The level of knowledge among residents of the Lower Silesian Voivodeship regarding bladder cancer prevention

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Abstract

Aim. The main objective of the research was to investigate and analyse the current level of knowledge in the community of the Lower Silesian Voivodeship regarding bladder cancer prevention.

Methods. The research was conducted among 100 patients (50 women and 50 men) surveyed during April-May 2024. A diagnostic survey method was used, employing a proprietary questionnaire with 40 questions that were further analysed statistically.

Results. The largest age group was 18-30 years (44%). Most respondents (51%) lived in cities with populations over 500,000. Higher education was reported by 58% of participants, 33% had secondary education, 7% vocational, and 2% primary education. The results indicate a statistically significant relationship between place of residence and perception of bladder cancer. There are also differences in opinions about the availability of information on bladder cancer prevention as well as between gender and knowledge of bladder cancer symptoms.

Conclusions. Residents of towns with populations between 2,000 and 50,000 are most aware of the risks associated with bladder cancer. There is a lack of information on bladder cancer prevention in the region, necessitating intensified educational efforts. Women have greater knowledge of bladder cancer symptoms than men, and higher education correlates with better awareness of risk factors. Tobacco product smokers have limited knowledge about prevention, suggesting the need for targeted education for this group.

Keywords: bladder cancer, prevention, smoking, cancers.

Introduction

Bladder cancer affects an ever increasing number of people every year. According to data obtained by the Global Cancer Observatory (GCO) in 2020, bladder cancer ranks 6th in terms of incidence and 9th in terms of mortality in men worldwide. In Poland, however, it has been the third cause of mortality (Ferlay et al., 2024). In 2020, the Lower Silesian Voivodeship was the third region in Poland in terms of the bladder cancer incidence, and the fourth regarding mortality in both sexes. Furthermore, forecasts conducted by the National Cancer Registry indicate a possible increase in deaths in the region by 2024 (Wojciechowska et al., 2023).

Although tobacco smoking remains one of the main risk factors, the influence of dietary, environmental, occupational factors and genetic predispositions on the development of this disease is increasingly considered as well as correlation with age, gender and place of residence. Understanding these complex mechanisms may contribute to more effective methods of prevention, which is a key element leading to maintaining the homeostasis of the body and reducing the possibility of disease (Saginala, Borsouk & Sukumar, 2020).

Reports from the National Cancer Registry in 2020 indicate a sudden and upward trend in morbidity in men over 50. A similar pattern can be observed in mortality which increases in men, especially aged over 55. In women, the crude rate of morbidity and mortality increases after the age of 55, but it is almost four times lower than in men. It is considered that almost 60% of people

with bladder cancer survive the five-year period from the diagnosis of the disease. The low level of five-year survival rate in Poland results from the diagnosis of cancer at its late stage. This may be caused by the lack of knowledge of about the prevention of bladder cancer (Halaseh et al., 2022).

Aim

The main objective of the study was to examine and analyse the current level of knowledge of the Lower Silesian Voivodeship residents regarding bladder cancer prevention. The specific objectives included assessment of the relationship between sociodemographic factors and the knowledge of the respondents and demand for specific prevention-related information. Namely, the authors wanted to assess whether there is a deficit of information on bladder cancer prevention and whether the place of residence, gender, level of education and smoking tobacco products affect the level of knowledge.

Methods

The study was conducted in a group of 100 respondents (60 women and 40 men), in the period April - May 2024. Data was collected among people belonging to local Internet groups gathering residents of the Lower Silesian Voivodeship. Participation in the study was voluntary and completely anonymous. All people qualified for the study were informed about its purpose and course and about the possibility of withdrawing from participation at any stage.

Inclusion criteria for the study were: age ≥ 18 years, expressing informed consent to participate in the study and residence within the Lower Silesian Voivodeship. On the other hand, exclusion criteria included: age < 18 years, lack of informed consent to participate in the study and residence outside the Lower Silesian Voivodeship.

The study used the diagnostic survey method. The tool was an original survey questionnaire which contained 40 questions. The first six questions concerned sociodemographic data. One question checked whether respondents were current smokers of tobacco products. Three questions referred to the assessment of their own habits and knowledge about a healthy lifestyle on a numerical scale from 1 to 5, where 1 meant very bad, 2 - bad, 3 - moderate, 4 - good and 5 - very good. Respondents made declarations by marking the appropriate response on the scale for their feeling. The next 15 questions were directed towards the prevention and epidemiology of bladder cancer. Four questions were also used regarding symptoms and 11 questions focusing on risk factors and prevention of bladder cancer. The objects of the study were ordinal, nominal and discrete variables. The Shapiro-Wilk test was used to verify the normality of variables. The chi-square test was used to verify the relationship between nominal and ordinal variables. In order to verify the significance of differences between the number of groups greater than two, the nonparametric analysis of variance Kruskal-Wallis was used. For

the number of groups equal to two, the unpaired Wilcoxon test was used. For all analyses, the significance level of 0.05 was assumed. The analysis was performed using the R package and Excel spreadsheet.

