INEQUALITIES IN CERVICAL CANCER SCREENING USE: RESULTS OF THE SERBIAN NATIONAL HEALTH SURVEY

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SUMMARY

Objectives: Cervical cancer represents a significant public health concern worldwide, particularly among women of reproductive age. According to data from the Cancer Registry of the Republic of Serbia for the year 2022, cervical cancer is the fourth most common cancer in women, with an age-standardized incidence rate (ASIR) of 24.8/100,000 and the fourth leading cause of mortality, with an age-standardized mortality rate (ASMR) of 10.2/100,000. This study aimed to analyse the association between socio-demographic factors, unmet healthcare needs, and cervical cancer screening use among women in Serbia.

Methods: Research was conducted as a cross-sectional study on a sample of 3,980 women aged 25–64 in Serbia. Three types of questionnaires were used as a research instrument. The association of missed cervical smear tests in the last 3 years with independent variables was examined by univariate and binary logistic regression model.

Results: According to socio-demographic characteristics, the likelihood of missing a cervical smear test in the last 3 years increased with age, being highest among older women (OR = 1.91, 95% CI: 1.88–1.94), lower-income categories (OR = 1.76, 95% CI: 1.74–1.78), and women with the lowest levels of education (OR = 1.49, 95% CI: 1.47–1.52). The logistic regression model revealed significant territorial disparities, with the highest predicted probability for women from South and East Serbia (OR = 1.73, 95% CI: 1.70–1.76). Additionally, distance/transportation and financial constraints were significantly associated with missed cervical smear tests in the last 3 years (OR = 2.05, 95% CI: 1.99–2.11; OR = 1.10, 95% CI: 1.08–1.12, respectively).

Conclusions: Socioeconomic disparities in cervical cancer screening remain a challenge. This study highlights the need to allocate resources to areas in need of improvement and also to conduct comprehensive evaluations of screening systems, which can lead to significant reductions in cervical cancer incidence and mortality.

Key words: women, healthcare inequalities, Pap test, cancer screening, assessment of healthcare needs

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INTRODUCTION

Cervical cancer is a significant global public health issue, particularly among women of reproductive age. In 2020, 604,000 new cases were reported worldwide, accounting for 6.5% of the global cancer burden (1). In Serbia, cervical cancer ranks as the fourth most common cancer among women, with an age-standardized incidence rate (ASIR) of 24.8/100,000 and an age-standardized mortality rate (ASMR) of 10.2/100,000 in 2022, which ranks Serbia in eighth place in Europe (2). Cervical cancer incidence and mortality rates in Serbia show notable regional variation. The Belgrade region reports the lowest rates, while Southern and Eastern Serbia, along with Vojvodina, record the highest. Incidence ranges from 16.0 (Belgrade Region) to 21.6 cases per 100,000 females (Vojvodina Region), and mortality from 4.5 (Belgrade Region) to 7.7 deaths per 100,000 women (Southern and Eastern Serbia), reflecting broader disparities in healthcare outcomes across the country (3). Despite being preventable, the high incidence and mortality of this disease remain concerning. Early detection through regular gynaecological exams significantly improves outcomes, with timely treatment leading to a five-year survival rate of up to 92% (4).

Screening is the key component of cancer prevention. Globally, cervical cancer screening has been performed for decades using Pap tests. Since 2016, some countries have also incorporated HPV testing alongside Pap smears (2, 4). The World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) guidelines recommend starting these screenings at age 21, along with HPV vaccination for girls aged 9–14. This strategy could prevent up to 70% of new cervical cancer cases (5). Serbia's

population-based screening programme, which began in 2012, targets women aged 25–64 every three years, intending to achieve 75% coverage (6). However, current coverage varies between 35% and 68%, reflecting regional disparities in access to health care (7).

