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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლე

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

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GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректурa авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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KNOWLEDGE AND BEHAVIORAL ATTITUDES OF THE PRIMARY HEALTH CARE PHYSICIANS REGARDING THE NATIONAL CANCER SCREENING PROGRAM IN GEORGIA

R. Gvamichava¹, T. Beruchashvili¹, M. Kereselidze², N. Ubilava¹, C. Seniore³.

¹Georgian Society of Clinical Oncology, Georgia.

²National Center for Disease Control and Public Health of Georgia, Georgia.

³Centre for Cancer Prevention in Turin (Italy). Piedmont Region cancer screening program.

Abstract.

Background: Population-based cancer screening programs are a key component of cancer control strategies. In Georgia, national screening programs for breast, cervical, and colorectal cancer are available; however, population participation remains low. Primary health care (PHC) physicians play a central role in promoting screening uptake, yet evidences on their attitudes, practices are limited.

Aim: To assess knowledge, attitudes, screening practices, system and patient-related barriers among primary health care physicians in Georgia.

Methods: A nationwide cross-sectional mixed-methods study was conducted among urban and rural (PHC) physicians using a structured questionnaire. Quantitative data were analyzed using descriptive statistics and multivariable regression models, while open-ended responses were analyzed thematically.

Results: Overall support for cancer screening among PHC physicians was very high. Nearly all respondents considered screening to be preventive, safe, and beneficial, and most reported routinely recommending screening to asymptomatic patients. Physician attitudes did not represent a barrier to screening implementation. Multivariable analysis identified region of practice as the strongest predictor of perceived consultation time sufficiency, with physicians in urban settings reporting significantly greater time constraints. Thematic analysis revealed that low population awareness, fear of diagnosis, access and transportation barriers, and weak coordination between primary care and screening services were the dominant challenges.

Conclusion: The study findings confirm that interventions should focus on improving organizational processes, strengthening communication, enhancing access to services, increasing public awareness, and supporting the professional development of primary health care (PHC) physicians.

Key words. Cancer screening, coverage of screening programs, family doctors, rural doctors, Georgia.

Introduction.

Cancer remains a major public health challenge in Georgia, with approximately 9,000–11,000 new cases diagnosed annually in recent years. A substantial proportion of cases are detected at advanced stages, resulting in poorer treatment outcomes and lower survival compared with many European countries. Early detection through organized cancer screening is therefore a critical component of national cancer control efforts [1-4].

Georgia introduced a state-financed cancer screening program

in 2008, initially in the capital and subsequently expanded nationwide. The program targets breast cancer (women aged 40–70 years), cervical cancer (25–60 years), and colorectal cancer (50–70 years). Despite full public financing, screening coverage remains low, in 2021, coverage was 11.2% for breast, 10.9% for cervical, and only 1.9% for colorectal cancer, compared with 65–80% in Western Europe, the United States, and Scandinavia (NCDC Georgia, 2021; Senore C, Basu P, Anttila A, et al.), indicating that the availability of services alone is insufficient to ensure population uptake [5-8].

Primary health care physicians occupy a pivotal position in the screening pathway [5,9,10]. As the first point of contact within the health system, they are trusted sources of health information and play a decisive role in recommending preventive services, identifying eligible individuals, and facilitating referrals. International evidence consistently shows that physician recommendation is among the strongest predictors of screening participation.

While several studies have explored population awareness and attitudes towards cancer screening in Georgia, evidence regarding primary care physicians' perspectives remains limited. Understanding whether barriers lie in physician knowledge and attitudes, or rather in system organization and patient-related factors, is essential for designing effective interventions. This study aimed to assess screening-related knowledge, attitudes, practices, and perceived barriers among family and rural doctors across Georgia, with a particular focus on identifying modifiable system-level constraints.

Materials and Methods.

Study design and participants:

A total of 458 primary health care physicians participated in the study. A cross-sectional mixed-methods study was conducted among primary health care physicians working in urban and rural PHC settings across Georgia. Eligible participants included family doctors (working in urban settings) and rural physicians actively providing PHC services at the time of the survey. Stratification variables included:

- Working place (Tbilisi and all ten administrative regions).
- Type of doctor: urban (family doctors) versus rural (village doctors), with a predefined target of approximately 60% urban and 40% rural).
- Sex in accordance with program eligibility, and
- Age group (25–29, 30–49, and 50–70 years for women; 50–70 years for men).

