

The attitude of the female students of medical and non-medical fields of studies towards the cervical cancer prophylaxis

Postawy studentek kierunków medycznych i niemedycznych wobec profilaktyki raka szyjki macicy – badanie porównawcze

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Słowa kluczowe: zachowania zdrowotne, profilaktyka, rak szyjki macicy.

Abstract

Introduction: The mortality of women with cervical cancer is one of the main problems of oncology. Poland is a country with high morbidity and mortality for this type of malignancy. In 2007, the incidence was 11.8 and the mortality was 5.0 per 100.000. Despite the availability of free Pap tests and many prevention campaigns, the incidence in Poland has remained at a constantly high level for several years. This prompted us to examine the degree of knowledge of different groups of the population about prophylaxis

Aim of the research: To determine the knowledge and attitudes of students towards the prevention of cervical cancer.

Material and methods: The study group are students of medical and non-medical faculties, who in total accounted for a panel of 112 people. The study was conducted at two universities: the Medical University of Warsaw and Kielce University of Technology. The diagnostic survey method: the study took the form of an anonymous questionnaire consisting of 25 closed questions on cervical cancer and its prevention. To determine whether there is a relationship between the subsidiaries, we used statistical methods such as test compliance χ^2 for a confidence level of $p = 0.05$, and r -Pearson's correlation coefficient.

Results: Training in the medical school is associated with having more knowledge in the field of medicine.

Conclusions: Although the respondents most frequently declared that the main reason for them reporting to a gynaecologist was for regular check-ups, the percentage of the response was insufficient to conclude that students appreciate the role of secondary prevention of cervical cancer.

Streszczenie

Wprowadzenie: Umieralność kobiet z powodu raka szyjki macicy jest jednym z głównych problemów onkologicznych. Polska należy do krajów o wysokiej zachorowalności i umieralności na ten rodzaj nowotworu złośliwego. W 2007 r. współczynnik zachorowalności wynosił 11,8, natomiast umieralności 5,0. Pomimo dostępności darmowych badań cytologicznych i wielu kampanii profilaktycznych liczba zachorowań w Polsce od kilku lat utrzymuje się stale na wysokim poziomie. Skłania to do przeanalizowania stopnia wiedzy różnych grup populacji na temat profilaktyki.

Cel pracy: Określenie wiedzy i postaw studentek wobec profilaktyki raka szyjki macicy.

Materiał i metody: Grupę badaną stanowiły studentki kierunków medycznych oraz niemedycznych, łącznie 112 osób. Badanie przeprowadzono na dwóch uczelniach wyższych: Warszawskim Uniwersytecie Medycznym oraz Politechnice Świętokrzyskiej. Zastosowano metodę sondażu diagnostycznego. W badaniu wykorzystano anonimową ankietę składającą się z 25 zamkniętych pytań dotyczących raka szyjki macicy i jego profilaktyki. W celu określenia, czy istnieje związek pomiędzy zaleźnymi, zastosowano metody statystyczne, tj. test zgodności χ^2 dla poziomu ufności $p = 0,05$ oraz współczynnik korelacji r -Pearsona.

Wyniki: Kształcenie się na uczelni medycznej wiąże się z posiadaniem większej wiedzy z dziedziny medycyny. Chociaż respondentki najczęściej deklarują, że głównym powodem, dla którego zgłaszają się do lekarza ginekologa, są regularne badania profilaktyczne, odsetek tej odpowiedzi jest zbyt niski, aby twierdzić, że studentki doceniają rolę profilaktyki wtórnej raka szyjki macicy.

Wnioski: Postawy badanych respondentek Warszawskiego Uniwersytetu Medycznego z obszaru profilaktyki raka szyjki macicy odbiegają od oczekiwanego społecznie wzorca, w związku z tym należy dążyć do zwiększenia aktywnego udziału studentek w programach profilaktycznych raka szyjki macicy.

Introduction

The mortality rate caused by cervical cancer is currently a major oncologic problem, as well as one of the most frequently diagnosed cancers of the reproductive organs. Regularly presented data is critical because due to cervical cancer, five women die every day, and each year the cancer incidence rate fluctuates between 4300 and 5000 women, and the mortality rate is 200,000 per year. Poland is classified as a country with high morbidity and mortality for this type of malignant tumour. In 2007, the incidence rate was 11.8, while the mortality totalled 5.0 per 100,000. Despite the growing availability of free cytology testing, as well as numerous prophylaxis campaigns, the incidence in Poland has remained at a constantly high level for several years [1, 2].

In Poland, cervical cancer most often develops in women at the age of 35 to 59 years. This is the time when women often devote themselves to taking care of their children or decide to focus on their career, being oblivious to their own health. The problem is that when they finally decide to examine their health, it frequently turns out to be too late [3]. These days, due to the easily accessible sources of medical knowledge and advanced health care, the number of female deaths caused by cervical cancer should be reduced. To achieve this goal, it is crucial to make women aware of the importance of regular check-ups, and to teach them so-called health awareness, which is based on elementary knowledge in the subject of health behaviours, prevention, and harmful factors and their effective elimination. Advancement in epidemiological studies concerning cervical cancer is a great challenge for health researchers, as well as for the other professional groups qualified to act as professional health educators. The causes of poor epidemiological situation, should be searched in health behaviors of students and examining the mechanisms for responding to social expectations [4].

The above attitudes result from an awareness, which can be defined as the ability to realise the conceptual categories of what is the object of perception and experience; the highest level of mental development typical for the human being; the brain's capability to reflect reality in a relatively objective way, conditioned by the social forms of human life and shaped during the course of its historical development [5].

The main postulate of the thesis was that students of medical fields of studies are much more aware of cervical cancer prophylaxis than are students of non-medical courses. However, it does not influence their attitude towards the prophylaxis (they do not attend cytology tests more frequently) (H0).

It was also stated that the students of medical courses possess a greater knowledge concerning cervical cancer and its prophylaxis than did the non-medical students (H1). Having not differentiat-

ed the research group in terms of profiled studies, it was assumed that students in general do not perform cytology tests regularly (H2). What is more, another assumption was that the faculty does not affect the frequency of cytology tests (h3).