Socioeconomic (SE) factors heavily influence health awareness and service utilization (8). Limited awareness of the recommended frequency and importance of cancer screening, particularly for detecting asymptomatic lesions, is a key factor contributing to low participation rates. Women with greater knowledge of cervical cancer and screening protocols are more likely to adhere to expert guidelines, which is vital for effective cancer control (9). Inadequate understanding of risk factors poses a significant barrier to early detection. Additionally, systemic issues such as limited access to healthcare services and Pap test facilities further hinder screening uptake, especially in underserved areas (7).

Barriers such as financial constraints, transportation difficulties, and long waiting times for health care disproportionately affect patients which in turn worsen unmet healthcare needs (UHCN) (8, 9).

Access to health care is a complex phenomenon that is conditioned by various factors, including both systemic and individual preferences. The accountability of the health system is crucial in ensuring the availability and accessibility of efficient, quality, and safe health services (9). The Health Care Law of the Republic of Serbia indicates that all citizens of Serbia, legally recognized by the state, should have equal access to appropriate health care that is "physically, communicationally, geographically, and economically accessible" (10). In addition, the law aims to recentralize the ownership of buildings and equipment (10). Although decentralization has been a declared objective of health-sector reform in Serbia, aiming to transfer decision-making authority, managerial responsibility, and financial resources to subnational levels, progress has been limited, with reforms stalled at devolution and fiscal autonomy at the local level still lacking (10, 11).

Although Serbia's universal healthcare system theoretically ensures access to health care, practical challenges, particularly financial limitations within the state and health system that have undergone transition, persist (10, 11). Evidence shows that the benefits are not equal for the whole population, particularly for vulnerable groups which negatively impacts their health (11).

Unmet healthcare needs are an important indicator of health inequalities, revealing systemic barriers and offering insights into inequities in health care. Addressing these issues is essential for fostering equitable healthcare access (8). This study aimed to analyse the association between socio-demographic determinants and unmet healthcare needs with cervical cancer screening use among women in Serbia.

MATERIALS AND METHODS

The data for this study were obtained from the 2019 National Health Survey (NHS) of Serbia, conducted in collaboration with the Statistical Office, the Ministry of Health, and the Institute of Public Health of Serbia "Dr Milan Jovanović Batut". The survey followed Eurostat's recommendations (EHIS-wave-3) (12). A two-stage stratified sampling method was employed, dividing the sample into four regions: Belgrade, Vojvodina, Sumadija and Western Serbia, and Eastern and Southern Serbia, to ensure statistical reliability. The population from the territory of the Autonomous Province of Kosovo and Metohija was not included in the survey (13).

The survey targeted 6,000 households, resulting in a sample of 13,589 individuals aged 15 and older (13). Data collection instruments included questionnaires aligned with the European Health Interview Survey. Ethical standards were upheld, and informed consent was obtained from participants in accordance with the Helsinki Declaration and General Data Protection Regulation (GDPR) (13).

Interviews were conducted face-to-face by two-member teams, one of whom was a healthcare professional. The first questionnaire was a household information panel used to gather SE data about all household members. It contained 18 questions, from which the household income variable was used in this manuscript. The second questionnaire included 118 questions covering demographic and SE background variables (gender, age, region, marital status, education, employment status), health status, limitations in daily activities, disease-specific morbidity, physical and sensory functional limitations, health care utilization, UHCN and preventive actions, etc.

For analysis, the following variables were extracted: age, region, marital status, education, employment status, chosen gynaecologist (state-owned or private practice), and UHCN (due to financial constraints, distance from healthcare facilities, or long waiting times) (13).

A specific database was constructed for this study, comprising 3,980 women aged 25–64. The outcome variable was missed cervical smear test (MCST). Information on MCST was derived from responses to the question: "Time when the last cervical smear test was done." This was recoded into a dichotomous variable – "cervical smear test in the last 3 years" – coded as a dummy variable (yes/no). Women who reported having a cervical smear test "within the last 12 months", "1 to less than 2 years", or "2 to less than 3 years" were categorized as having had a test in the last 3 years. Those who reported having a test "more than 3 years ago" or "never" were categorized as having missed the test in the last 3 years (13).

