EVALUATION OF BARRIERS TO CERVICAL CANCER SCREENING IN GEORGIA

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SUMMARY

Objectives: The Cervical Cancer (CC) Screening Programme in Georgia provides insufficient coverage of the target population. The aim of the study is to identify the barriers to cervical cancer screening for women in Georgia in order to plan and implement adequate measures to increase the screening effectiveness.

Methods: The study is based on the results of a survey of 582 women aged 25–60 years (mean age 42.11 + 12.17). Respondents were selected in out-patient clinics.

The questionnaire included questions related to the place of residence, ethnicity, religion, marital status, education, employment, cervical cancer awareness and screening, screening participation practices, and barriers to participation.

Results: The following factors reliably increase the chance of participating in the screening: residing in Tbilisi, OR = 1.84 (95% CI: 1.10–3.07); higher education, OR = 1.87 (95% CI: 1.09–3.19); being employed as a nurse, OR = 3.42 (95% CI: 1.49–7.85); receiving screening-related information from medical staff, OR = 2.43 (95% CI: 1.42–4.15); and from television, OR = 2.57 (95% CI: 1.47–4.50). The chance of participating in the screening is reduced due to incomplete secondary education, OR = 0.10 (95% CI: 0.01–0.77); single marital status, OR = 0.49 (95% CI: 0.28–0.87); employment in public service, OR = 0.39 (95% CI: 0.17–0.89); and receiving screening-related information from friends, OR = 0.26 (95% CI: 0.09–0.77). Women with higher education are undoubtedly more informed about screening, screening procedures and free programmes than those without higher education. The common barrier to participation in the screening was "fear of the manipulation-related pain" but the most frequent answer was "I'm afraid that the test will detect cancer (36.3%)." Women with a lower level of education are more likely to believe that "Pap testing is appropriate for the women who have active sexual life", and/or "have multiple sexual partners", and/or "have children," and "it is not necessary if a woman has no complaints".

Conclusion: Screening participation among women in Georgia depends on screening availability, formal education and awareness of CC, sources of information, and employment type.

Key words: barriers, cervical cancer screening, education, awareness

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INTRODUCTION

Cervical cancer, which is the fourth leading cause of death for women worldwide, continues to be a major public health problem. In 2020, 604,000 women developed cervical cancer and 342,000 women died (1, 2). The most significant risk factor for cervical cancer is infection with the human papillomavirus (HPV), especially types 16 and 18 (3). Cervical cancer is one of the few oncological diseases for which primary prevention (by vaccination) as well as screening based on various methods (HPV test, Pap test), is carried out with great success in different countries (4, 6).

A recent modelling study in 181 countries found that 12.5 million to 13.4 million new cases of cervical cancer could be prevented between 2020 and 2070, and that by the end of the century the disease could be almost completely eradicated in most countries as a result of HPV vaccination as well as the widespread introduction of cervical cancer screening (5).

Definitely, all factors creating barriers to the overall process of vaccination and screening should be identified and eliminated in order to deal with such a challenge.

It should be noted that barriers to cervical cancer screening exist in both developing and developed countries. Furthermore, some barriers are identical (similar) in both categories of countries.

A survey of 18,000 women aged 25–64 living in the UK revealed that pain/discomfort and embarrassment caused directly by screening procedures, as well as a lack of time, were most often considered barriers to cervical cancer screening (7). A survey of immigrant women conducted in Canada revealed that the most common barriers to the screening were low public awareness of

health issues, low income, a sense of discomfort related to the participation of male doctors in the screening process, and a lack of effective doctor-patient communication (8). In addition, unlike immigrants, the majority of aboriginal Canadians confirm the existence of the following barriers: the invasiveness of the Pap test (young women, aged 20–24) (9); and the opportunistic nature of the screening (elders) (10, 11).

The barriers to women's participation in screening differed slightly in low- and middle-income countries. For example, a survey of Iranian women showed their limited and incorrect knowledge about cervical cancer (CC) and its screening, exacerbated by misconceptions about infection and cancer prevention (low perception of CC was related with an overestimation of the role of hereditary factors and the absence of visible symptoms) (13).

Screening barriers for Kenyan, Ugandan, Nigerian, and Indonesian women were more or less identical. These included difficulty of access (due to transport and cost of screening), negative attitude of the spouse, stigma, embarrassment, and fear of the screening procedure itself, fear related to positive test results, lack of knowledge, and religious and cultural beliefs (14–17). However, in Nigeria, "being married", "increasing age", "awareness of screening methods" and "doctor's recommendation" were proven contributing factors to women's participation in screening (16).

A study conducted on Serbian women found that a combination of social and personal barriers contributes to the formation of negative attitudes toward CC screening. Among them, the most important were "inadequate health education" of the population, "lack of patient-oriented health services" and "wrong socio-cultural perceptions" (18). Investigation of barriers to participation in cervical cancer screening in low- and middle-income countries revealed the 22 most common barriers, including "low awareness of cervical cancer and its treatment" (barrier of lack of knowledge and awareness); "unacceptability or shyness" (psychological barrier); "lack of time" (structural barrier); and "limited support from family members" (socio-cultural and religious barriers) (12, 22–24, 26).