Last but not least, it was also stated that the main source of information gathered on this particular issue for the students from medical faculties is the course in which they participate, while for the students of non-medical faculties it was the Internet.

Aim of the research

The aim of the research was to compare knowledge and to demonstrate differences in the attitudes of female students of medical and non-medical courses towards the prophylaxis of a cervical cancer.

Material and methods

The survey was conducted among female students of universities from medical and non-medical courses. The total number of respondents that filled the questionnaire was 112, of whom 50% were (56 students) studying Public Health at the Medical University of Warsaw (where medical subjects such as anatomy, human physiology, microbiology, and epidemiology prevail in the core curriculum), and 50% (56 students) were female students of the Technical University in Kielce attending courses of Management and Production Engineering (in which the core curriculum does not include subjects of a medical nature).

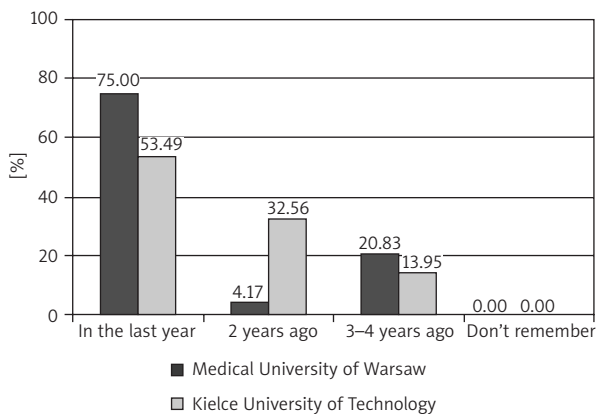
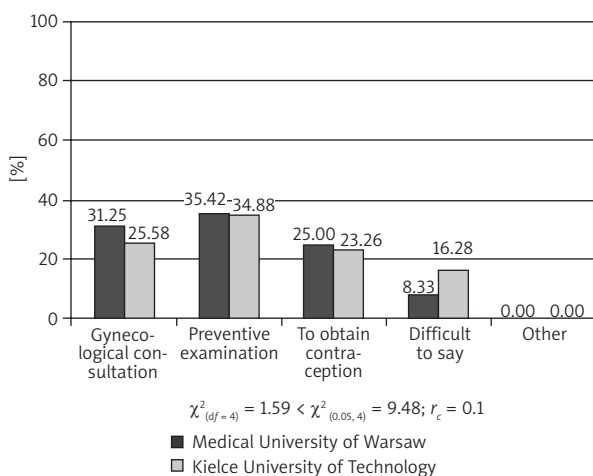
The method used to carry out there search was a diagnostic survey. It was prepared in the form of an anonymous questionnaire consisting of 25 closed-end questions concerning cervical cancer and its prophylaxis. To determine whether there is any correlation between the subsidiaries, a statistical methods such as a χ^2 test for a confidence level of $p = 0.05$ was used, as well as r -Pearson correlation coefficient. The relationship between the kind of university course and the state of knowledge about the prevention of cervical cancer, and also the frequency and purpose of cytology tests was studied in relation to the type of institution. The aim of the research was to compare knowledge and to demonstrate differences in the attitudes of female students of medical and non-medical courses towards the prophylaxis of cervical cancer (Table 1).

Results

It should be noted that very often knowledge of health issues, and primarily taking part in preventive examinations, is associated with the place of residence. Therefore, one of the questions in the survey addressed this matter. The largest percentage of respondents of both medical and non-medical universities were from large cities (over 500,000 inhab-

Table 1. Characteristics of the group. Source: own study

Place of residence	Medical University of Warsaw		Kielce University of Technology		Total	
	n	%	n	%	n	%
City of over 500 thousand residents	38	67.86	21	37.50	59	52.68
City of less than 500 thousand residents	10	17.86	15	26.79	25	22.32
Village	8	14.28	20	35.71	28	25.00
Total	56	100.00	56	100.00	112	100.00

**Figure 1.** Time of last gynaecological visit**Figure 2.** Motivation among the respondents to attend a gynaecological visit

itants) – the Medical University of Warsaw, 67.86% (38 people) and the Technical University in Kielce 37.50% (21 people). A significantly larger group of respondents from the countryside was seen among students of Kielce University of Technology – 35.71% (20 people). The smallest percentage of students filling in the survey lived in towns of less than 500,000 inhabitants – a total of 22.32% (25 people).

In the modern world the problem of the occurrence of cancer is becoming more and more common,

and it affects people at a younger and younger age. One of the research objectives in the present work was to determine the level of knowledge and the attitudes of female students towards the prevention of cervical cancer. The survey conducted among female students aimed to assess their knowledge of and attitude towards preventive examinations in the direction of prevention of cervical cancer. The results presented below demonstrate that the level of such knowledge is very diverse.

The collected data allow us to conclude that the majority of respondents said that they took advice from a gynaecologist. It should be noted that the female students of Kielce University of Technology admitted more often that they did not visit a gynaecologist – 23.21% (13 people), compared to respondents from the Medical University of Warsaw – 14.29% (8 people). The results of the test were $\chi^2 = 1.46$ and $r_c = 0.1$. A connection between taking advice from a gynaecologist and the type of college was not confirmed statistically, although the Pearson correlation coefficient showed a weak relationship. Perhaps the decisive factor here is the place of residence.

The data presented in the following graph (Figure 1) show when the surveyed female students last visited a gynaecologist. The most frequently declared answer was “last year” among both respondents of medical – 75% (36 people) and non-medical universities – 53.49% (23 people). A much larger percentage of respondents studying at Kielce University of Technology – 32.56% (14 people) compared to the female students of the Medical University of Warsaw – 4.17% (2 people) answered “2 years ago.” It may be noted also that the answer “3–4 years ago” was more frequent among the female students of Public Health – 20.83% (10 people). The results in this case indicate greater regularity of visits among female students of a medical university, which may be because of their broader medical knowledge.

