



Original research article

Health literacy of adult women as a component of cervical cancer prevention in women

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Abstract

Background: Cervical cancer is a preventable disease. The health literacy of women is a significant predictor of behaviour regarding their own health, along with the ability to search for, understand, and use health information, and plays an important role in the use of preventive and screening programmes.

Objectives: To evaluate the health literacy level of women of reproductive age in relation to their knowledge of the issue of cervical cancer.

Sample: The research sample consisted of women between the ages of 18 and 60 years old ($n = 270$).

Methods: We collected data with the use of a self-constructed questionnaire focused on knowledge about cervical cancer and a standardised health literacy questionnaire (Health Literacy Questionnaire, hereafter the HLQ).

Results: In the first five dimensions of the HLQ, the highest achieved score was recorded in the domain "Social support in the field of health" ($\bar{x} = 3.10 \pm 0.35$). The lowest scores were seen in the domains "Active care of one's own health" ($\bar{x} = 2.91 \pm 0.33$) and "Assessment of health information" ($\bar{x} = 2.91 \pm 0.37$). For the last four domains, the lowest score occurred in "Navigation of the health care system" ($\bar{x} = 3.42 \pm 0.57$), and the highest score was achieved in the domain "Understanding health information to the extent that the individual knows what to do" ($\bar{x} = 3.72 \pm 0.45$). Respondents assigned to the "sufficiently informed" group achieved a higher average score on the HLQ ($\bar{x} = 29.68 \pm 3.13$) than respondents assigned to the "insufficiently informed" group ($\bar{x} = 29.28 \pm 3.29$).

Conclusion: It is necessary to increase the effectiveness and adequacy of patient education regarding the importance of passing preventive gynaecological examinations at annual intervals for the prevention of cervical cancer, as well as the possibility of vaccination against HPV.

Keywords: Cancer; Cervix; Health literacy; Health literacy questionnaire; HPV; Prevention

Introduction

Cervical cancer is the fourth most common cancer in women worldwide and a major reproductive health problem. Almost half a million women around the world are affected by cervical cancer (Beddoe, 2019; Kashyap et al., 2019; Lu et al., 2020; Lukac et al., 2018; WHO, 2021). The only aetiological agent of cervical cancer is infection with high-risk types of human papillomaviruses (HPV), which accounts for up to 99.7% of diagnosed cases. It is estimated that approximately 291 million women worldwide are infected with human papillomavirus, with a particularly high prevalence in women younger than 25 years old (Burmeister et al., 2022; Mekuria et al., 2021). The main cause of the high incidence and mortality of women is low health literacy regarding cervical cancer prevention. Increasing health literacy is the key to preventing the onset of this disease (Dai Minh et al., 2022; Flores et al., 2019; He et al., 2023; Morris et al., 2013). Health literacy is defined as a person's ability to access information about health, comprehend it, evaluate it, and apply it, with the aim of making the right

decisions related to health (Coughlin et al., 2022; Stormacq et al., 2020; Visscher et al., 2018). According to Koay et al. (2012) and Bakht et al. (2023), it is essential that women fully understand health information and services in order to make correct decisions about health care, including decisions about screening and treatment.

Slovakia is among those countries with a higher incidence of cervical cancer, which is 5th among oncological diseases and the 7th most common cause of death in women in Slovakia. In 2020, approximately 700 new cases were diagnosed in Slovakia, and 284 female deaths occurred from cervical cancer (Bruni et al., 2023). Information from the National Centre for Health Information of the Slovak Republic from 2022 states that in 2021, only 27.2% of women visited gynaecological and obstetric clinics for preventive examinations (NCZI, 2022).

Research conclusions are diverse, and it is not possible to explicitly determine which determinants directly influence health literacy with regard to cervical cancer prevention. Health literacy, however, appears to be a key determinant of health.

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The aim of our study was to identify the level of health literacy and assess the degree of knowledge about cervical cancer among women of reproductive age.

Materials and methods

The research was conducted from March 2022 to April 2023 in a non-state health facility in Slovakia. We followed the ethical standards of the workplace and ensured the de-identification of female respondents in line with the applicable legislation on personal data protection. The respondents ($N = 270$) were women aged 18 to 60 years old. The inclusion criteria were the women's age, consent to participate in the research, and the ability to fill in the questionnaire in the Slovak language (Table 1).

We performed data collection by combining two questionnaires. The aim of the self-constructed questionnaire was to determine the respondents' awareness regarding cervical cancer, human papillomavirus (hereafter HPV), and HPV vaccination. We then divided the respondents into two groups based

on the number of points obtained. We assigned respondents scoring 8–13 points to the “sufficiently informed” group ($n = 155$), and respondents who scored fewer than 8 points were assigned to the “insufficiently informed” group ($n = 115$). The results of the assessment of the knowledge questionnaire are presented in Chart 1.