Sampling and data collection:

Physicians were selected through random sampling from national primary care facility lists, the sample size was calculated using standard epidemiological methods (Lwanga & Lemeshow, 1991). Parameters: 50% expected frequency of positive answers, 5% margin of error, 95% confidence interval, 1.0 design effect, and allowance for potential non-response.

Data were collected using a structured questionnaire administered through a combination of online surveys and face-to-face interviews conducted by trained field researchers. Participation was voluntary. Responses were compiled into a unified electronic database.

The survey questionnaires were developed in Georgian and pre-tested on a pilot sample of 65 individuals for clarity, translation accuracy, and response consistency. Feedback was used to refine question wording and scale options.

Research instrument:

The questionnaire included items on socio-demographic characteristics, screening practices, attitudes towards cancer screening, perceived patient barriers, and system-level challenges. Open-ended questions allowed respondents to elaborate on their views regarding screening promotion and program management.

Data analysis:

Quantitative data were analyzed using SPSS software. Descriptive statistics were used to summarize key variables. Multivariable regression models were fitted to assess associations between physician characteristics, including region of practice and type of physician and survey outcomes. Qualitative responses were analyzed using thematic analysis with inductive coding to identify recurring themes.

Ethical considerations:

This study protocol received ethical approval from the Tbilisi State Medical University Biomedical Research Ethics Board (Approval No. N4-2023/105). All participants were provided with an informed consent form, outlining the purpose of the study, voluntary nature of participation, confidentiality protections, and data usage.

No personally identifiable information was collected. Survey responses were anonymized and stored securely on encrypted drives. For online submissions, IP addresses and emails were neither recorded nor required. Participants had the right to decline or withdraw at any point without consequences.

Results.

Participant characteristics:

A total of 458 primary health care physicians participated in the study. The majority were female and over 45 years of age. Both family doctors and rural physicians were represented, with respondents drawn from multiple regions of the country, including urban and rural settings.

The survey results indicate a highly homogeneous primary health care physician workforce. An overwhelming majority of respondents were female (95%), Georgian nationals (99%), and over 45 years of age (90%). This demographic concentration suggests a stable but aging workforce, with nearly 53% of

physicians aged 55 years or older, and one-fifth already aged 65+. The largest age groups were 45–54 years (37%) and 55–64 years (33%), representing physicians likely trained during periods when preventive medicine and screening were increasingly emphasized.

A detailed socio-demographic characteristics of participant is presented in Table 1.

Table 1. Socio-demographic and socioeconomic characteristics of the study sample (N = 458).

Characteristic	n	%
Age group		
25-34	10	2%
35-44	36	8%
45-54	170	37%
55-64	152	33%
65+	90	20%
Gender		
Female	435	95%
Male	23	5%
Marital status		
Married	362	79%
Single	37	8%
Widowed/divorced	55	12%
Other	5	1%
Ethnicity		
Georgian	452	99%
Azeri	1	0,2%
Armenian	2	0,2%
Russian	1	0,2%
Ossetians	1	0,2%
Other	1	0,2%
Type of physician		
Family doctors/Urban	227	49,5%
Rural doctors/Village	231	50,4%
Workplace		
Adjara	37	8%
Guria	14	3%
Tbilisi	124	27%
Imereti	73	16%
Kakheti	55	12%
Mtskheta-Mtianeti	9	2%
Racha-Lechkhumi and Kvemo Svaneti	9	2%
Samegrelo and Zemo Svaneti	32	7%
Samtskhe-Javakheti	18	4%
Kvemo Kartli	37	8%
Shida Kartli	50	11%

Screening attitudes and practices:

Support for cancer screening among PHC physicians was almost universal. Nearly all respondents considered screening procedures to be preventive in nature and did not perceive them as harmful to patients. The vast majority reported routinely offering screening to asymptomatic patients, and more than half indicated that they had recommended screening within the previous week. These findings suggest that screening

promotion is well integrated into routine primary care practice. No statistically significant differences were observed between urban (family doctors) and rural (village) doctors in the likelihood of recommending screening.