In Georgia, cervical cancer is one of the five most common malignancies registered in women (20). Besides, the 5-year survival rate of cervical cancer does not exceed 65% (21). The population of the country is 3,720,200, including 51.8% of women and 48.2% of men; 59.0% of the population lives in the cities. According to the census in 2014, the ethnic composition of the country is as follows: Georgians – 86.8%, Azerbaijanis – 6.3%, Armenians – 4.5%, others – 2.4%; the distribution of the population according to religion looks like this: Christians – 86.8%, Muslims – 10.7%, and remaining representatives of other confessions (19).

Since 2011, the country has developed a state screening programme for cervical cancer for women aged 25–60. The programme is based on a Pap test and is implemented as a non-organized (opportunistic) model, when a woman enrols in the screening process voluntarily by her own decision. In such a model it is obvious that great importance is attached to the proper public awareness, as well as the level of health education and adequate perception of the information provided.

The coverage of the target population by the Cervical Cancer Screening Programme in Georgia is far from the desired one. The coverage rate in regions is approximately 8%, while in Tbilisi it is 18%. Obviously, it is essential to determine the reasons for low screening coverage in Georgia and find ways to improve the situation.

The aim of the study is to identify the barriers to cervical cancer screening for women in Georgia in order to plan and implement adequate measures to increase the screening effectiveness.

MATERIALS AND METHODS

The study is based on the results of a survey of 582 women aged 25–60 years (mean age 42.11 + 12.17). Respondents were selected in out-patient clinics (non-screening institutions), 4 out-patient clinics in Tbilisi (one out-patient clinic in one district of Tbilisi), and 4 regional out-patient clinics, two in western Georgia and 2 in eastern Georgia were selected by randomization.

A questionnaire designed by an expert group of psychologists, nurses, public health professionals, and screening programme staff was used as the research instrument. The social position of Georgia, the existing system of education, and ethnic features were taken into account. The questionnaire was tested on 61 respondents for its validation (25).

The questionnaire included questions related to the place of residence, ethnicity, religion, marital status, education, employment, cervical cancer awareness and screening, screening participation practices, and barriers to participation (Table 1).

Each participant was informed about the study's content and purpose, and a written informed consent form was obtained. The time and location of the interview were agreed upon in order to create the most comfortable conditions for the respondent.

The inclusion criteria for the study were as follows: citizenship of Georgia, "screening age" (25–60 years), no current or prior diagnosis of cervical cancer or other cervical anomalies.

Exclusion criteria: insufficient knowledge of the Georgian language, mental disorders (confirmed by the results of a "mini-examination" of the mental state provided by family doctors), refusal to be included in the study.

All procedures were carried out in accordance with the ethical requirements of the Commission on Ethics of the National Screening Centre (Minutes No. N25/4 dated February 4, 2019) and the Helsinki Declaration of 1964.

Statistical Analysis

Participation in the study was offered to 627 women; 45 of them refused to participate in the study. The number of participants in the study was determined by the results of a pilot study, which revealed that the expected frequency of awareness of cervical cancer was 60%.

$N = t2 * P * Q/\Delta 2$

$P = 0.6$, $Q = 0.4$, $t = 1.96$, $\Delta 2 = 0.0025$

Minimum N = 369

To evaluate quantitative indicators, the mean value and standard deviation were assessed. In the case of quantitative indicators, the significance of differences between groups was determined using Student's t-test; when comparing, the equality of variances was evaluated by the Levene's test, and the subsequent t-test was chosen based on the results obtained. For qualitative indicators, we evaluated frequency and percentage. Differences between groups were assessed using the ANOVA–F (Fisher's) test. The odds ratio was determined using several binary logistic regression analyses. The difference was considered significant

Table 1. *Number of screened and non-screened women according to the place of residence, level of education, employment and information source*

Factors		Without screening (n = 493)		Screening (n = 89)		p-value
		n	%	n	%	
Place of residence	Tbilisi	192	38.95	53	59.55	0.0003
	Regions	301	61.05	36	40.44	0.0003
Marital status	Married	201	40.77	45	50.56	0.0855
	Divorced and widow	91	18.46	19	21.35	0.5224
	Single	192	38.95	23	25.84	0.0184
	Cohabitant	9	1.83	2	2.25	0.7885
Education	Primary	19	3.85	1	1.12	0.1937
	Incomplete secondary	67	13.59	1	1.12	0.0007
	Secondary	234	47.46	33	37.08	0.0705
	Higher and university	173	35.09	54	60.67	< 0.0001
Employment	Doctor	57	11.56	19	21.35	0.0116
	Nurse	19	3.85	13	14.61	< 0.0001
	Public Service	121	24.54	8	8.99	0.0011
	Student	76	15.42	16	17.98	0.5429
	Small entrepreneur	41	8.32	11	12.36	0.2191
	Housewife	83	16.84	13	14.61	0.6028
	Self-employed	77	15.62	13	14.61	0.8084
	Peasant	29	5.88	2	2.25	0.1604
How did you find out about screening	Radio/television	75	15.21	31	34.83	< 0.0001
	Internet	178	36.11	23	25.84	0.8608
	Medical staff	129	26.17	44	49.44	< 0.0001
	Family	50	10.14	5	5.62	0.0645
	Friends	47	9.53	5	5.62	< 0.0001
	Magazines/newspapers	92	18.66	4	4.49	0.7293

