonstrate knowledge in this area, including gastroscopy and complete blood counts in screening tests. Al-Naggar et al. [29], who examined the level of knowledge about screening tests for colorectal cancer among young Malaysians, obtained much better results, as many as 60.7% of responses indicated colonoscopy and 62.3% to testing faeces for occult blood. The Jordanian respondents presented a low level of knowledge regarding research on the early detection of colorectal cancer [30]. Interestingly, while the respondents had a low level of knowledge about screenings, they indicated them as the most important preventive measures.

Since 2000 in Poland, the Colon Cancer Screening Programme has been implemented, but the reporting rate for colonoscopic examinations within the programme is still alarmingly low [31–34]. Numerous studies mention the reasons for not reporting for a colonoscopy, including the lack of knowledge about the possibility of such a test [31, 32, 36–37]. The programme covers people of a certain age who were not covered by our own research. Researchers analyzing recent epidemiological data [12] of colorectal cancer incidence in the young population emphasize that consideration should be given to extending colonoscopy screening for early detection of colorectal cancer. However, such action would be too costly and ineffective; therefore the criteria for its implementation should be strictly defined. As of today, it is urgent to start educating young people by professionals, and it seems reasonable to include these topics in the school curriculum.

Statistical analysis of the results of the author's own study show that the level of knowledge of the respondents differed depending on age and gender. The older the subjects, the higher their knowledge of risk factors and prevention of colorectal cancer prevention. This is consistent with other studies in which knowledge of cancer risk factors improved with age [26, 38–42]. Other results were obtained by Al.-Azri et al. [23], in whose study young participants identified more risk factors than older participants, which was explained by the greater accessibility of young people to the Internet and social media. In the author's own study, women presented a significantly higher level of knowledge, results which correlated with those obtained in the study by Rocke [43], in which male gender was also a predictor of low knowledge, and with the study by Hamza et al. [44] in which the level of knowledge was statistically significantly related not only to gender, but also to monthly income, place of residence, education level, sources of information about colorectal cancer, and family history of colorectal cancer. In studies by Markowska et al. [15], knowledge did not significantly differ depending on gender; however, the place of residence was statistically significantly associated with the level of knowledge, with the highest percentage of people with a low level of knowledge living in the countryside. In the authors' own study, both among rural and urban dwellers, the highest percentage of respondents showed a low level of knowledge ($p > 0.05$), and the office workers among the respondents had a higher level of knowledge ($p < 0.05$). A significant relationship was observed between the awareness of being at risk of developing colorectal cancer and the level of knowledge of the respondents. Importantly, those who were aware of the risks showed a greater level of knowledge. The author's own study also found among the significant predictors of the level of knowledge: awareness of the presence of colorectal cancer in the family, and that it was people who had such awareness who had a higher level of knowledge, and sources of information; those who used the Internet had a higher level of knowledge, and those who obtained knowledge from the press presented a lower level of knowledge ($p < 0.05$).

Despite the fact that the problem of cancer, including colorectal cancer, isoften discussed, the level of knowledge of people in many countries is insufficient. This is a global problem which is independent of ethnic or cultural origin. More attention should be paid to educating societies by selecting appropriate methods and tools. A broadly understood prevention programme should include not only screening tests, but also very important changes in everyday eating habits and lifestyle. Increasing general knowledge on risk factors and prevention of colorectal cancer has the potential to improve unfavourable epidemiological outcomes.

The presented study covered only the scope of knowledge about risk factors and prevention of colorectal cancer. No questions were asked about the motivation of young people to lead a healthy lifestyle. Although the study covered a group of 541 people, this group does not seem to be entirely representative, even though the results in the analysis are comparable with other studies, most of which come from Asia. The limitation of the study is the lack of control for confounding variables.

CONCLUSION

Although young people have a wide access to information, the obtained results indicate insufficient knowledge of the studied group about the risk factors and prevention of colorectal cancer. It is worth considering the inclusion of oncology education in the school curriculum, which should be provided by health care professionals on a regular basis and from an early age. It is important to emphasize the importance of healthy behaviours, preventive examinations, the importance of early detection in the effectiveness of cancer treatment using appropriate sources, so that they reach young people.

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