The results of the answer to the question of why the surveyed female students visit a gynaecologist are presented in Figure 2. The analysis of the survey results illustrated in the following diagram shows that respondents of a non-medical university had a bigger problem with identifying what prompts them to visit a gynaecologist – 16.28% (7 people). Apart from this factor, other results are comparable for the two

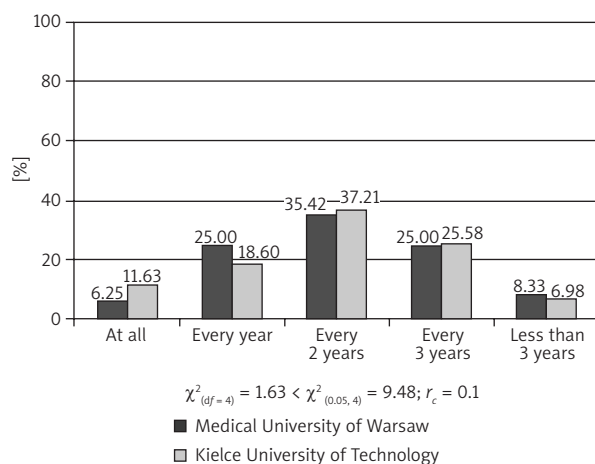


Figure 3. The frequency of attending a Pap smear by the respondents

groups. The results of the test are $\chi^2 = 1.59$ and $r_c = 0.1$. The dependence of the purpose for which students visit a gynaecologist on the type of university was not confirmed statistically, but the Pearson correlation coefficient showed a faint strength of the relationship.

Tested students also responded to the question of how often they have a Pap smear (Figure 3). An analysis of the responses to this question confirmed the hypothesis that knowledge is not transformed into health behaviours among female students of a medical university. The results of the test were $\chi^2 = 1.63$ and $r_c = 0.1$. The dependence of the frequency of cytology on the type of college attended was not confirmed statistically, but the Pearson correlation coefficient showed a faint strength of such a relationship.

The data presented in Figure 4 evaluates whether female students know how often Pap smears should be performed. Analysing the chart below shows the difference in the level of knowledge between medical university female students and non-medical ones. It can be observed that, according to the hypothesis, female students of a medical faculty have a broader knowledge on the presented issue, which, however, does not translate into a difference in the frequency of having a cytological examination. The results of the test are $\chi^2 = 9.11$ and $r_c = 0.2$. The dependence of knowledge about the frequency of performing cytology on the type of college attended was not confirmed statistically, but the Pearson correlation coefficient showed a faint strength of the relationship.

The answer to the question of whether respondents know what the Pap smear is performed for is presented in Figure 5. The data shows that the vast majority were aware that the Pap smear is to check whether cervical malignancies arise. However, in most cases the correct answer was given by the students of the Medical University of Warsaw – 89.29% (50 people). In contrast, respondents of Kielce University of Technology

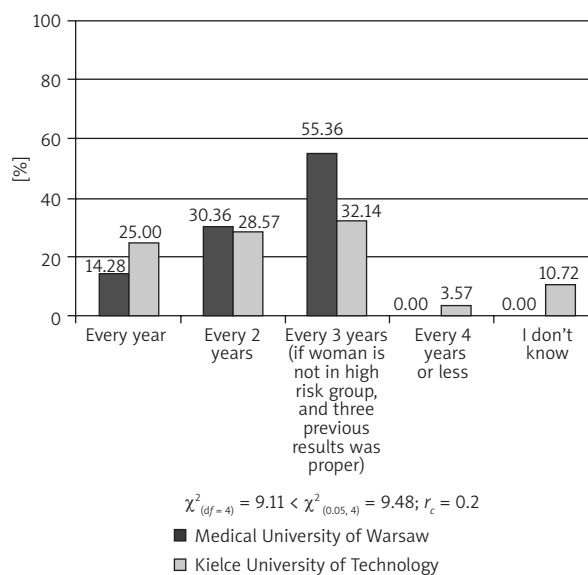


Figure 4. Recommended frequency of cytology in the opinion of the respondents

often admitted that they did not have knowledge on the subject – 19.64% (11 people). A small percentage of respondents were mistaken in their opinion that cytology is performed for diagnosis of genital herpes – in this case also more answers came from non-medical university students – 5.36% (3 people). At this point, female students of medical universities demonstrated a greater knowledge of the matter, which is consistent with the hypothesis.

Do female students know that cervical cancer is a disease caused by a virus? The following graph (Figure 6) shows that the medical university respondents again demonstrated a greater knowledge – as much as 92.86% (52 people) knew that it is a disease of viral aetiology, whereas only 33.93% (19 people) of the non-medical university respondents shared the same opinion. Kielce University of Technology female students were much more incorrect, answering: “cervical cancer is a hereditary disease” – 21.43% (12 people) (Medical University of Warsaw 3.57% – 2 people), and “it is a disease caused by bacteria” – 8.39% (5 people) (Medical University of Warsaw 3.57% – 2 people). The graph demonstrates that none of the female students from a medical university stated “I do not know”, whereas the opposite was the case with students from Kielce University of Technology – up 35.71% (20 people) said that they did not have any knowledge on this subject. The results of the test are $\chi^2 = 33.76$ and $r_c = 0.4$. The dependence of knowledge on the type of college was confirmed statistically; Pearson correlation coefficient showed the average strength of the relationship. In this case, the knowledge given to medical university students is reflected in the correct answers to the above question.

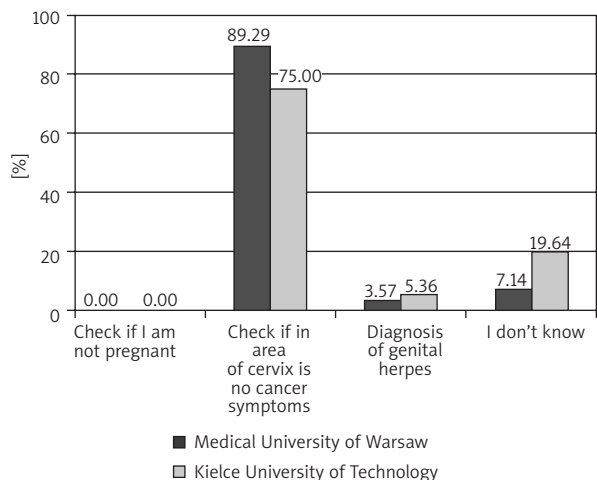


Figure 5. The purpose of the performance of cytology in the opinion of the respondents