Results

The study included a group of 100 people registered in the Lower Silesian Voivodeship, of whom 60% were women and 40% were men. The largest age group was 18-30 years old (44%), followed by age groups 41-50 (26%), 51-60 (12%) and 31-40 (10%). The smallest group were people over 60 years old (8%). Among the respondents, 51% live in a city with more than 500 thousand inhabitants. As much as 19% of the respondents live in a city with 100 thousand to 500 thousand inhabitants, 11% - in a village or in a city with 50 thousand to 100 thousand inhabitants. The remaining 8% of the respondents live in a city with 2 thousand to 50 thousand inhabitants. The basic sociodemographic and clinical data describing this study sample are presented in the Table 1.

Table 1. *Sociodemographic characteristics of respondents (N=100).*

		n	%
Gender	Women	60	60,00%
	Men	40	40,00%
Age	18 – 30	44	44,00%
	31 – 40	10	10,00%
	41 – 50	26	26,00%
	51 - 60	12	12,00%
	Above 60	30	30,00%
Place of residence	City over 500 thousand inhabitants	51	51,00%
	City 100 - 500 thousand inhabitants	19	19,00%
	City 50 - 100 thousand inhabitants	11	11,00%
	City 2 - 50 thousand inhabitants	8	8,00%
	Village	11	11,00%
Education	Higher	58	58,00%
	Secondary	33	33,00%
	Primary	2	2,00%
	Vocational	7	7,00%
Employment status	Unemployed	8	8,00%
	PhD student	1	1,00%
	Retired	6	6,00%
	Part-time job	2	2,00%
	Full-time job	56	56,00%
	Student	20	20,00%
	Student/Part-time job	3	3,00%
	Student/Full-time job	4	4,00%

Marital status	Single	50	50%
	Married	34	34%
	Divorced	9	9%
	Widows/widowers	4	4%
	Informal relationships	2	2%
	Divorced but in relationship	1	1%
Nicotine addiction	No	50	50%
	Smokers	29	29%
	Smoked in the past	21	21%

Source: own research

The next research topics included relationship between the place of residence and perception of bladder cancer as a serious medical problem. The results are given in Table 2.

Table 2. *Place of residence vs. perception of bladder cancer as a serious medical problem.*

Place of residence	Bladder cancer as a serious medical problem in Poland			P-value
	No	I don't know	Yes	
City over 500 thousand inhabitants	5.88%	78.43%	15.69%	
City 100 - 500 thousand inhabitants	5.26%	68.42%	26.32%	
City 50 - 100 thousand inhabitants	27.27%	54.55%	18.18%	**0.04898**
City 2 - 50 thousand inhabitants	00.00%	37.50%	62.50%	
Village	18.18%	54.55%	27.27%	

Source: own research

A p-value=0.04898 was obtained. There is a statistically significant relationship between place of residence and perception of bladder cancer.

Only 7% of respondents believe there is enough information available on bladder cancer prevention, while 70% of them believe otherwise and 23% don't have a clear opinion.

The authors also wanted to assess whether there is a difference in the level of knowledge about the symptoms of bladder cancer between women and men. The respondents were asked the following questions:

- Do you consider the presence of blood in the urine as a possible symptom of bladder cancer? Correct answer: yes.
- Do you consider pain in the lumbar spine as a possible symptom of bladder cancer? Correct answer: yes.
- Do you consider dysuria (painful urination) as a possible symptom of bladder cancer? Correct answer: yes.
- Do you consider the presence of swelling in the limbs as a possible symptom of bladder cancer? Correct answer: yes.

For providing a correct answer, the respondent received one point. For an incorrect answer, they received 0 points. To check the significance of the difference in the result of the knowledge test about the symptoms of cancer urinary bladder by gender, the unpaired Wilcoxon test was used.