Nearly all respondents considered screening procedures to be preventive in nature and did not perceive them as harmful to patients. The study revealed a near-total consensus on the importance of prevention as a core health strategy. This indicates strong alignment between physicians' beliefs and public health frameworks, suggesting that resistance to preventive programs is unlikely to come from primary care providers.

Physicians also expressed strong confidence in the population-level benefits of national screening programs. Importantly, only a very small proportion of respondents reported not offering screening, and these cases were attributed to practical constraints such as limited consultation time or competing clinical priorities rather than skepticism about screening effectiveness. These findings suggest that screening promotion is well integrated into routine primary care practice, indicates strong professional endorsement of national screening initiatives and provides a solid foundation for expanding or strengthening these programs.

Rural physicians were significantly more likely than urban family doctors to report having sufficient consultation time to discuss screening with patients (Table 2).

In unadjusted analyses, rural physicians were significantly more likely than family doctors to report having sufficient consultation time to discuss screening with patients ($p < 0.001$). However, multivariable analysis demonstrated that this association was largely explained by region of practice (urban doctors in Tbilisi and all ten administrative regions) rather than doctor type. After adjustment, region of practice emerged as the strongest predictor of perceived consultation time sufficiency. Physicians practicing in Tbilisi were significantly less likely to report having adequate time for screening-related discussions compared with those working in urban settings of other regions (OR 0.17; 95% CI 0.06-0.52; $p = 0.002$). Doctor type and workload were not independent predictors of consultation time sufficiency (Table 3).

Collaboration, knowledge and integration of cancer screening programs with primary care:

Reported collaboration with other professionals involved in cancer screening was moderate in both family doctors and rural physicians, with no statistically significant differences between groups. No statistically significant differences were observed between family/urban and rural/village doctors in reported levels of professional collaboration related to screening activities.

Analysis of responses indicates that collaboration and knowledge gaps, rather than dissatisfaction with the screening concept itself, represent the primary barriers to effective integration of cancer screening programs with primary care.

The most frequently cited priority was insufficient awareness and knowledge among physicians (34%), highlighting a perceived deficit in timely, clear, and actionable information regarding screening guidelines, referral pathways, and program updates. Respondents emphasized that limited professional awareness undermines effective communication with both patients and screening services, thereby constraining program

performance. A substantial proportion of participants (20%) recommended regular, structured training activities, favoring a blended approach combining online and face-to-face formats. This suggests a demand for continuous professional development mechanisms that are both accessible and interactive, and that support sustained engagement between primary care providers and screening programs.

Geographic and service accessibility emerged as a secondary but relevant concern, with 7% of respondents calling for expanded screening infrastructure or improved territorial coverage. Related suggestions—such as mobile screening units and transportation support—underscore persistent rural-urban disparities affecting communication and referral continuity. Notably, only a small proportion of respondents (6.5%) reported no perceived problems, indicating that while overt resistance to screening programs is limited, system-level communication and collaboration challenges remain widespread.

Lower-frequency responses further highlighted motivational and organizational factors, including inter-sectoral cooperation, protected time for education, and patient communication time. Although individually less common, these themes collectively point to structural constraints within primary care that may limit active engagement in screening promotion.

Overall, the findings suggest that strengthening communication strategies, enhancing professional awareness, and institutionalizing capacity-building mechanisms represent the most actionable leverage points for improving collaboration between cancer screening programs and primary healthcare services. Importantly, respondents' recommendations focus on optimization and support rather than fundamental reform, indicating broad acceptance of existing screening initiatives alongside a clear need for improved implementation.

Qualitative findings: perceived patient and system barriers:

Thematic analysis of open-ended responses highlighted patient-related barriers as a major challenge to screening uptake. The most frequently identified patient-related barriers included fear of cancer diagnosis, anxiety related to screening procedures, limited awareness of screening programs, and misconceptions about the need for screening in the absence of symptoms. Access-related barriers, such as transportation difficulties, distance to screening centers, and limited local service availability, were reported more frequently by rural physicians.