at $p < 0.05$. Statistical analysis was performed using the SPSS 23 software platform.

RESULTS

The demographic data of the women participating in the survey were as follows: 245 (42.10%) lived in Tbilisi (the capital city), 337 (47.90%) lived in the regions; Georgians were 516 (88.66%), Azerbaijanis 9 (1.55%), Armenians 28 (4.81%), Russians 13 (2.23%), other nationalities 16 (2.75); Christians were 508 (87.29%), Muslims 47 (8.08%), of other religions 23 (3.95%); married 246 (42.27%), divorced + widowed 110 (18.90%), unmarried 215 (36.94%), had a partner outside of marriage 11 (1.89%); with primary education there were 20 (3.40%), with incomplete secondary education 68 (11.60%), with secondary education 267 (45.90%), and with higher education 227 (39.00%).

It turned out that 493 of the 582 women who participated in the study had never previously been screened for cervical cancer (group N1), and 89 women had undergone it at least once (group N2).

It should be noted that the comparison of these two groups did not reveal any age differences. The mean ages of the groups were 30.80 + 12.93 and 32.58 + 12.90, respectively ($t = -1.198$, $p = 0.232$).

In the group N1 there are significantly more Tbilisi residents. Examining screening participation rates by type of employment showed that the number of public employees and peasants who did not participate in the CC screening is 15 times higher than the number of those who passed the screening. In the case of other forms of employment, the ratio of similar data is much lower (Table 1).

When asked how they got information about cervical cancer, all respondents named more than one source. In the N 1 group (whose members did not undergo the screening), the answer "friends" is significantly more common, while among the representatives of the N 2 group (who underwent the screening), the more common responses were "radio–television" and "medical personnel" (Table 1).

The distribution of the respondents according to cervical cancer knowledge/awareness is provided in Table 2.

Among respondents of the N 2 group, in contrast to the N 1 group, there are more people who know that cervical cancer is a sexually transmitted disease, prevention of cervical cancer is possible by vaccinating adolescents, early diagnostics is possible by screening (Pap smear), and that in case of early diagnostics of cervical cancer, it is possible to cure (Table 2).

It has been found that individuals, who were screened for cervical cancer, in general, have a correct understanding of risk factors for

Table 2. *Distribution of interviewed women according to awareness of cervical cancer, its causes and clinical symptoms*

Questions		Without screening (n = 493)		Screening (n = 89)		p-value
		n	%	n	%	
What do you know about cervical cancer	Cervical cancer is sexually transmitted disease	134	27.18	47	52.81	< 0.0001
	Prevention is possible	182	36.92	65	73.03	< 0.0001
	Cervical cancer can be prevented by vaccinating young girls	98	19.88	47	52.81	< 0.0001
	Cervical cancer can be prevented by cervical cancer screening	155	31.44	51	57.30	< 0.0001
	Cervical cancer can be cured in case of early diagnostics	219	44.42	69	77.53	< 0.0001
	Surgical intervention in patients with cervical cancer can contribute to the spread of cancer	113	22.92	23	25.84	0.5496
What do you think are the reasons for the development of cervical cancer	Family planning – using pills and injections	101	20.49	18	20.22	0.9551
	Early onset of sexual activity	105	21.30	33	37.08	0.0012
	Papillomavirus infection	93	18.86	47	52.81	< 0.0001
	Multiple sexual partners	84	17.04	34	38.20	< 0.0001
	Sexual intercourse with polygamous man	65	13.18	23	25.84	0.0021
	Traumatic/rough sexual intercourse	105	21.30	22	24.72	0.4729
	Hygiene – insufficient genital washing, especially after sexual intercourse	141	28.60	45	50.56	< 0.0001
	Sexual intercourse before marriage	114	23.12	11	12.36	0.0228
	Large family (> 5 live or more than 20 weeks gestation pregnancy)	78	15.82	19	21.35	0.1985
	Abortion	151	30.63	61	68.54	< 0.0001
	Late childbirth	69	14.00	27	30.34	0.0001
	Childbirth at an early age	84	17.04	30	33.71	0.0003
	Cervical cancer is hereditary; woman will be affected if mother, aunt or grandmother had the disease	108	21.91	45	50.56	< 0.0001
	Cervical cancer is contagious	53	10.75	9	10.11	0.8578
	Poor ecology	101	20.49	39	43.82	< 0.0001
	Poor nutrition	69	14.00	23	25.84	0.0048
	Overweight	91	18.46	22	24.72	0.1699
	Cigarette/tobacco	118	23.94	47	52.81	< 0.0001
	Frequent alcohol consumption	70	14.20	29	32.58	< 0.0001
Symptoms of cervical cancer	Intermenstrual vaginal bleeding	106	21.50	42	47.19	< 0.0001
	Postmenopausal vaginal bleeding	59	11.97	32	35.96	< 0.0001
	Post-coital vaginal bleeding	52	10.55	28	31.46	< 0.0001
	Excessive vaginal discharge, often with unpleasant odour	102	20.69	46	51.69	< 0.0001
	Lower abdominal pain	122	24.75	31	34.83	0.0468
	Dyspareunia	50	10.14	44	49.44	< 0.0001