Table 1. Education of respondents

Education	Number of respondents	
	<i>n</i>	%
Primary education	5	1.9
Vocational education	16	5.9
Vocational education with school-leaving certificate	22	8.1
Secondary school education	102	37.8
University education	125	46.3
Total	270	100.0

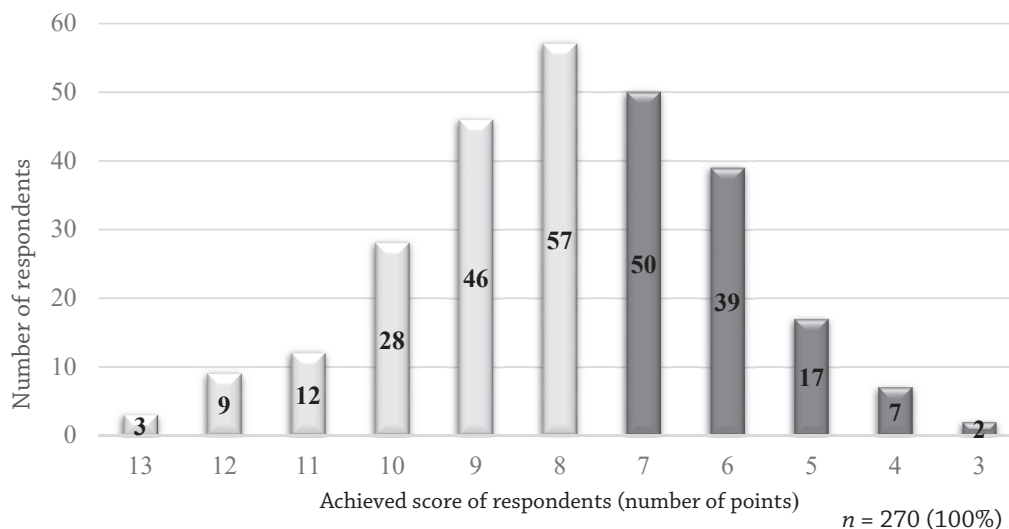


Chart 1. Knowledge questionnaire with colour-coded frequency of the sufficiently informed group (light grey colour, $n = 155$) and the insufficiently informed group (dark grey colour, $n = 115$)

The standardised HLQ consisted of two parts: understanding of health and understanding of health care. We obtained written consent to use the HLQ questionnaire in the Slovak version from the Swinburne University of Technology in Melbourne, Australia, based on a developed and approved project application. This questionnaire is the most widely used comprehensive measurement tool in the world, focusing on nine different areas of health literacy, which make it possible to create a detailed profile of health literacy (Čepová, et al., 2017; Hawkins et al., 2017).

We distributed the questionnaires personally in printed or electronic form; the number of distributed questionnaires was $n = 300$, and the number of returned questionnaires was $n = 270$ (90.0% response rate). Statistical processing of the data included the determination of descriptive statistics of the sample in the form of the number of female respondents (n), the arithmetic mean (\bar{x}), the standard deviation (sd), the minimum (min.) and maximum (max.) acquired value and, in the case of using a non-parametric statistical test, also the median

(x_m). When using the non-parametric Mann–Whitney test, we used the conventional value of $p < 0.05$ as the limit of significance of the detected differences.

Results

Through the HLQ questionnaire, we identified the domains that affect women's care of their own health. The respondents answered the first five dimensions with options ranging from 'strongly disagree' to 'strongly agree'. The highest achieved score (the average score was 3.10, and the value of the standard deviation was 0.35) was recorded in the domain “Social support in the field of health”. The lowest scores were evaluated in the domain “Active care of one's own health”, with values of $\bar{x} = 2.91 \pm 0.33$, and in the domain “Assessment of health information” ($\bar{x} = 2.91 \pm 0.37$). For the last four domains, with options ranging from 'I can't' or 'it's very difficult for me' through 'always easy', the lowest score occurred for the domain “Navi-

gation of the healthcare system”, where the mean has a value of $\bar{x} = 3.42 \pm 0.57$, and the highest score was achieved in the domain “Understanding health information to the extent that the individual knows what to do,” with an arithmetic mean of $\bar{x} = 3.72 \pm 0.45$ (Table 2).

In the domain “Ability to find the right information about health”, respondents are able to access adequate information when they need it. In contrast, we recorded the lowest scores for the domains “Active care of one’s own health” and “Navigation of the health care system”.