System-level barriers included insufficient consultation time, particularly in urban settings, weak coordination between primary care and screening services, and limited feedback mechanisms following patient referral. Thematic patterns were largely similar between family and rural doctors, although access and transport issues were more prominent in rural settings (Table 4).

Distribution of screening participation across cancer types:

Analysis of responses clearly indicates that breast cancer screening dominates participation, with 75% of respondents identifying it as the most utilized screening program. This indicates high awareness, acceptance, and possibly better accessibility or stronger promotion of breast cancer screening compared to other cancer types.

Table 2. Comparison of family and rural doctors (closed-ended questions).

Domain	Variable	Urban Doctors	Rural Doctors	p-value	Interpretation
Consultation time	Sufficient time for screening discussion	Lower	Higher	<0.001	Significant unadjusted difference
Screening practice	Offers screening to asymptomatic patients	Very high	Very high	NS	No difference

Table 3. Multivariable models (Adjusted effects).

Outcome	Predictor	Effect (OR/coef)	95% CI	p-value
Consultation time sufficient	Region: Tbilisi	OR 0.17	0.06–0.52	0.002
Consultation time sufficient	Rural doctor	OR 1.05	0.48–2.30	0.90

Table 4. Thematic analysis of open-ended responses.

Question	Theme	Urban Doctors	Rural Doctors
Attitudes	Positive/supportive	High	High
	Need for education	Moderate	Moderate
Barriers	Fear/anxiety	Moderate	High
	Access/transport	Lower	Higher

Cervical cancer screening follows at a much lower level (23%), suggesting moderate engagement but still substantial underutilization relative to breast cancer screening. This disparity may reflect differences in program outreach, perceived risk, cultural attitudes, or effectiveness of communication strategies targeting eligible populations.

In contrast, colorectal cancer screening participation is extremely low (1%), highlighting a critical gap in screening uptake. This may be associated with limited awareness, greater perceived discomfort, weaker physician recommendation, or insufficient media and public health promotion.

Discussion.

This study provides important insights into both the distribution of cancer screening participation and the system-level communication dynamics between cancer screening programs and primary care physicians. Taken together, the findings highlight that challenges in cancer screening implementation are less related to resistance or negative attitudes and more strongly associated with imbalanced program visibility, uneven professional engagement, and suboptimal communication mechanisms.

Imbalance in screening participation across cancer types:

A key finding of this study is the uneven distribution of screening participation across cancer types, characterized by a strong concentration on breast cancer screening and comparatively low engagement with colorectal and, to a lesser extent, cervical cancer screening. This pattern suggests that existing screening efforts and public messaging may disproportionately emphasize breast cancer, while other high-burden, preventable cancers receive less attention.

Such imbalance has important public health implications. Colorectal cancer screening is widely recognized as one of the most effective population-based interventions for cancer prevention and early detection; therefore, its underutilization represents a missed opportunity to reduce morbidity and mortality. The findings indicate a clear need for more targeted media campaigns and communication strategies that actively promote underused screening programs and ensure that all

priority cancers receive balanced visibility within national prevention efforts.

Role of primary care physicians in shaping screening behaviour:

The open-ended responses further underscore the central role of primary care physicians in influencing screening participation. Insufficient awareness among physicians emerged as the most frequently cited barrier to effective communication with screening programs. This suggests that gaps in knowledge regarding screening guidelines, eligibility criteria, referral pathways, and program updates may directly translate into lower screening uptake—particularly for colorectal and cervical cancers, which often rely more heavily on physician recommendation than patient self-referral.

The expressed need for regular, structured training, combining online and face-to-face formats, reflects a demand for continuous professional development that is practical, accessible, and responsive to clinical realities. Without such mechanisms, physicians may default to promoting the most familiar or socially visible screening programs, thereby reinforcing existing imbalances across cancer types.

Communication, misconceptions, and procedural barriers:

Beyond professional awareness, respondents highlighted broader communication challenges affecting patient engagement. Lower participation in colorectal and cervical cancer screening may be influenced by fear of diagnosis, procedural discomfort, stigma, or misconceptions, which require tailored, cancer-specific messaging rather than generic screening promotion. The findings suggest that communication strategies should be adapted to address these distinct concerns, using clear, culturally sensitive, and evidence-based information delivered through trusted primary care channels.