cervical cancer. They frequently cite factors including the early onset of sexual activity, papillomavirus infection, multiple sexual partners, sexual intercourse with a polygamous man, childbirth at an early age, and abortions. They also believe that cervical cancer is inherited. Respondents in this group note general risk factors for cancer, such as poor ecology, poor nutrition, smoking, and frequent alcohol consumption. Also, it is reliably frequent to cite the symptoms of cervical cancer, such as intermenstrual vaginal bleeding, postmenopausal vaginal bleeding, bleeding after sexual intercourse, excessive vaginal discharge (often with an unpleasant odour), lower abdominal pain, and genital pain during sexual intercourse (dyspareunia) (Table 2).

The odds ratio (OR) of the characteristics of prognostic demographic and information resources affecting screening, determined by multiple regression analyses, revealed that the following factors reliably increase the chance of participating in the screening: residing in Tbilisi, OR = 1.84 (95% CI: 1.10–3.07); higher education, OR = 1.87 (95% CI: 1.09–3.19); being employed as a nurse, OR = 3.42 (95% CI: 1.49–7.85); receiving screening-related information from medical staff, OR = 2.43 (95% CI: 1.42–4.15); and from television, OR = 2.57 (95% CI: 1.47–4.50). The chance of participating in the screening is reduced due to incomplete secondary education, OR = 0.10 (95% CI: 0.01–0.77); single marital status, OR = 0.49 (95% CI: 0.28–0.87); employment in public service,

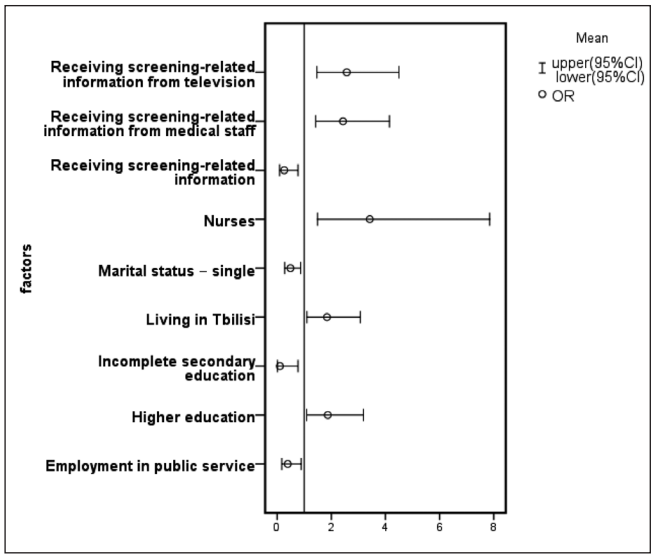


Fig. 1. *Evaluation of odds ratio of participating in the screening programme.*

OR = 0.39 (95% CI: 0.17–0.89); and receiving screening-related information from friends, OR = 0.26 (95% CI: 0.09–0.77); (Fig. 1).

Among the respondents, who were not screened (493 women), screening barriers were also compared between populations with and without higher education (Table 3). It should be noted that women with higher education, in contrast to the rest of the population, indicate different barriers to participation in cervical cancer screening.

As shown in the table, certainly more women with higher education are informed about screening, screening procedures, and free programmes, in contrast to the women without higher education. Moreover, they cite the following hindering factors reliably more often: problems related to the "lack of time to visit the clinic", as well as "waiting at the clinic". The barrier to participation in the screening was "fear of the manipulation-related pain", but the most common answer was "I'm afraid that the test will detect cancer (36.3%)".