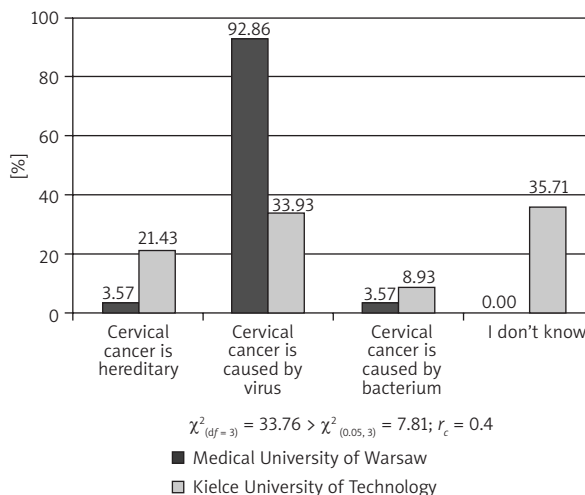


Figure 6. Cervical cancer as a disease caused by a virus, in the opinion of the surveyed students

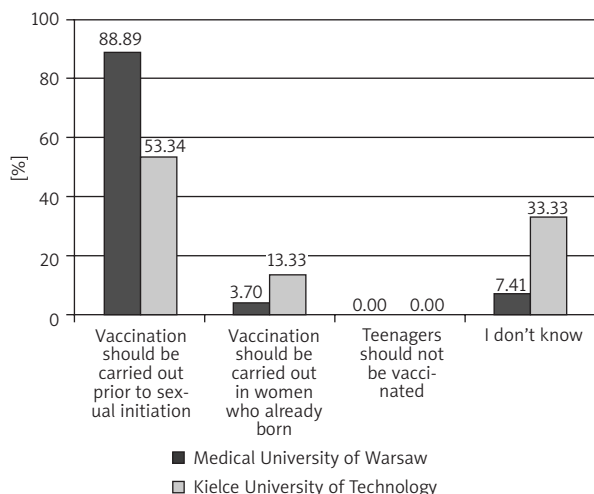


Figure 7. Knowledge about adoption of the HPV vaccine among students

The aim of one of the questions of the survey was to verify the knowledge of the respondents regarding the meaning of the term HPV. The survey results show that about 60% more female students of the Medical University of Warsaw, in comparison to Kielce University of Technology students, understood the meaning of the abbreviation HPV. As many as 82.14% (46 people) respondents of the non-medical university said that they did not know what was meant by HPV. Analysis of the chart below shows very clearly the difference in the level of knowledge of surveyed female students. The results of the test are $\chi^2 = 41.32$, and $r_c = 0.5$. The dependence of knowledge on the type of college was confirmed statistically; the Pearson correlation coefficient indicated a high strength of the relationship. This result is not surprising, since the answer to the question requires detailed medical

knowledge. This may also justify the lack of knowledge of non-medical university students. The same applies to the next question.

The respondents also answered a question about the availability of a vaccine against the virus. Almost all medical university students surveyed – 96.43% (54 people), said that they knew of the existence of such a vaccine, whereas the proportion of non-medical university students who answered the same was only 26.79% (15 people). It should be noted that a much higher percentage of respondents from Kielce University of Technology – 73.21% (41 people) said that they had never heard about a vaccine against HPV.

Analysis of the data contained in Figure 7 shows that most of the students knew that vaccination against HPV should be done before starting regular sexual intercourse. However, this awareness was again significantly higher for respondents from the Medical University of Warsaw. The cause can be the same as in the two previous questions: the nature of medical knowledge. Students from Kielce University of Technology, compared to the other group, gave incorrect answers (“vaccination should be given to women who have already given birth”) more often – 13.33% (2 people), and they also confessed to a lack of knowledge on the subject – 33.33% (5 people). None of the respondents replied “vaccination should not be performed on teenagers”.

The answer to the question of whether students know that the HPV vaccine is chargeable is shown in Figure 8. It can be seen that correct answer was most frequent (the vaccine is chargeable). About 15% more respondents from the Medical University of Warsaw, compared to the Kielce University of Technology students, responded in such a way. A larger proportion of respondents studying at the university in Kielce – 26.67% (4 people) mistakenly claimed that the vac-

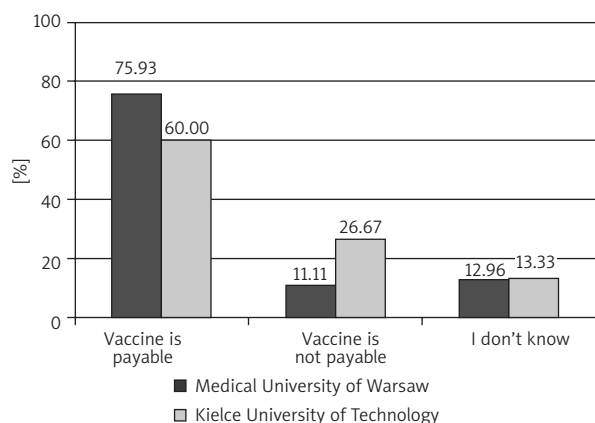


Figure 8. The view on payment for the vaccine against HPV among the respondents

cine is not chargeable. About 13% of medical university students and non-medical students admitted that they did not know the answer to this question. The percentage of correct answers can be considered satisfactory.

The data contained in the chart below (Figure 9) show the level of knowledge on routes of infection with HPV, among the respondents. Students usually chose the correct answer – sexual intercourse and intimate surroundings, dermal contact, rarely kisses, insect bites, and using common utensils/dishes. Detailed analysis showed that the the highest number of correct answers were given by the students of the Medical University of Warsaw; for example, only 39.29% (22 people) of surveyed female students from Kielce University of Technology knew that dermal intimate surroundings contact is a means of transmission of HPV, while the percentage of the response in the case of students from the medical university was about 57% higher. In addition, the non-medical university students frequently gave incorrect answers, e.g. 30.36% (17 people) of female students from Kielce University of Technology believed that kissing can transmit the virus, and only 10.71% (6 people) of Warsaw University respondents shared the same opinion. Similarly, in the response category “insect bites” – none of the students of the Medical University and 16.07% of Kielce University of Technology students believed that these are routes of HPV infection. On the basis of these data, it can be concluded that the respondents from the Medical University of Warsaw were more aware of the routes of infection with HPV, and this is in accordance with our expectations. The test results are $\chi^2 = 27.69$ and $r_c = 0.3$. The dependence of knowledge on the type of college was confirmed statistically and the Pearson correlation coefficient showed an average strength of the relationship.