Importantly, the data indicate that these challenges are not uniform across regions or facilities, as reflected by a small proportion of respondents who reported no communication problems. This heterogeneity points to uneven implementation of screening communication strategies and reinforces the need for standardized, system-wide approaches [11-14].

Structural and organizational constraints in primary care:

Although less frequently mentioned, issues related to physician motivation, remuneration, workload, and time constraints provide important context for understanding screening engagement. Limited consultation time and competing clinical demands may reduce opportunities for preventive counseling, particularly for screenings that require more detailed explanation or patient reassurance. Similarly, fragmented cooperation between stakeholders -screening providers, primary care services, and program coordinators, can weaken feedback loops and reduce physician engagement over time.

Together, these findings highlight that improving screening participation requires not only better messaging but also organizational support that enables primary care physicians to actively promote prevention as part of routine practice.

Implications for policy and practice:

Overall, the results point to communication and capacity-building as the most actionable leverage points for improving cancer screening performance. Strengthening stakeholder coordination, institutionalizing continuous training for primary care physicians, and ensuring balanced promotion of all screening programs are essential steps toward more equitable preventive coverage.

Rather than calling for fundamental reform, respondents' recommendations emphasize optimization of existing screening programs, suggesting broad acceptance of current initiatives alongside a clear need for improved implementation. Addressing awareness gaps among physicians, correcting imbalances in program promotion, and deploying tailored communication strategies for underutilized screenings may substantially enhance the effectiveness and equity of national cancer screening efforts.

Strengths and limitations.

The strengths of this study include its nationwide scope, inclusion of both urban and rural physicians, and use of mixed methods. Limitations include reliance on self-reported practices and the cross-sectional design, which precludes causal inference.

Conclusion.

This study highlights that the effectiveness of national cancer screening programs depends not only on their availability, but critically on how well they are communicated, promoted, and integrated within primary healthcare services. The findings demonstrate that while support for cancer screening is high among primary care physicians, substantial gaps remain in professional awareness, communication pathways, and balanced promotion across different cancer types.

A pronounced imbalance in screening participation was observed, with breast cancer screening receiving disproportionately greater attention compared with colorectal and cervical cancer screening. This pattern reflects unequal program visibility and varying levels of physician engagement, rather than differences in perceived importance or acceptance of screening. Underutilization of colorectal cancer screening, in particular, represents a missed opportunity for cancer prevention and early detection and underscores the need for more targeted, cancer-specific communication strategies.

Primary care physicians emerged as pivotal actors in shaping screening uptake. Insufficient awareness of screening programs, limited access to structured training, and weak coordination between stakeholders were identified as key barriers to effective communication and referral. The strong demand for blended training approaches, combining online and face-to-face formats, signals a clear pathway for strengthening physician engagement and improving the consistency of screening recommendations in routine practice.

Importantly, the findings suggest that challenges in cancer screening implementation are primarily systemic and organizational, rather than attitudinal. Physicians' recommendations point toward optimization of existing programs through improved information flow, capacity building, and institutional support, rather than the need for fundamental redesign. Addressing workload constraints, ensuring adequate time for preventive counselling, and strengthening cooperation between primary care and screening services are essential to translating program availability into population-level impact.

In conclusion, achieving equitable and effective cancer screening coverage requires a strategic rebalancing of communication efforts, with greater emphasis on underutilized screenings, enhanced professional education, and stronger integration of primary care into screening governance and delivery. By reinforcing the role of primary care physicians as informed and supported advocates for prevention, national screening programs can move closer to their full potential in reducing avoidable cancer burden and health inequalities.