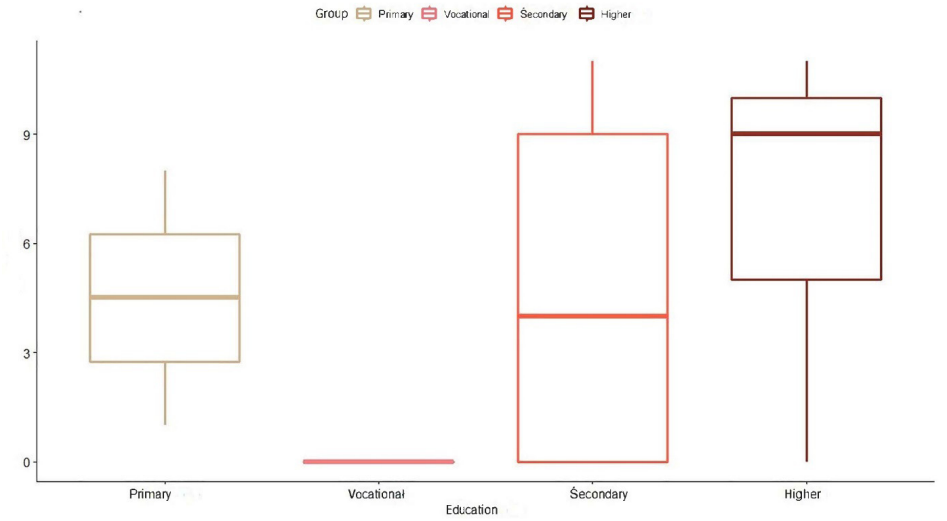
Women in the self-reported survey regarding knowledge about symptoms of bladder cancer obtained an average score of 2.72, while the average score for men was 1.38. The standard deviation for women (1.21) was lower than for men (1.39), which indicates an increased similarity of responses among women. The results are presented in Fig. 1

Figure 1. Knowledge test about symptoms of bladder cancer in men and women.

Source: own research

The next research step involved assessment of the correlation between the level of education and respondents' knowledge about risk factors for bladder cancer. The Kruskal-Wallis test was used. to test the differences between groups and then the Wilcoxon signed-rank test with Bonferroni correction to further distinguish those differences. Statistically significant results were obtained between secondary and vocational education, higher and vocational education, and higher and secondary education. People with secondary education obtained a higher result than people with vocational education. People with higher education obtained a higher result than people with vocational or secondary education. With increasing education, knowledge of respondents about the risk factors of bladder cancer increases. The results are presented in Fig. 2 and in Tab. 3.

Figure 2. Respondents' knowledge about risk factors vs. level of education.



Source: own research

Table 3. *Knowledge about the risk factors of bladder cancer and the level of education*

Level of education	Primary	Vocational	Secondary
Vocational	1	-	-
Secondary	1	**0.01697**	-
Higher	0.63460	**0.00029**	**0.00431**

Wilcoxon test with Bonferroni correction

The authors also wanted to assess whether smoking tobacco products indicates greater knowledge about cancer prevention. A chi-square test of independence was used to check the difference between smokers and non-smokers. No difference was detected beween those two groups (p=0,06513).

Finally, the perceived level of knowledge about bladder cancer prevention was assessed. The participants do not generally rate it as very good. The most common answer was "Bad" in 39% (n=39) of respondents, followed by "Very bad" in 29% (n=29), "Moderate" in 23% (n=23), and the result "Good" and "Very good" was marked by 5% (n=5) and 4% (n=4) respondents, respectively.

Discussion

Residents of cities with a population of 2-50 thousand inhabitants in 62.5% maintain that bladder cancer is a serious medical problem in Poland. However, no other place of residence exceeded the threshold of 30% in positive response to the question asked. The negative answer was most often given among residents

of cities between 50-100 thousand inhabitants, given by 27.27% of respondents. Cities with more than 500 thousand inhabitants received the most frequent answer "I don't know" with 78.43%. In the study conducted by Roupret M. et al., concerning the level of knowledge about bladder cancer among the French population, an analysis was made of the perception of bladder cancer as a serious threat on a scale from 0 to 10, where 0 means no seriousness and 10 very serious. The results showed that the inhabitants of France assess bladder cancer as a serious threat at 6.2 points, which is the lowest among the five different types of cancers. For the French, the following were a greater threat than bladder cancer: cervical cancer (6.4 points), breast cancer (6.4 points), colon cancer (6.6 points) and lung cancer (8.0 points) (Rouprêt et al., 2020). According to 70% of the surveyed inhabitants of the Lower Silesian Voivodeship, there is currently not enough information about prevention of bladder cancer. The answer "I don't know" was given by 23% of respondents, and the answer suggesting sufficient information was given by only 7% of respondents. A survey on knowledge and perception of bladder cancer among the local population of Ghana revealed a very low level of knowledge among residents due to lack of education and access to information on risk factors, symptoms, prevention and treatment of bladder cancer (Duduyemi et al, 2020). In the Netherlands, Westhoff E. et al. indicated a significant deficit of knowledge on risk factors and prevention of bladder cancer. As reported by the respondents, this situation occurs due to insufficient provision of the above-mentioned health information by family doctors, which indicates the need to implement and increase patient education during medical visits on healthy lifestyle habits and bladder cancer prevention (Westhoff et al., 2019). Demirci A. and Özgür B. C., operating at the Turkish Aksaray University, conducted an analysis of Google Trends™ regarding the interest in searching for information on bladder cancer in the browser from January 2004 to December 2019. The researchers proved a downward trend in recent years in the interest in this type of cancer among Internet users. They also indicated a lack of increase in search interest during the annual bladder cancer awareness campaign, conducted in May, which means that its intended purpose was not met. However, Google Trends™ was recognised as a useful platform in the analysis and study of information needs among the public, as well as an indispensable source for assessing the course of online health campaigns (Demirci & Özgür, 2020).