Another problem that should be examined is whether students know that condoms reduce the risk

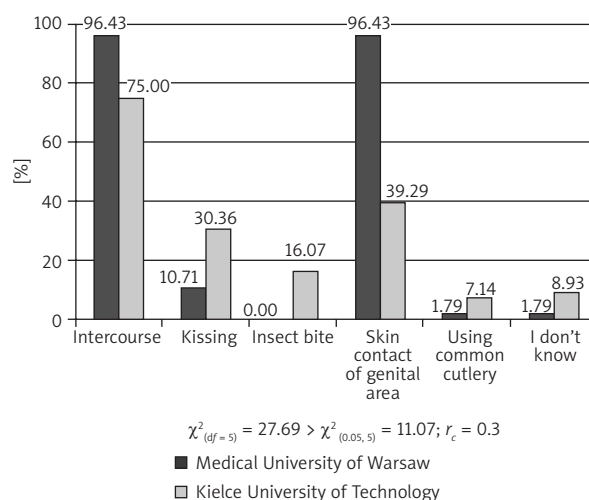


Figure 9. Knowledge of the routes of HPV infection among the surveyed students

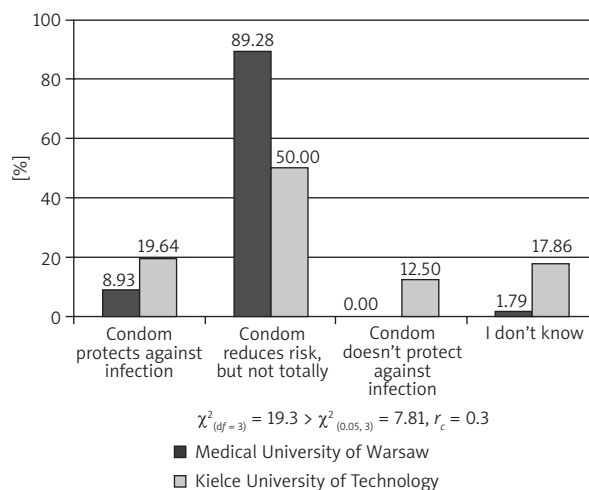


Figure 10. Condoms as protection against HPV infection in the opinion of the respondents

of HPV infection but do not give one hundred percent protection (Figure 10). Most respondents were aware of the fact, but there were opposing opinions, mainly from the non-medical university students. The correct answer was marked by 89.28% (50 people) of surveyed students at the Medical University of Warsaw, and 50.00% (28 people) of Kielce University of Technology students. As many as 19.64% (11 people) of non-medical university respondents said that the use of condoms provides complete protection against infection, and that opinion was shared by 8.93% (5 people) of the medical university respondents. The response that condoms do not protect against HPV was given by 12.50% (7 people) of respondents studying at Kielce University of Technology, while none of the surveyed students of the University of Warsaw failed to give such an answer. In addition, about 16%

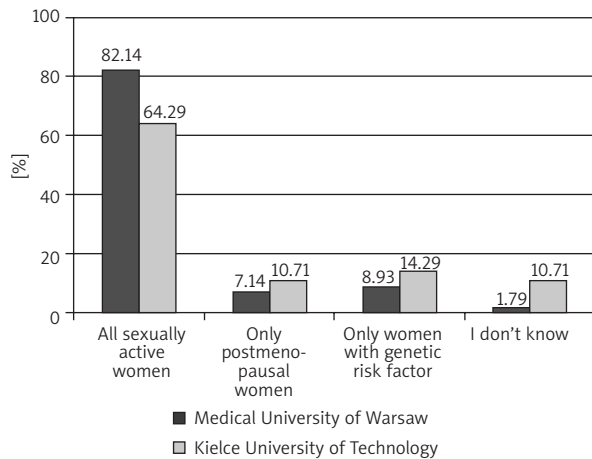


Figure 11. Knowledge about the vulnerability of women to cervical cancer among the respondents

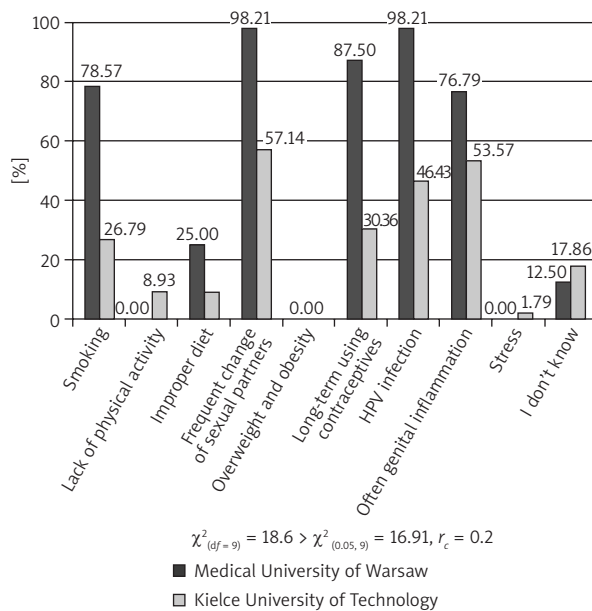


Figure 12. Students' knowledge of the risk factors for cervical cancer

more non-medical university respondents admitted that they had no knowledge on the subject. This result may also indicate the lower propensity to risky sexual behaviour among medical university students. The results of the test is $\chi^2 = 19.3$ and $r_c = 0.3$. The dependence of knowledge on the type of college was confirmed statistically, and the Pearson correlation coefficient showed an average strength of the relationship.