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abstrakti

Sesavali: kibos populaciuri skriningis programebi kibos kontrolis strategiis erT-erT mniSvnelovan komponents warmoadgens. saqarTveloSi moqmedebs ZuZus, saSvilosnos yelisa da koloreqtuli kibos erovnuli skriningis programebi, Tumca mosaxleobis CarTulobis maCvenebeli kvlav dabalia. Ppirveladi jandacvis (pjd) eqimebi mniSvnelovan rols asruleben miznobrivi mosaxleobis skriningSi monawileobis xelSewyobaSi, Tumca, maTi damokidebulebis da praqtikis Sesaxeb mtkicebulebebi SezRudulia. **mizani:** saqarTveloSi pirveladi jandacvis eqimebis codnis, damokidebulebis, skriningis praqtikis, sistemuri da pacientTan dakavSirebuli barierebis Sefaseba.

meTodebi: qveyenis masStabiT Catarda jvaredin-seqciuri Sereuli meTodologiis kvleva pjd eqimebis (qalaqad da soflad) monawileobiT strukturirebuli kiTxvaris gamoyenebiT. analizi: aRwerilobiTi statistika, mravalfactoruli regresuli modeli da Tematuri analizi Ria tipis pasuxebisTvis.

Sedegebi: maRalia kibos skriningis programis mimarT mxardaWera pirveladi jandacvis eqimebs Soris, respondentTa umravlesoba miiCnevs skriningis prevenciul, usafiTxo da sargeblan rCevad da usimptomo pacientebis monawileobis regularul rekomendacia aZlevs. skriningis mimdinareobis procesebisaTvis eqimTa damokidebuleba bariers ar warmoadgens. mravalfactoruli analizis Tanaxmad, adgilmdebareoba (qalaqi, regioni) mniSvnelovani faqtorია sakonsultacio drois xangrZlivobis TvalsazrisiT – qalaqad momuSave eqimebi metad aRniSnaven drois deficits. Tematurma analizma gamoavlina, rom ZiriTad gamowvevebs warmoadgens mosaxleobis dabali cnobiereba, diagnozis SiSi da xelmisawvdomobasTan dakavSirebuli barierebi. aseve, pirveladi jandacvisa da skriningis servisebs Soris arasakmarisi koordinacia. D

daskvna: kvlevis mignebebi adasturebs, rom intervenciebi unda fokusirdes: organizaciuli procesebis gaumjobesebaze, komunikaciis gaZlierebaze, servisebis xelmisawvdomobisa da mosaxleobis cnobierebis zrdaze, pjd eqimebis profesiul ganviTarebaze.

sakvanZo sityvebi: kibos skriningi, ojaxis eqimebi, soflis eqimebi, skriningis mocva, saqarTvelo.

Абстракт.

Актуальность: Государственные программы скрининга рака являются ключевым компонентом стратегий онкологического контроля. В Грузии действуют национальные программы скрининга рака молочной железы, шейки матки и колоректального рака; однако уровень участия населения остается низким. Врачи первичного звена здравоохранения играют центральную роль в повышении охвата скринингом, однако данные об их отношении и действиях ограничены.

Цель: Оценить знания, отношение, практику направления на скрининг, а также системные и пациент-ориентированные барьеры среди врачей первичного звена здравоохранения в Грузии.

Методы: Было проведено поперечное исследование с использованием смешанных методов среди городских и сельских врачей с применением структурированного опросника. Анализ: дескриптивная статистика и многофакторная регрессионная модель, а также тематический метод анализа для открытых ответов.

Результаты: врачи показали очень высокую поддержку программ скрининга рака. Практически все респонденты считали скрининг профилактическим, безопасным и полезным, и большинство сообщали о регулярных рекомендациях скрининга бессимптомным пациентам. Отношение врачей не являлось препятствием для внедрения скрининговых программ. Многофакторный анализ показал, что регион практики был наиболее сильным предиктором субъективной достаточности времени консультации, при этом врачи в городских условиях сообщали о значительно более выраженных временных ограничениях. Тематический анализ выявил, что низкая осведомленность населения, страх пациентов перед постановкой диагноза, барьеры доступа и транспорта, а также слабая координация между первичной медицинской помощью и скрининговыми службами являлись основными проблемами.

Заключение: Результаты исследования подтверждают, что вмешательства должны быть направлены на совершенствование организационных процессов, укрепление коммуникации, повышение доступности услуг и уровня информированности населения, а также на профессиональное развитие врачей первичного звена здравоохранения.

Ключевые слова: онкологический скрининг, охват населения скринингом, семейные врачи, сельские врачи, Грузия.