Statistical Methods

Descriptive statistics were used to summarize the sample characteristics, including means, standard deviations (SD), and proportions. To examine differences between variables, the chi-square test was applied as an appropriate inferential method. Multivariable binary logistic regression analysis was conducted to estimate the odds of MCST, using the enter method for variable inclusion. All analyses were weighted to ensure representativeness of the sample. Statistical analyses were performed using SPSS version 23. Results were interpreted using odds ratios (OR) with 95% confidence intervals (CI). A p-value of less than 0.05 was considered statistically significant.

RESULTS

The study included 3,980 women aged 25–64 ($\bar{x} = 46.6$), with a response rate of 94.1% to the cervical smear test question. Most participants were married (71.7%), had secondary education (56.5%), belonged to the high-income category (44.0%), and were employed (53.5%). In the last three years, 67.4% of women

had undergone a cervical smear test, while 16.1% had never had one. About one-quarter had a chosen gynaecologist in a private practice, and 67.8% in a state-owned practice. Among those with UHCN, 17.6% cited long waiting times, 12.9% financial reasons, and 3.2% distance or transportation barriers.

Table 1. *Sample structure*

Variable	Women	
	n	Weighted %
Age (years), mean (SD)	46.57 (11.438)	
Age category		
25–34	763	22.6
35–49	1,428	38.1
50–64	1,789	39.3
Regions		
Belgrade Region	971	26.0
Region of Vojvodina	881	26.8
Region of Sumadija and West Serbia	1,273	26.7
Region of South and East Serbia	855	20.5
Marital status		
Married/living with a partner	2,942	71.7
Never married/never lived with a partner	477	13.3
Widowed	267	7.0
Divorced/separated	283	8.0
Education		
Primary school	724	16.2
Secondary school	2,291	56.5
University degree	965	27.3
Household income		
Low	1,552	36.9
Middle	784	19.1
High	1,644	44.0
Employment status		
Employed	1,986	53.5
Unemployed	942	23.0
Inactive	1,042	23.5
Time when the last cervical smear test was done		
Whitin the last 12 months	1,183	34.2
1 to less than 2 years	838	22.1
2 to less than 3 years	428	11.1
More than 3 years	685	16.5
Never	609	16.1
Chosen gynaecologist in a state-owned practice		
Yes	2,497	67.8
No	1,171	32.2
Chosen gynaecologist in a private practice		
Yes	872	26.1
No	2,799	73.9
Unmet healthcare needs		
Distance/transportation		
Yes	89	3.2
No	2,373	96.8
Financial reasons (could not afford medical care)		
Yes	325	12.9
No	2,092	87.1
Long waiting		
Yes	429	17.6
No	2,121	82.4

Table 2 presents the association between cervical smear tests in the last 3 years and women's socio-demographic characteristics and unmet healthcare needs. Regionally, the smallest number of women who have had cervical smear tests in the last 3 years was in the Region of South and East Serbia (58.7%). Test uptake declined with age and was the lowest among women with low income, lowest education, and inactive categories. Widowed women had the lowest rate concerning marital status (45.2%). Women without a chosen gynaecologist, whether in public (54.8%) or private (63.9%) practices, were less likely to be tested. Those who cited distance or financial barriers as reasons for UHCN also had lower testing rates: 46.1% (95% CI: 45.6–46.6) and 62.8% (95% CI: 62.5–63.0), respectively.

Binary logistic regression identified several significant predictors of MCST in the last three years. The odds increased with age and were the highest in the 50–64 age category (OR = 1.91, 95%