Table 2. Mean scores of HLQ domains

Monitored parameters	n	min.	max.	\bar{x}	sd
1. Feeling of understanding and support from healthcare providers	270	1.75	4.0	3.01	0.28
2. Sufficient information about taking care of one’s own health	270	1.50	4.0	2.97	0.34
3. Active care of one’s own health	270	1.80	4.0	2.91	0.33
4. Social support in the field of health	270	1.40	4.0	3.10	0.35
5. Assessment of health information	270	1.60	4.0	2.91	0.37
6. Ability to actively cooperate with healthcare providers	270	1.60	5.0	3.62	0.39
7. Navigation of the healthcare system	270	1.67	5.0	3.42	0.57
8. Ability to find current health information	270	1.60	5.0	3.69	0.51
9. Understanding health information to the extent that the individual knows what to do	270	1.80	5.0	3.72	0.45

Note: n – number, min. – minimal value, max. – maximal value, \bar{x} – arithmetic mean, sd – standard deviation.

Respondents assigned to the “sufficiently informed” group achieved a higher average score on the standardised HLQ questionnaire ($\bar{x} = 29.68 \pm 3.13$) than respondents included in the “insufficiently informed” group ($\bar{x} = 29.28 \pm 3.29$) (Table 3). Even the values of the medians of both groups ($x_m = 29.58$, or $x_m = 28.95$; Table 3) are similar, in consequence of which even the statistical test did not evaluate the differences as sta-

tistically significant ($p > 0.05$; Table 3, Mann–Whitney test). The best awareness of cervical cancer (Chart 2) was found among respondents with secondary school education and a school-leaving certificate ($\bar{x} = 8.01 \pm 1.86$). The worst average was achieved by female respondents with a primary education ($\bar{x} = 6.80 \pm 1.10$), and the best score (max. 13 points) was achieved by female respondents with a university education.

Table 3. Knowledge level of female respondents (n = 270) depending on the score achieved on the standardised HLQ questionnaire

Awareness	n	min.	max.	\bar{x}	sd	x_m	p
sufficient	155	18.45	38.30	29.68	3.13	29.58	0.21
insufficient	115	21.13	39.20	29.28	3.29	28.95	

Note: n – number of respondents, min. – minimal value, max. – maximal value, \bar{x} – arithmetic mean, sd – standard deviation, x_m – median, p-value of the testing criteria of the Mann–Whitney test.

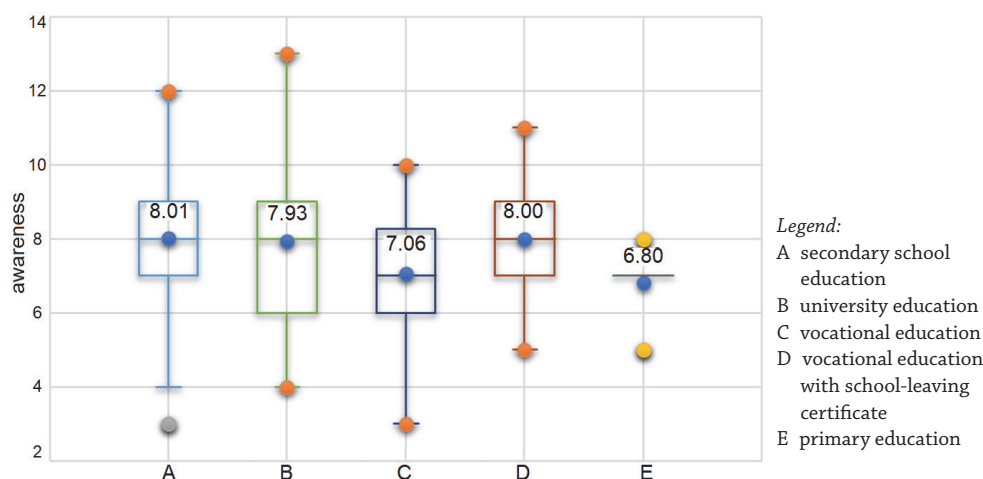


Chart 2. Comparison of the score achieved depending on education – dispersion of answers depending on the highest education of female respondents

Discussion

Adequate health literacy is essential for effective decision-making when seeking, accessing, and utilising suitable health care. It plays a principal role in how individuals process information about health to make decisions about health behaviours, including cancer screening (Han et al., 2022; Mwanri et al., 2020).

In our study sample, in the case of the domain “Social support in the field of health”, with the highest average score ($\bar{x} = 3.10 \pm 0.35$; Table 2), we assume that the respondents have someone in their surroundings who supports them in health care or accompanies them to the necessary examinations and preventive examinations.