Women without higher education are more likely to believe that "Pap test is necessary for the women, who have active sexual life",

Table 3. *Evaluation of screening barriers in women with and without higher education*

Factors		Without higher education (N = 320)		With higher education (N = 173)		p-value
		n	%	n	%	
Do you know	About cervical cancer (free) screening programme	36	11.25	41	23.70	0.0003
	About screening procedure	31	9.69	43	24.86	< 0.0001
	Where can you be screened	43	13.44	64	36.99	< 0.0001
	About Pap test	39	12.19	39	22.54	0.0026
	About Pap test procedure	75	23.44	56	32.37	0.0322
Resources	I have no time	45	14.06	58	33.53	< 0.0001
	I cannot go to the hospital	14	4.38	21	12.14	0.0013
	I cannot wait at the hospital for a long time	22	6.88	28	16.18	0.0010
Doctor-related barriers	Doctor is not acceptable for me	38	11.88	18	10.40	0.6242
	I feel embarrassed with male doctors	43	13.44	29	16.76	0.3193
	I do not trust in terms of saving information	30	9.38	28	16.18	0.0251
	I do not trust the quality of public health service.	18	5.63	14	8.09	0.2895
Test is not important	Because I am old	12	3.75	8	4.62	0.6395
	I am too young	40	12.50	21	12.14	0.9077
	Pap test is necessary for the women who have sexual life	32	10.00	5	2.89	0.0042
	Pap test is necessary only for women who had multiple sexual partners	37	11.56	8	4.62	0.0106
	Pap test is necessary only for the women who have kids	32	10.00	7	4.05	0.0194
	Doctor does not require Pap test	6	1.88	10	5.78	0.0195
	Screening is not necessary, if I do not have complaints	80	25.00	27	15.61	0.0157
Psychosocial	I do not care	21	6.56	18	10.40	0.1320
	I am afraid that test will detect cancer	108	33.75	72	41.62	0.0836
	Fear of diminishing social image	46	14.38	13	7.51	0.0251
	If cancer is revealed, husband (partner) may feel mistrust	57	17.81	29	16.76	0.7700
Fear of procedure	Fear of instruments	45	14.06	44	25.43	0.0017

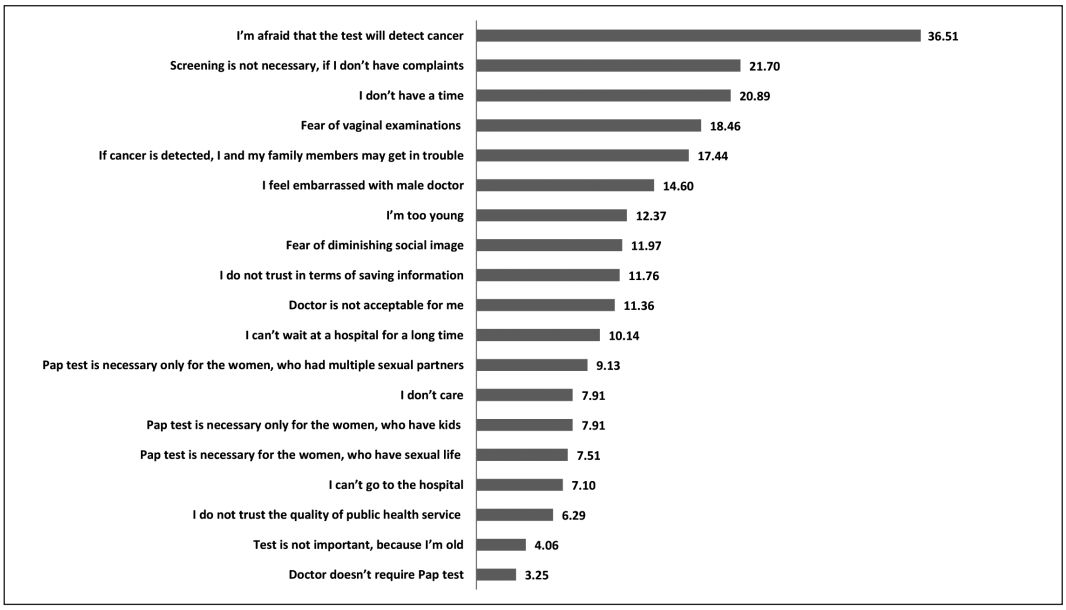


Fig. 2. *Distribution of screening-related barriers in women not participating in the screening programme.*