In our study, women possessed a higher level of knowledge about the existing symptoms of bladder cancer than men The average score obtained by women was 2.72, and in men this average was 1.38. The standard deviation in women was 1.21, while in men it was 1.39, which indicates a greater consistency of answers among women. Temircan Z., the author of the text on the study of knowledge, attitudes and health habits related to bladder cancer among the inhabitants of Turkey, indicated a higher level of knowledge about bladder cancer in men than in women. However, he noted that a significant group of respondents were men (94.5%), which could have influenced the result (Temircan, 2024). Men also showed a higher percentage of knowledge

about bladder cancer, where 29% obtained a result corresponding to a good level of knowledge, while in women this result indicated 8.7%. These data was collected by Nassir A. et al., and concerned the assessment of knowledge and awareness of bladder cancer among the general population of western Saudi Arabia (Nassir, 2023).

In our study the highest level of knowledge was demonstrated by the population with higher education (average 7.64, n=b), then with secondary education (average 4.76) and primary education (average 4.5), while respondents with vocational education received zero points. Temircan Z. in his research work also indicated the presence of a relationship between education and the level of knowledge, attitudes and health behaviour regarding bladder cancer. Temircan indicated the negative impact of a lower level of education on the level of knowledge of the Turkish population (Temircan, 2024).

The impact of education on the level of knowledge about bladder cancer was also mentioned by Kopcych B et al.. The collected questionnaires helped them to notice an increased level of knowledge about fluid therapy in the prevention of bladder cancer among the population with higher education (58.8%). Subsequently, secondary education was obtained by 35.6%, and primary education by only 12.5% of correct answers (Kopcych et al., 2023).

However, in one study on primary prevention of bladder cancer, the level of education was not indicated as a factor influencing the state of basic knowledge among the residents of the state of Texas in the United States of America (Wood et al., 2015).

Studies conducted in the western part of Saudi Arabia showed that the group classified as "low knowledge" included people with no education (100%) and with education other than university and secondary (91.7%), while the group with a "good level of knowledge" included the majority of representatives of university (28.8%) and secondary (20.1%) education (Temircan, 2024).

People smoking tobacco products showed a lower level of knowledge regarding the definition of the word prevention than non-smokers. Only 24.14% of smokers indicated the correct definition, while 46.48% of non-smokers gave correct answers. Kopcych B. et al., in their own study, obtained results indicating increased awareness among tobacco smokers (86%) of the negative impact of nicotine contained in cigarettes (Kopcych et al., 2023). Data collected from the state of California in the United States of America showed a higher level of knowledge of active smokers (90%) about tobacco smoking as a major factor in bladder cancer than those who used to smoke (64%) and those who are not smokers (61%). However, exposure to chemical risk factors for bladder cancer was more often indicated by non-smokers (61%) than by those who used to smoke (49%) and those who are tobacco smokers (55%) (Bassett et al., 2014).

The majority of residents of the Lower Silesian Voivodeship do not assess their knowledge of bladder cancer prevention as very good. The most common answer was "Bad" (39%, n=39), followed by "Very bad" (29%, n=29). The answer "Moderately" was selected by 23% (n=23) of respondents, while the answers "Good" and "Very good" were given the lowest scores, with 5% (n=5)

and 4% (n=4) indications, respectively. In studies on patients' knowledge of bladder cancer, the assessment of the level of patients' knowledge was indicated as low by almost 97% of respondents (Farag et al., 2023).

Conclusions

People in the surveyed region perceive bladder cancer as a serious medical problem, depending on the place of residence. Residents of bigger communities most often assessed this problem as serious.

All respondents believe that there is a deficit of information on the topic, which highlights the need to intensify educational and IT activities in this area.

Women demonstrated a higher level of knowledge about the symptoms of bladder cancer than men, which may suggest the need to increase educational activities in men.

The level of education influences knowledge of the respondents about the risk factors for bladder cancer. The higher the level of education, the higher the awareness of the risk factors associated with this cancer

People who smoke tobacco products do not know more about prevention than people who currently do not smoke. This shows the need to intensify educational activities among smokers.

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