Do students know that all women who have began sexual intercourse are at risk of cervical cancer? The following graph (Figure 11) shows that the majority of respondents are aware of the fact: Medical University of Warsaw – 82.14% (46 people), Kielce University of Technology – 64.29% (36 people). It should be noted,

however, that some of the respondents claimed that cervical cancer affects only women who have a genetic predisposition. This view was shared by 14.29% (8 people) of the respondents from non-medical universities, and 8.93% (5 people) of the medical university students. The answer that cervical cancer risk affects only postmenopausal women was given by about 3% more respondents from Kielce University of Technology, compared to the surveyed students of the Medical University of Warsaw. Again, a higher percentage of respondents from the university in Kielce – 10.71% (6 people) – said that they did not have any knowledge on this subject. Such an outcome could also affect the propensity to engage in risky sexual behaviour.

The level of surveyed students' knowledge about their awareness of the risk factors for cervical cancer is shown in Figure 12. The analysis of data contained in the following graph leads to the conclusion that the Medical University of Warsaw student scope better with this question; for example, the answer “smoking” was given by about 51% more medical school students in relation to non-medical university students. A similar situation exists in the case of the response category “long-term use of hormonal contraceptives”, where the percentage of answers selected by the students of University is only 30.36% (17 people), and as many as 87.50% (49 people) of the respondents from the Medical University were of the same opinion. Only 46.43% (26 people) of the respondents from university in Kielce included HPV infection as a risk factor for cervical cancer (Medical University of Warsaw 98.21%, 55 people). It should be noted, however, that few students, either medical (25.00% 14 people) or non-medical (8.93% 5 people), knew that the wrong diet (vitamin deficiencies such as vitamin C) can also lead the occurrence of cervical cancer. This confirms the hypothesis of the greater knowledge of medical students and shows that they are well prepared in terms of prevention. The χ^2 test score is 18.6, and $r_c = 0.2$. The dependence of knowledge on the type of college was confirmed statistically, and the RC Pearson coefficient indicated a weak strength of the relationship.

A summary of results for the tested students' knowledge about the symptoms of cervical cancer is shown in Figure 13. It can be seen that the respondents did not have a problem in giving the correct answers although the greater proportion were from the students of the Medical University: 51.79% (29 people) of respondents studying at the Technical University of Kielce and 91.07% (51 people) of respondents from the Medical University of Warsaw knew that one of the symptoms of cervical cancer is bleeding between periods, after intercourse, or after menopause. The least frequently indicated symptom in the list, as given by the respondents of medical schools (75.00%

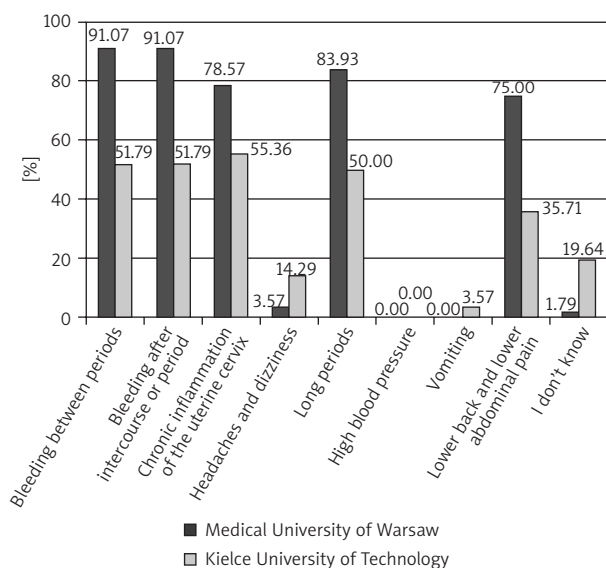


Figure 13. Knowledge of respondents on cervical cancer symptoms

42 people) as well as non-medical schools (35.71% 20 people) was “abdominal pain and surrounding low back pain”. There were also incorrect answers, which were often given by non-medical college students, such as: headaches, dizziness, and vomiting. A much greater proportion of respondents from the Technical University (19.64% 11 people), compared to respondents from the medical school (1.79% 1 person), declared that they could not answer this question. The greater knowledge of the medical students gives them a better chance of early detection of the disease, and thus behaviour in the prevention of III degree. This reflects their greater potential health.

Do female students know that the most common cancer among women in Poland is cervical cancer? Analysis of the chart below (Figure 14) shows that the level of knowledge in this field is not very high for the two groups. The correct answer, that cervical cancer is the second most common cancer that affects women, was given by only 53.57% (30 people) of the medical school respondents and by 30.36% (17 people) of the Kielce University of Technology students. The next most common response was “do not know”. In this case, 30.36% (17 people) of respondents from the Medical University admitted to lack of knowledge. The percentage of students who also declared that they could not answer this question was only about 5% higher (35.71%, 20 people). Perhaps in the prevention of cervical cancer knowledge is not the key, no less from the direction of the medical students would be expected slightly better percentage of correct answers.

The data contained in Figure 15 represent the opinion of the respondents about cervical cancer as a curable disease. The highest percentage gave the correct answer-cervical cancer is a disease that can be cured.

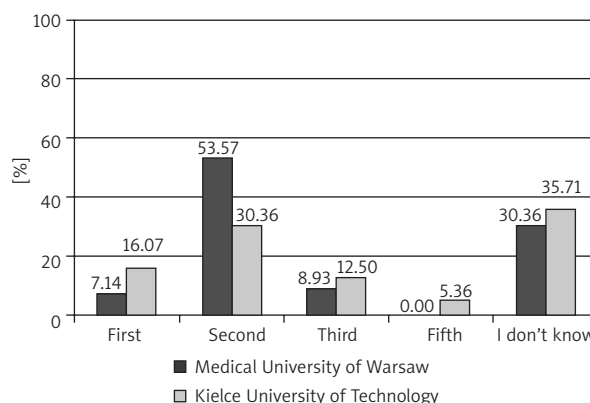


Figure 14. The opinions of the surveyed students about the fact that the most common cancer among women in Poland is cervical cancer