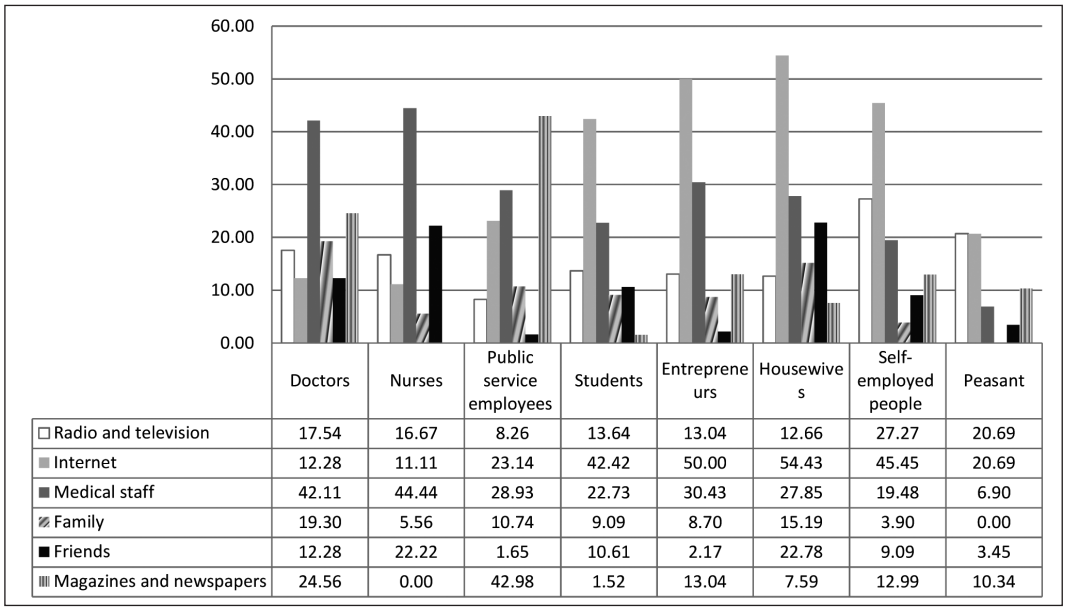
and/or "have multiple sexual partners", and/or "have children". Also, they think that "screening is not necessary if a woman has no complaints". Screening barriers were studied in women, who were not screened (Fig. 2).

The most common source of information for doctors and nurses is the medical staff (direct head and/or head of an institution, trainer, experts organizing scientific-educational events, etc.); for public service employees – magazines and newspapers; for students, entrepreneurs, housewives, and self-employed people – the internet (social networks); for those employed in agriculture (peasants) – radio and television and social networks (Fig. 3).

Table 4 presents results from a binary logistic regression model predicting respondent barriers to screening. The table lists variables that reliably increase or decrease screening barriers by employment of women who have never been screened.

In the case of doctors, the odds of refusing screening are related to a lack of time. The factors significantly increasing the relative probability of students refusing to undergo screening include "I do not have a time" and "if cancer is detected, I and my family members may get in trouble". In the case of public service employees, these factors include: "I am too young"; "doctor does not require a Pap test"; "screening is not required if I have no complaints"; "if cancer is discovered, I may experience distrust"; "Pap testing is only required for women who have had multiple sexual partners".

The likelihood of small business employees refusing to undergo screening has significantly increased: "the doctor is not acceptable for me"; "screening is not necessary if I don't have complaints"; "I'm afraid that the test will detect cancer"; "if cancer is detected, I and my family members may get into trouble"; "I do



	Doctors	Nurses	Public service employees	Students	Entrepreneurs	Housewives	Self-employed people	Peasant
Radio and television	17.54	16.67	8.26	13.64	13.04	12.66	27.27	20.69
Internet	12.28	11.11	23.14	42.42	50.00	54.43	45.45	20.69
Medical staff	42.11	44.44	28.93	22.73	30.43	27.85	19.48	6.90
Family	19.30	5.56	10.74	9.09	8.70	15.19	3.90	0.00
Friends	12.28	22.22	1.65	10.61	2.17	22.78	9.09	3.45
Magazines and newspapers	24.56	0.00	42.98	1.52	13.04	7.59	12.99	10.34

Fig. 3. *Distribution of respondents according to source of information about cervical cancer and screening, and employment.*

Table 4. *Binary logistic regression model predicting respondent barriers to screening*