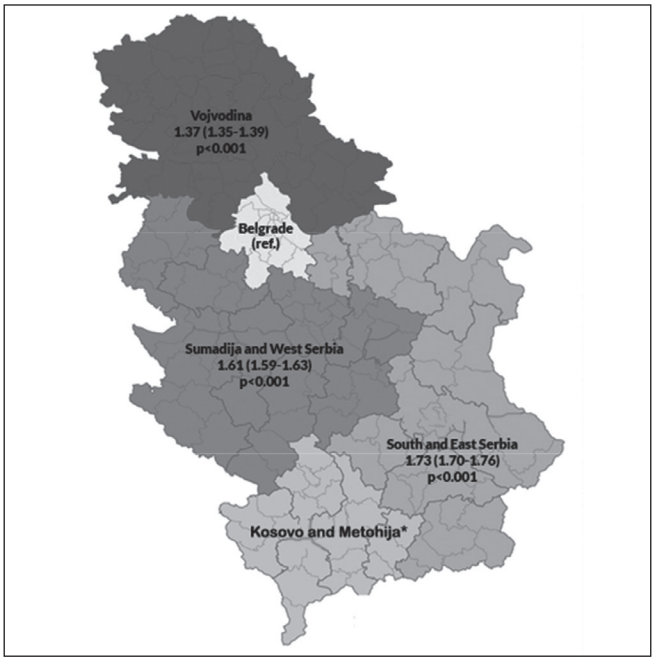

Fig. 1. *Regional differences in the likelihood of missed cervical smear test in the last 3 years.*

*Data not available

Table 2. *Cervical smear test in the last 3 years in relation to socio-demographic characteristics, chosen gynaecologist and UHCN*

Variable	Cervical smear test in the last 3 years					p-value*
	n	Yes		No		
		Weighted %	95% CI	Weighted %	95% CI	
Age category						
25–34	707	73.7	73.6–73.9	26.3	26.1–26.4	**< 0.001**
35–49	1,351	73.4	73.3–73.5	26.6	26.5–26.7	
50–64	1,685	58.0	57.9–58.1	42.0	41.9–42.1	
Regions						
Belgrade Region	907	80.5	80.4–80.6	19.5	19.4–19.6	**< 0.001**
Region of Vojvodina	806	66.9	66.7–67.0	33.1	33.0–33.3	
Region of Sumadija and West Serbia	1,231	62.0	61.9–62.2	38.0	37.8–38.1	
Region of South and East Serbia	799	58.7	58.5–58.9	41.3	41.1–41.5	
Marital status						
Married/living with a partner	2,797	69.9	69.8–70.0	30.1	30.0–30.2	**< 0.001**
Never married	422	61.5	61.3–61.7	38.5	38.3–38.7	
Widowed	249	54.8	54.5–55.1	45.2	44.9–45.5	
Divorced	267	65.2	65.0–65.4	34.8	34.6–35.0	
Education						
University degree	906	79.0	78.9–79.1	21.0	20.9–21.1	**< 0.001**
Secondary school	2,170	67.3	67.2–67.4	32.7	32.6–32.8	
Primary school	667	47.6	47.4–47.7	52.4	52.3–52.6	
Household income						
High	1,544	75.4	75.3–75.5	24.6	24.5–24.7	**< 0.001**
Middle	741	68.6	68.4–68.8	31.4	31.2–31.6	
Low	1,458	57.2	57.1–57.3	42.8	42.7–42.9	
Employment status						
Employed	1,877	75.4	75.3–75.5	24.6	24.6–24.7	**< 0.001**
Unemployed	892	64.6	64.5–64.8	35.4	35.2–35.5	
Inactive	965	51.4	51.2–51.5	48.6	48.5–48.8	
Chosen gynaecologist in a state-owned practice						
Yes	2,475	75.8	75.7–75.9	24.2	24.1–24.3	**< 0.001**
No	1,150	54.8	54.6–54.9	45.2	45.1–45.4	
Chosen gynaecologist in private practice						
Yes	866	83.6	83.4–83.7	16.4	16.3–16.6	**< 0.001**
No	2,761	63.9	63.8–64.0	36.1	36.0–36.2	
Unmet healthcare needs						
Distance/transportation problem						
Yes	86	46.1	45.6–46.6	53.9	53.4–54.4	**< 0.001**
No	2,311	71.8	71.7–71.8	28.2	28.2–28.3	
Financial reasons (could not afford medical care)						
Yes	319	62.8	62.5–63.0	37.2	37.0–37.5	**< 0.001**
No	2,034	72.4	72.3–72.5	27.6	27.5–27.7	
Long waiting						
Yes	423	72.2	72.0–72.4	27.8	27.6–28.0	**< 0.001**
No	2,063	70.9	70.9–71.0	29.1	29.0–29.1	

UHCN – unmet healthcare needs; CI – confidence interval
*Chi-square test; numbers in bold indicate statistically significant values.