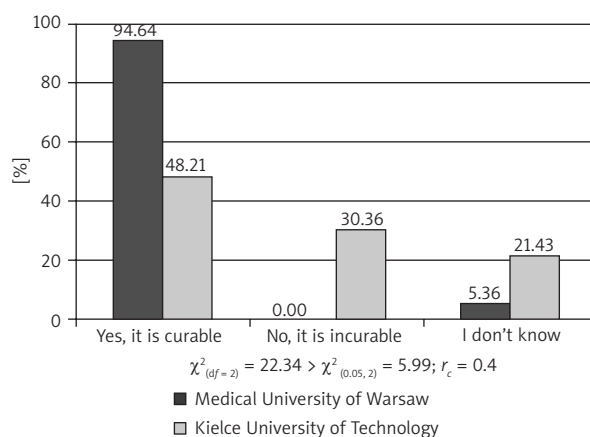


Figure 15. Cervical cancer as a curable disease in the opinion of the respondents

This view was given by about 46% more respondents from the medical school, compared to non-medical university students. As many as 30.36% (17 people) of the Technical University respondents believed that cervical cancer is an incurable disease, but none of the students of the Medical University of Warsaw shared this opinion. Much more often, the Kielce University of Technology students admitted they did not know the answer to this question. Analysis of the results show that medical school students would have a greater sense of security in the event of developing cervical cancer, relative to the medical school students. The χ^2 test score is 22.34, and $r_c = 0.4$. The dependence of knowledge on the type of college was confirmed statistically, and the RC Pearson coefficient indicated an average strength of the relationship.

Research indicates that students, regardless of the type of institution, in the majority are of the opinion that women in Poland do not have sufficient awareness of the importance of the prevention of cervical cancer-Medical University of Warsaw 85.71% (48 peo-

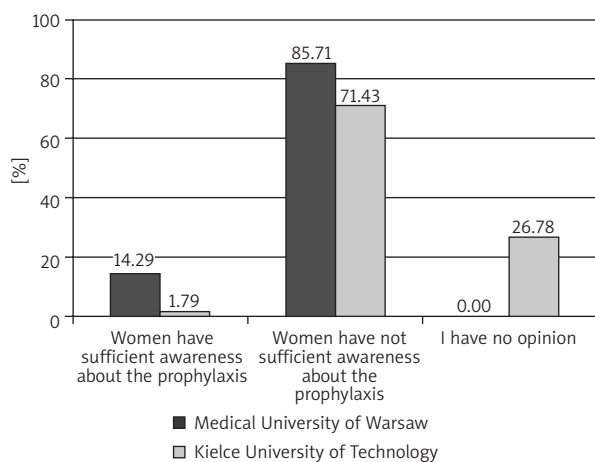


Figure 16. The opinion of respondents on whether women in Poland have sufficient awareness of the importance of cervical cancer prevention

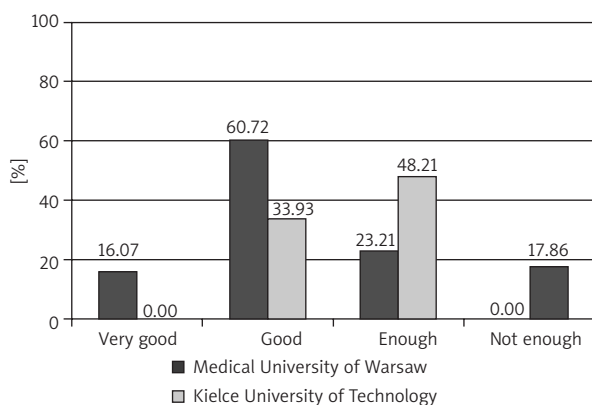


Figure 18. Rating respondents about their knowledge of cervical cancer and its prevention

ple), Kielce University of Technology 71.43% (40 people). Analysis of the chart below shows that a much higher percentage of respondents from the Medical University (14.29%, 8 people) compared to subjects from non-medical university (1.79%, 1 person) believed, however, that women are aware of the importance of prevention. It should be noted also that the University of Kielce students frequently declared that had no opinion on the subject – 26.78% (15 people). Such a result maybe a prerequisite to increase the level of knowledge about the prevention of cancer among women (Figure 16).

The data presented in Figure 17 present the sources of knowledge about cervical cancer and its prevention, among the interviewed students. The most frequently reported source of knowledge among students was the Internet – Medical University of Warsaw 91.07% (51 people), Kielce University of Technology 58.93% (33 people). Chart analysis shows that students rarely derive knowledge from a gynaecologist – this answer

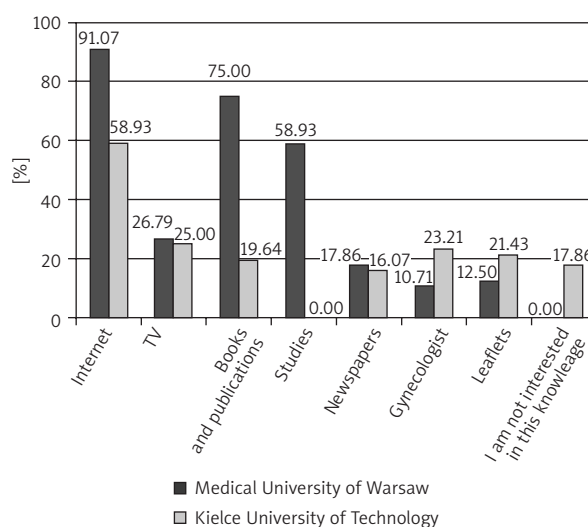


Figure 17. Sources of knowledge of surveyed students about cervical cancer and its prevention

was given only by 10.71% (6 people) of the medical school respondents and 23.21% (13 people) of respondents from non-medical universities. About 55% more respondents from the Medical University of Warsaw, in relation to the other students, claimed books were their source of knowledge. Conversely, for the situation in the case of the response category “leaflets/brochures”, and “I’m not interested in this” there were a greater proportion of respondents’ are students of non-medical universities. The latter result may arouse anxiety – a lack of interest in this topic may prove to encourage risky behaviour, and the lack of knowledge of the symptoms of the disease, which makes difficult early diagnosis and implementation of treatment.

In the questionnaire, used for research, there was also the question of the assessment of their knowledge on the subject. The data presented in the following graph (Figure 18) shows that the largest percentage of female students of the Medical University of Warsaw assessed their knowledge level as good – 60.72% (34 people). On the other hand, in the case of students from Kielce University of Technology the answer most often given was a sufficient level – 48.21% (27 people). It is worth noting that none of the non-medical college students did not evaluate their knowledge very well. The situation is similar in the case of the respondents from the Medical University where 0.00% of students assessed their awareness level as insufficient. The analysis of this result shows that there is a need for the advancement of knowledge in this field in both study groups. This is a positive trend; critical approach to the state of their knowledge, especially among non-medical college students, can translate into a desire to supplement.