Employment	Factors	B	SE	Wald	p-value	Exp(B)	95% CI for OR
Doctor	I do not have a time	1.71	0.34	25.44	< 0.0001	5.50	2.84–10.67
	Screening is not necessary, if I do not have complaints	−1.31	0.43	9.06	0.0026	0.27	0.12–0.63
	I am afraid that the test will detect cancer	−0.68	0.33	4.30	0.0380	0.51	0.27–0.96
	Constant	−2.05	0.20	100.48	< 0.0001	0.13	
Student	I do not have a time	0.73	0.28	6.88	0.0087	2.07	1.20–3.57
	Pap test is necessary only for the women, who had multiple sexual partners	−2.10	1.02	4.22	0.0401	0.12	0.02–0.91
	If cancer is detected, I and my family members may get in trouble	0.71	0.35	4.14	0.0418	2.03	1.03–4.01
	If cancer is revealed, may feel mistrust	−1.23	0.49	6.40	0.0114	0.29	0.11–0.76
	Constant	−1.76	0.17	107.55	< 0.0001	0.17	
Public service	I am too young	1.70	0.41	17.34	< 0.0001	5.49	2.46–12.248
	Pap test is necessary for the women who have sexual life	−1.33	0.66	4.05	0.0442	0.26	0.07–0.966
	Doctor does not require Pap test	1.57	0.58	7.39	0.0066	4.79	1.55–14.817
	Screening is not necessary if I do not have complaints	0.78	0.31	6.17	0.0130	2.17	1.18–4.007
	I do not care	−1.39	0.58	5.80	0.0160	0.25	0.08–0.772
	If cancer is detected, I and my family members may get in trouble	−1.03	0.51	4.12	0.0425	0.36	0.13–0.966
	If cancer is revealed, husband (partner) may feel mistrust	1.41	0.35	15.97	0.0001	4.09	2.05–8.174
	Fear of vaginal examinations	−1.29	0.42	9.53	0.0020	0.28	0.12–0.625
	Pap test is necessary only for the women who had multiple sexual partners	1.22	0.43	8.17	0.0043	3.39	1.47–7.84
	Constant	−1.65	0.19	75.54	< 0.0001	0.19	
Small entrepreneur	Doctor is not acceptable for me	1.89	0.44	18.29	< 0.0001	6.64	2.79–15.81
	I am too young	−2.31	1.07	4.67	0.0307	0.10	0.01–0.81
	Screening is not necessary if I do not have complaints	1.20	0.46	6.70	0.0096	3.31	1.34–8.20
	I am afraid that the test will detect cancer	1.50	0.36	16.99	< 0.0001	4.48	2.20-9.13
	If cancer is detected, I and my family members may get in trouble	1.69	0.44	15.06	0.0001	5.42	2.31–12.73
	Constant	−3.91	0.40	95.14	< 0.0001	0.02	
Housewife	I do not have a time	−1.02	0.42	5.96	0.0146	0.36	0.16–0.82
	Doctor is not acceptable for me	−1.25	0.62	4.01	0.0453	0.29	0.08–0.97
	I feel embarrassed with male doctor	−2.55	0.73	12.24	0.0005	0.08	0.02–0.33
	I do not trust in terms of saving information	0.94	0.37	6.54	0.0106	2.56	1.24–5.25
	Pap test is necessary for the women who have sexual life	1.65	0.41	16.16	0.0001	5.23	2.33–11.72
	Pap test is necessary only for the women who have kids	1.15	0.42	7.36	0.0067	3.15	1.37–7.22
	I do not care	−1.89	0.81	5.51	0.0189	0.15	0.03–0.73
	Fear of vaginal examinations	1.18	0.37	10.24	0.0014	3.26	1.58–6.72
	Constant	−1.73	0.19	85.05	< 0.0001	0.18	
Self-employed	Doctor is not acceptable for me	0.67	0.33	4.08	0.0434	1.96	1.02–3.76
	I do not care	0.86	0.38	5.08	0.0241	2.36	1.12–4.98
	Fear of diminishing social image	−1.66	0.74	5.10	0.0239	0.19	0.04–0.80
	If cancer is revealed, husband (partner) may feel mistrust	−1.06	0.45	5.60	0.0179	0.35	0.14–0.83
	Constant	−1.63	0.16	106.25	< 0.0001	0.20	
Peasant	I do not have a time	−1.67	0.79	4.43	0.0352	0.19	0.04–0.89
	Pap test is necessary only for the women who had multiple sexual partners	1.50	0.51	8.82	0.0030	4.50	1.67–12.14
	Fear of diminishing social image	2.71	0.44	38.77	< 0.0001	15.06	6.41–35.36

not trust in terms of concealing information". "Pap test is necessary for the women who have sexual life"; or "Pap test is only necessary for women who have children"; and "fear of vaginal examinations" are among the reasons given by a housewife for refusing the test. In the case of self-employed individuals, the frequent answer was "doctor is not acceptable for me"; "I do not care". The relative likelihood that a peasant will refuse to be tested significantly increases, which is expressed as "Pap tests are necessary only for women who have had multiple sexual partners". There is the fear of a diminished social image.

DISCUSSION

Although the number of interviewed women and the distribution of their demographic data more or less adequately reflect the distribution of the female population of Georgia, the exception is the Azerbaijani community. The participation of Azerbaijani women in the survey is limited due to their insufficient knowledge of the Georgian language. This fact can be considered one of the "limitations" of the study.

The fact that only 89 out of 582 women surveyed participated in cervical cancer screening (15.3%) confirms low screening coverage and once again points to the need to investigate its causes.

While the age difference is not confirmed among the groups N1 and N2, this indicates that age is not a determining factor for participation or non-participation in screening. The active participation of medical staff in screening is understandable. The only thing that reduces the likelihood that they will undergo the screening is a lack of time. Time constraints also increase the share of students, not taking the Pap test. In addition, students are less likely to have a Pap test because of the fear that they and their families will face trouble if cancer is found. Contrary is the case of female university students from the USA, who never received a Pap test, mentioned procrastination (82%), lack of interest, and fear as reasons for not practicing behaviour (27).