Table 3. *Association of MCST in the last 3 years with socio-demographic characteristics, chosen gynaecologist and unmet healthcare needs*

Variable	Missed cervical smear test in the last 3 years		
	n	OR (95%CI)	p-value
Age category			
25–34	349	1 (ref.)	
35–49	735	1.42 (1.40–1.44)	**< 0.001**
50–64	1,093	1.91 (1.88–1.94)	**< 0.001**
Regions			
Belgrade Region	485	1 (ref.)	
Region of Vojvodina	474	1.37 (1.35–1.39)	**< 0.001**
Region of Sumadija and West Serbia	798	1.61 (1.59–1.63)	**< 0.001**
Region of South and East Serbia	420	1.73 (1.70–1.76)	**< 0.001**
Marital status			
Married/living with a partner	1,674	1 (ref.)	
Never married	180	1.42 (1.39–1.44)	**< 0.001**
Widow	171	0.91 (0.90–0.92)	**< 0.001**
Divorced	152	1.29 (1.26–1.31)	**< 0.001**
Education			
University degree	484	1 (ref.)	
Secondary school	1,269	1.23 (1.22–1.25)	**< 0.001**
Primary school	424	1.49 (1.47–1.52)	**< 0.001**
Household income			
High	916	1 (ref.)	
Middle	429	1.27 (1.25–1.29)	**< 0.001**
Low	832	1.76 (1.74–1.78)	**< 0.001**
Employment status			
Employed	1,072	1 (ref.)	
Unemployed	500	1.02 (1.01–1.04)	**< 0.001**
Inactive	605	1.81 (1.79–1.84)	**< 0.001**
Chosen gynaecologist in a state-owned practice			
Yes	1,551	1 (ref.)	
No	626	3.42 (3.38–3.46)	**< 0.001**
Chosen gynaecologist in private practice			
Yes	465	1 (ref.)	
No	1,712	3.54 (3.49–3.60)	**< 0.001**
Unmet healthcare needs			
Distance/transportation			
No	2,107	1 (ref.)	
Yes	70	2.05 (1.99–2.11)	**< 0.001**
Financial reasons (could not afford medical care)			
No	1,913	1 (ref.)	
Yes	264	1.10 (1.08–1.12)	**< 0.001**
Long waiting			
No	1,821	1 (ref.)	
Yes	356	0.79 (0.78–0.81)	**< 0.001**

MCST – missed cervical smear test; OR – odds ratio; CI – confidence interval
Logistic regression model; numbers in bold indicate statistically significant values.

CI: 1.88–1.94). Compared with the reference county ORs for MCST in the last 3 years ranged from 1.37 (95% CI: 1.35–1.39) in Vojvodina region to 1.73 (95% CI: 1.70–1.76) in South and East Serbia (Fig. 1, Table 3). Never married and divorced women, less educated women and those with low household income were also more likely to MCST. Women without a chosen gynaecologist, whether in a public or private practice, had higher odds of missing tests. Additionally, UHCN due to transportation or financial barriers were significantly associated with MCST (OR = 2.05, 95% CI: 1.99–2.11; and OR = 1.10, 95% CI: 1.08–1.12) (Table 3).