In the case of a low score on active care of health ($\bar{x} = 2.91 \pm 0.33$; Table 2), we assume that the respondents do not make time for preventive examinations; they only deal with more serious health issues resulting from neglect. Likewise, they clearly do not look for resources other than the usual ones and have a limited understanding of what is available to them and what they are entitled to. Van der Heide et al. (2018) observe that health literacy is not only a matter of individual skills, but that it largely depends on the accessibility of health-care systems, the communication skills of healthcare workers, and the level of complexity of health information.

Bazaz et al. (2019) confirm the correlation of a higher level of health literacy with a higher level of education, employment, and income. Minamitani et al. (2024) confirmed the correlation between the level of health literacy and knowledge about cervical cancer and radiotherapy, when women with a higher level of health literacy had better information about the symptoms, prevention, and treatment of cervical cancer. The level of awareness differed depending on demographic factors, such as age, level of education and socioeconomic status; women with higher education and better socioeconomic status had better information on the issue of cervical cancer.

An analysis of the effect of education level on participation in cervical cancer screening in different European countries (Altová et al., 2024) found that education is an important factor that can influence participation in screening, and that women with lower education faced greater barriers in accessing screening programmes.

Among the most effective and accessible methods of protection against cervical cancer, we include annual preventive gynaecological examinations, which are covered by all health insurance companies in Slovakia, vaccination against HPV, and safe sexual intercourse using barrier methods. From the total number of respondents, $n = 270$, 88.5% ($n = 239$) regularly undergo a preventive gynaecological examination. In our study, 81.5% of respondents ($n = 220$) were aware of the possibility of vaccination against HPV. Unfortunately, among European countries, the Slovak Republic has the lowest vaccination against high-risk types of HPV. Compared with the Czech Republic, the Slovak Republic has a 2.6-times lower vaccination rate, while compared with Hungary it is 3.1-times lower (NCZI, 2022).

The way to achieve more intensive vaccination against HPV is raising awareness about cervical cancer through campaigns that emphasise the effectiveness of prevention, vaccination programmes, extensive public education, and the use of media services (Siddharthar et al., 2014; Thiel de Bocanegra et al., 2022). In higher-income countries, programmes are in place that enable girls and women to receive HPV vaccination, screening, and adequate treatment. In contrast, in low- and

middle-income countries, access to preventive measures is limited, and cervical cancer is typically diagnosed at a later stage (WHO, 2022).

In the additional questions on our questionnaire, respondents ($n = 270$) were asked to indicate which of the risk factors do not contribute to its development. A surprisingly large portion of the female respondents in our sample ($n = 107$, 39.6%) stated that HPV does not contribute to the development of cervical cancer. It is evident that the respondents likely did not read the question with understanding, so they marked the possibility of HPV, which in fact causes 99% of cervical cancer. The second most frequent response ($n = 64$, 23.7%) was that a frequent changing of partners is not a risk factor for cervical cancer. Taneja et al. (2021) state that the least number of respondents included in the research, 8.5% ($n = 653$), mentioned HPV as the riskiest factor. The most frequent answer was early marriage 32.6% ($n = 2506$), insufficient hygiene 25.2% ($n = 1937$), and sexual intercourse at an early age 23% ($n = 1768$). In a study in Zanzibar (Weng et al., 2020), frequent change of sexual partners was the prevalent answer of the female respondents (36.3% ($n = 539$)), while early intercourse (32.5% ($n = 482$)) and HPV (29.20% ($n = 433$)) were also mentioned.

A complete preventive gynaecological examination should include information on the reason for carrying out a cytological smear. Nearly all female respondents ($n = 250$; 92.6%) knew the reason for performing a cytological smear, and this may be connected to effective education of female respondents. The results of numerous studies, however, highlight the low awareness of women about the reasons for performing a cytological smear, and that the prevention of cervical cancer depends on the knowledge within the population about the aetiology, risk factors, and awareness of screening (Aga et al., 2022; Dozie et al., 2021; Malibari, 2018; Mengesha et al., 2020; Srivastava et al., 2022; Wakwoya et al., 2020).

Conclusion

Long-term statistics in the Slovak Republic have shown low attendance at gynaecological clinics for the purpose of preventive examinations at annual intervals. Low health literacy contributes to the lower rates of screening for cervical cancer and nonadherence to treatment plans, which result in increased healthcare costs, risk of hospitalisation, and mortality. From our point of view, nurses inviting female patients to a gynaecological preventive check-up at a set interval by sending an SMS via the outpatient information system seems to be an appropriate way of increasing health literacy and achieving a higher participation of women in preventive examinations. Educational meetings focused on the complex issue of cervical cancer can also be a tool for increasing health literacy and preventive behaviour of women of reproductive age.

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Ethical aspects and conflict of interest

The authors have no conflict of interest to declare.

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