Discussion

Cervical cancer is one of the few cancers for which the aetiological agent was detected – chronic infection with HPV, which offers great opportunities in terms of prevention, both primary and secondary [6]. The question therefore arises: why do so many women still die from this disease? One of the most important reasons for the lack of effective screening is very low public awareness.

The study's aim was to determine the knowledge and attitudes of medical college students and non-medical students about/to cervical cancer and its prevention. Our findings presented in this study support the conclusion that there is a very large difference in the level of awareness of women that are not related to the medical sciences and women studying at the Medical University of Warsaw. This thesis is confirmed, *inter alia*, by the opinions of students about the signs of cervical cancer, where a much larger proportion of correct answers were given by students of the Medical University of Warsaw. Also, Kielce University of Technology respondents of ten declared that they did not know the symptoms of cervical cancer. In a study by Mastalerz-Migas, which included 168 women aged 16 to 30 years, cervical cancer symptoms were given correctly by 72.00% of respondents [6].

An important factor with a very large impact on reducing mortality from cervical cancer, is that for primary prevention the key element is knowledge and control of risk factors. Tested students of the Medical University of Warsaw did not have a problem with giving the correct answers on the risk factors for cervical cancer, such as HPV infection, frequent change of sexual partners – 98.21%, while the Kielce University of Technology respondents fared worse with this question – as above 46.43% and 51.14%. The χ^2 test also confirmed this relationship – χ^2 ($df = 9$) = 18.6. A similar problem was addressed by Pacewicz *et al.* in 2011 in the city of Białystok, where the study involved a group of women and men. The women at 64.00% for the major risk factors for cervical cancer include infection with the highly oncogenic HPV types and a large number of sexual partners. Men, on the other hand, felt that the most significant factors were common, untreated inflammation of the vagina – 38.00%, and also a large number of women as sexual partners – 38.00% [7].

Also, a study conducted by Charążka and Bieńkiewicz, among students of the Medical University and the University of Lodz, to assess the knowledge of students about the prevention of cervical cancer, showed that the resource information in both cases was insufficient. At the same time, the students questioned from the Medical University of Lodz showed greater awareness than the second study group, which was confirmed statistically [8]. For only basic knowledge of risk factors indicate an Lewitowicz *et*

al. [9]. Due to the fact that medical school respondents showed a greater knowledge addressed in this paper about it, and also because of the type of study (medical), the Medical University of Warsaw students should serve as a model for other women in the prevention of cervical cancer. However, it is worrying that the results of their research showed no significant difference in the attitude of medical school students and non-medical students towards prevention. A very similar proportion of respondents from Kielce University of Technology (34.88%) and the Medical University of Warsaw (35.42%) said that the reason to report to your gynaecologist is a preventive examination. The χ^2 ($df = 4$) = 1.59 did not confirm the statistical relationship. In addition, about 10.00% more respondents from Kielce University argued that Pap smears should be performed every year. Similar observations were seen in the study by Podolska *et al.* They observed the lack of proper health behaviours in the context of the prevention of cervical cancer in a large group of women working in the medical profession [10].

Reksa *et al.*, using a questionnaire on the frequency of Pap tests and their execution, studied a group of 234 women, including nurses. The results show that more than 20.00% of the women did not see a gynaecologist regularly, and up 29.90% had never had a cytological examination [11]. Similar observations were seen by Słopiecka [12]. This also highlights the value of cytology and modern techniques of LBC cytology in the early detection of the disease [13].

A form of primary prevention of cervical cancer is the HPV vaccine. Our findings show that awareness of the surveyed students from Kielce University of Technology on the availability of such a vaccine was very small – only 26.79% of the respondents declared that they had heard of the HPV vaccination. A similar observation was shown in the study by Mastalerz-Migas – 25.00% of the surveyed women said they had been informed about by a family doctor/gynaecologist about the possibility of vaccination against human papilloma virus [6]. It should be noted, however, that the fact that immunisation does not necessarily have to translate into differences in the frequency of testing prevention among women vaccinated and not vaccinated [14].

It should also be noted that a very small percentage of surveyed students from both the Medical University of Warsaw and Kielce University of Technology recognised that the main source of knowledge about cervical cancer and its prevention is a gynaecologist. On the contrary, the results of research by Podolska *et al.* show that students studying pedagogy and sociology gave as the main and most reliable source of knowledge, a gynaecologist. Note, that this response fell primarily on the part of respondents 50 years of age [10]. It should be noted that the gynaecologist as

a fully competent person should play a major role in the health education of patients.

We conclude that greater awareness of cervical cancer is not reflected in the frequency of visits and performance of gynaecological cytology. It is believed that the high mortality rate is mainly due to the small share of Polish women in studies of prevention of cervical cancer. Rare and irregular use of preventive testing proves little awareness among women, as well as the lack of effective actions carried out in the field of health education [15].

Conclusions

Training at medical school is associated with having more knowledge in the field of medicine, which translates to the results presented in this work. Rare visits by the respondents to the gynaecologist are most likely the result of low awareness of risk of cervical cancer, which causes lack of proper conduct, especially in the prevention of II degree. Attitudes of the surveyed respondents from Warsaw Medical University in the area of cervical cancer prevention deviated from the expected social standard; therefore, we should seek to increase the active participation of students in prevention programs for cervical cancer. In view of the statement that the main source of knowledge about cervical cancer and its prevention, among respondents from the Medical University of Warsaw and Kielce University of Technology, is the Internet, even at the high school, teaching staff and school nurses should carry out health education in the form of regular talks, paying particular attention to the ability to find reliable information on this issue, not only from the Internet. In addition, for non-medical students, the study suggests a thematic block, linked to wider health education in the context of teaching, and in the case of medical studies, during the course, paying special attention to female-specific cancers. This would lead to a reduction of information retrieval on the Internet due to the high risk of their lack of credibility.

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