DISCUSSION

This cross-sectional study highlights the insufficient cervical cancer screening rates and factors associated with low participation. Using a representative sample from the NHS of Serbia, we found that 67.4% of women had been screened in the last 3 years, which is higher than in 2013 (42.6%). Similar increasing trend is obtained in Lithuanian population-based study from 60% in 2006 to 74.2% in 2014 (14). While some countries report high levels of participation (e.g., Sweden 78.8% and Czechia 74.1%), the coverage of cervical cancer screening programmes in many other countries remains below the recommended 80% (15). The results obtained for the 22 European countries found that there is no national programme for cervical cancer prevention in Bulgaria, Slovakia (16), and in some countries the implementation of the programme has not improved significantly and still lack national cervical cancer registries and Pap test databases (Bosnia and Herzegovina) (17). Regardless of cervical cancer screening coverage, the problem of SE differences is common to both developed and underdeveloped countries. The same SE categories stand out as significant predictors for MCST (14). The aforementioned research identified several factors that could contribute to a low rate of cervical screening, including a lack of awareness about the importance of screening, limited access to healthcare services, cultural or religious beliefs, fear or embarrassment, and SE factors such as poverty or lack of health insurance (14, 17).

In our study, age was a significant predictor for MCST, where older women had 1.91 greater odds to MCST. This aligns with research by Liu et al., which found decreased screening rates after the age of 50 years (18). Screening attendance was higher among younger women compared to older ones in the Czech study (19). Comparable age pattern has been observed in the study of Đorđević et al. (17). However, other studies have reported that younger women are also more likely to miss cervical smear tests (14). In the Lithuanian study the likelihood for MCST was lower among older than among younger women (OR = 0.70, 95% CI: 0.61–0.82) (14). These variations may be influenced by psychosocial factors that play a significant role in women's decision to participate in screening (17).

Marital status also strongly affected participation in cervical screening, where never-married and divorced women were more likely to MCST, with greater odds for never-married (OR = 1.42, 95% CI: 1.39–1.44), which is in line with a cross-sectional study conducted on Norwegian women where single women had 2.18 times higher chance to non-attendance cervical cancer screening. Social support from partners may increase participation, which is absent in these groups (20).

Education has been identified as a significant predictive factor of cervical cancer screening. Our results showed that women with primary education had 1.49 times higher chance to MCST than higher educated women. Women with higher education tend to have better access to health care and are more likely to prioritize screenings (21). A Chinese study revealed that women with higher levels of education were significantly more likely to participate in cervical cancer screening compared to those with lower levels (18). Rančić et al. found that women with lower education levels are less likely to participate in screening, reflecting limited health literacy and awareness (21). A study in Sweden confirmed similar disparities as our study (22). Some researchers have found that individuals with higher levels of education tend to have a higher social status, more stable and larger incomes, utilise more private health services, and pay more out-of-pocket for necessary health services (9, 23).

Low household income is also identified as a significant barrier to cervical cancer screening. Although cervical screening is provided free of charge, women with lower incomes frequently encounter indirect and opportunity costs that impede attendance. These may include expenses for transportation or childcare, loss of earnings due to time off work, and rigid employment schedules. Additionally, lower income is associated with reduced health literacy and limited digital access, as well as concerns about potential future costs related to follow-up tests or treatment (21). Women with low household income had a 1.76 times higher chance of MCST (OR = 1.76, 95% CI: 1.74–1.78). Analysis of data from 28 countries showed that low household income (OR = 0.60) was significantly associated with a lower likelihood of having had a cervical smear test in the last 3 years. The China study provides compelling evidence of the significant impact of income-related inequality on MCST (18). According to the study by Sabine Israel, direct costs (admission fees) along with indirect expenses like transportation and alternative costs (lost wages due to time away from work) pose significant financial barriers to accessing health care for low-income households (24).

Regional disparities are evident within Serbia, with the highest rates of MCST observed in the South and East regions (OR = 1.73, 95% CI: 1.70–1.76). Our findings align with data from the Serbian Cancer Registry, indicating that the standardised incidence rate (21.2 per 100,000) and mortality rate (7.7 deaths per 100,000) are the highest in the South and East regions, underscoring the urgent need for targeted intervention (2). Existing regional disparities may be attributed to a range of structural and systemic factors. Decentralisation reforms in Serbia's health sector have progressed slowly, remaining primarily at the level of devolution without full fiscal or managerial autonomy for local authorities. Ongoing economic challenges have placed limitations on public funding, with the health system particularly affected. These constraints have contributed to interruptions in strategic planning and have stretched management capacities, thereby moderating the pace of progress toward comprehensive decentralisation (11). Additionally, ongoing internal migration, particularly the movement of young people from rural areas to urban centres in search of employment, alongside the increasing emigration of healthcare professionals, has contributed to pronounced disparities in workforce distribution. Analysis of data from the 2023 Statistical Yearbook revealed substantial regional variation in the workload of gynaecologists. The number of women aged 15