The reason for the "restraint" of civil servants should be clarified and provided. The absence or infrequent participation of civil servants in the screening causes wrong beliefs about screening ("I am too young"; "doctor does not require Pap test"; "screening is not necessary, if I do not have complaints", "feelings of distrust may arise if cancer is detected"; "Pap test is necessary only for the women, who had multiple sexual partners"). Although, given the demographic and economic structure of the country, civil servants are mostly city dwellers and most of them have higher education, a combination of the above data suggests that, on the one hand, information about screening is provided with inadequate intensity and quality for this contingent (this is confirmed by citing, "friends" as the main source of information), and on the other hand, public officials fail to adequately perceive the risk of cervical cancer and main point and importance (advantage) of the screening, which despite the higher education of public service employees, indicates their poor health care education.

Multiple studies generally indicate that degree of participation in the screening is associated with women's education (28–30). The main barriers to screening are cited to be low awareness and insufficient understanding of the screening role (31). Our study compared housewives, few of whom have higher education, with working women. Fear of vaginal examinations, as well as statements like "I do not trust in terms of concealing information"; "Pap test is only necessary for women who have sexual life"; and "Pap test is only necessary for women who have children", all increase the likelihood of housewives refusing screening. The education status turned out to be important for the participation in the screening programme as well.

It should be noted that barriers to participation in cervical cancer screening identified in our study are consistent with the barriers identified in both low- and middle-income countries, as well as in developed countries. Thus, for example, the 22 barriers identified in low- and middle-income countries like Georgia including "lack of information about cervical cancer and its treatment", "unacceptability or shyness", "lack of time", and "lack of family support" were considered to be the most important (12).

Screening barriers to cervical cancer identified in Georgia are consistent with those identified in the countries in Latin America: "discomfort and distrust in terms of privacy", "anxiety about test results", and "fear of cancer, in general" (31).

So-called practical barriers were distinguished more often among the screening barriers in the English population: "fear of pain" (67.2%) and "lack of time" (48.7%) (5), which are also important for the population of Georgia, where 18.49% of respondents cite "fear of vaginal examinations", and 20.89% "lack of time".

Psychological (anxiety, embarrassment) and practical (lack of time) barriers to cervical cancer screening, identified in a study in Australia (32), were also frequently noted by a contingent surveyed in Georgia, from which the following fear was the most frequent: "the test will detect cancer" (36.51%), and "if cancer is detected, husband (partner) may experience distrust" (18.46%), "fear of vaginal examination" (18.49%), and "feeling embarrassed with male doctor" (14.6%). Some fear increased the odds of a screening barrier in almost all of the groups we surveyed.

Identifying barriers in Georgia typical for a developed country, on one hand, may indicate that despite the economic problems, Georgia is considered in the cohort of developed countries socially and culturally, and on the other hand, part of the barriers to cervical cancer screening is the same in both low- and high-income countries, due to screening specificity. It should be noted that, in the part of the female population of Georgia that has never been screened, barriers vary depending on both the level of education and employment peculiarities. Women with higher education are more likely to state practical barriers or fear of the procedure, while for the respondents without higher education, hindering factors are as follows: low awareness and a lack of health education, and consequently, misconceptions about screening. This is supported by the fact that women who have participated in the screening undoubtedly have more information and knowledge about the aetiology, prevention, and treatment of cervical cancer. Moreover, they have more knowledge about the risk factors for cervical cancer, such as the early onset of sexual activity, papillomavirus infection, multiple sexual partners, a sexual relationship with a polygamous man, childbirth at an early age, abortions, and inheritance. They are also more aware of the symptoms of cervical cancer, such as various types of vaginal bleeding and discharge, as well as pain, including pain during sexual intercourse.

CONCLUSION

Given all of the above-mentioned, it can be concluded that the main barriers to the participation of the female population of Georgia in the screening are associated with difficult accessibility of screening, low level of education, and low awareness.

The difference in awareness of cervical cancer and its management between the screened and non-screened groups demonstrates the need to find more effective forms of providing information on screening and at the same time, improve the quality of public health education. In this process, the cooperation of the medical community with the mass media and social networks may be actively used, especially considering our research data, which confirms that the information heard on radio/television and the doctor's explanation of the need for screening are the most convincing tools for those women, who receive information most often through electronic and digital media.

We believe that "telecommunication" of the medical community (especially of top-class cervical cancer screening specialists) will help build public trust in health services (which is scarce, including among people with higher education, who generally cite greater barriers to enrolment in screening than the women without higher education). Such communication should support removing the fear of pain associated with participation in screening (irrational fear), as well as the stigma associated with a cancer diagnosis (irrational stigma).

Such communication should also help to eliminate the misconceptions that a Pap test is necessary "only for women who have an active sex life (especially with multiple partners)", "for those who have many children", or "for those who complain about the genitals" (such opinions are more often supported by women without higher education). The study results should be important for policymakers and their international or local partners (state institutions and non-governmental organizations) to work together to eliminate cervical cancer screening barriers identified in Georgia.

Conflict of Interests
None declared

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