and over per gynaecologist ranges from 4,114 in the Sumadija District to 10,935 in the Zajecar District (South and East Serbia), highlighting a significant shortage of medical personnel in these regions (25). Besides decentralization, literature shows that large-scale public health emergencies, such as the COVID-19 pandemic, can significantly disrupt the implementation of preventive screening programmes. These disruptions arise from a dual dynamic: systemic reallocation of healthcare resources toward acute care services, and individual postponement of preventive examinations due to limited access, fear of infection, or shifting health priorities (26).

Such conditions compromise early detection efforts and may lead to delayed diagnoses, particularly in oncological care, underscoring the need for resilient screening infrastructure and targeted public health communication during crises (26).

Our study found that 67.4% of women were screened in the last 3 years, an improvement from 57.1% in 2013 (27). However, there is a growing global concern about the increasing number of women diagnosed with cervical cancer and other genitourinary tract diseases (28). The limited availability of health care is cited as one of the reasons for the lower number of visits to the gynaecologist and missed cervical cancer screenings, according to existing literature (29).

The availability, affordability and accessibility of health care in our study were analysed through UHCN expressed as barriers to tending cervical screening due to waiting time, distance/transportation and affordability of medical care, based on self-reported data. Women who cited distance or lack of finances were more likely to MCST in the last 3 years (OR = 2.05, 95% CI: 1.99–2.11; and OR = 1.10, 95% CI: 1.08–1.12, respectively).

The first research on unmet healthcare needs on a representative sample in Serbia showed that the most common reasons for UHCN for accessibility were a lack of finances and long waiting lists (9). One of the first combined qualitative-quantitative studies conducted in Serbia, which analysed the barriers to cervical screening use, showed that long waiting times were a key reason for missing this preventive check-up (30).

While Serbia initiated an organized cervical cancer screening programme in 2012, adequate coverage has not yet been achieved. This is likely due to the lack of prioritization of screening amidst competing healthcare needs and limited resources, which impact the infrastructure and financial support necessary for successful implementation (27).

Our study's limitations include its cross-sectional design, which does not allow for causality analysis, and the reliance on self-reported data, which may introduce bias. All data on UHCN are based on individuals' self-assessment and, therefore, to some extent, reflect subjective experiences. Treating UHCN as an independent variable measured within the same 12-month window introduces the risk of reverse causality (endogeneity): it is unclear whether unmet needs preceded (non-)attendance at screening or were reported as a consequence of attempts to access screening. Moreover, UHCN is partly shaped by both underlying health needs and service utilization; conditioning on it may result in over-adjustment, potentially biasing associations typically by diluting true effects or generating spurious ones. This study did not include individuals residing in health or social care institutions. However, using data from the NHS provides a robust foundation for statistical analysis.

CONCLUSIONS

This study highlights substantial regional and socioeconomic inequalities in cervical cancer screening participation in Serbia. The findings confirm a persistent North–South gradient, reflecting both geographic and systemic centralisation of healthcare services. Participation is socially patterned – older, less-educated and lower-income women are less likely to attend cervical screening. Shortfalls most plausibly reflect resource and infrastructure constraints that have limited the organised programme since its inception. While causality cannot be inferred and self-report may introduce bias, the nationally representative data depict persistent inequities that call for targeted, equity-oriented action.

Acknowledgement

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Conflicts of Interest

None declared

Adherence to Ethical Standards

The Ethics Review Board of the Institute of Public Health of Vojvodina (Decision no. 01-689/2, of April 25, 2024), issued the necessary approval for undertaking this study.

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