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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

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.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

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 ВИНИТИ 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 ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

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. Корректура 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 compu-ter-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 საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ 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 შეღებვის 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 ფჩხილებში 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, ATTITUDE, AND PRACTICE TOWARD PROSTATE CANCER AND ITS SCREENING METHODS IN QASSIM REGION

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Abstract.

Objective: Prostate cancer is a significant health concern globally, and in Saudi Arabia, it is the sixth most prevalent type of cancer among adult males over the age of 75. However, awareness and attitudes towards prostate cancer screening vary widely. This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding prostate cancer and its screening methods in the Qassim region of Saudi Arabia.

Methods: This descriptive cross-sectional study involved 384 male participants aged 20 years and above. Data were collected using an online Arabic questionnaire. Knowledge scores were calculated, and participants were classified as having good or poor knowledge. The Chi-squared test and Spearman's correlation analysis were used for statistical analysis.

Results: Most participants (42.8%) were aged 20-29 years, and 90.3% were Saudi nationals. Only 61.6% had heard of prostate cancer, and 30.4% were aware of both the prostate-specific antigen (PSA) blood test and rectal exam. Knowledge about risk factors was poor, with smoking identified by 42.3% and obesity by 23.9%. Symptoms were better recognized, with 67.9% identifying blood in urine or semen. Only 10.9% had ever had a prostate exam, and 6.3% had a PSA test. Knowledge was significantly associated with age, educational level, occupational status, and working in the health-care field.

Conclusion: The study revealed gaps in knowledge, attitudes, and practices regarding prostate cancer and its screening methods. Region-specific public health education strategies, particularly focusing on men under 40 and those outside health-care professions, are urgently needed.

Key words. Prostate cancer, screening methods, knowledge and attitudes, Qassim region, Saudi Arabia.

Introduction.

Prostate malignancy or cancer refers to an abnormal growth of the prostate gland [1]. Prostate cancer produces no symptoms, especially in its early stages [1]. On the other hand, it can cause BPH-like symptoms such as hematuria, nocturia, disturbed flow, and urgency. Patients may experience dysuria in its later stages [2].

Prostate cancer has been linked to a variety of risk factors, including alcohol and cigarette use, a poor diet, a lack of exercise, bacterial and viral infections, household smoking, ionizing radiation, and airborne pollution in metropolitan areas [3]. It is the fifth most common cause of cancer-related death in men worldwide and the most common malignancy in males to be diagnosed [4].

Prostate cancer is the sixth most prevalent type of cancer among Saudi adult males over the age of 75 [5]. Early detection of prostate cancer is essential [1]. There are several approaches to screening men for prostate cancer [1]. One such method is to measure prostate-specific antigen (PSA) serum levels, which is recommended for men aged 50 to 70 [1]. Other procedures include digital rectal exams, which are suggested for males over 40 who are known to be high-risk, as well as those over 50 who fall into any risk group [1]. Unfortunately, issues regarding over-diagnosis and overtreatment have been highlighted with prostate cancer screening [6].

Several polls have been conducted globally to assess men's awareness of prostate cancer. In a Chilean investigation, 377 persons aged 50 to 90 were surveyed; 81% knew something about prostate cancer, and 68% had undergone prostate cancer screening [7]. Another study conducted in São Paulo, Brazil, involving 392 adult participants, revealed that 45% of the participants, the majority of whom were over the age of 50, had never previously encountered information related to prostate cancer [6]. The vast majority of subjects (85%) claimed to have never had DRE or PSA [6].

To investigate men's awareness and attitudes towards prostate cancer and testing methodologies in Riyadh, a population-based cross-sectional survey of 400 males over the age of 40 was conducted. The data revealed that only 10% of respondents had performed a standard prostate cancer examination checkup [8]. They had a reasonable perspective on screening and assessment, but their Prostate cancer knowledge was limited [8]. Overall accuracy for general opinions averaged 18.3 ± 4.08 (65.3%), while awareness was 10.25 ± 2.5 (51.25%) [8].

A second cross-sectional study was conducted with Saudi men over 40 [9]. An online self-report survey was used to measure Saudi men's knowledge and attitudes towards prostate cancer screening [9]. The poll was completed by 368 male respondents [9]. Of survey respondents, 64.5% said they learned about prostate cancer from doctors (18.6%), the internet (40.1%), or social media (46.7%) [9]. Furthermore, approximately 20.3% of individuals surveyed were aware of the PSA screening [9]. Furthermore, 55.2% of individuals had insufficient understanding regarding prostate cancer and the PSA test, with 53.1% holding an unfavorable impression [9] in summation. Saudi men demonstrated low awareness and a negative attitude towards prostate cancer screening [9].

Despite numerous studies conducted in major Saudi cities like Riyadh and Jeddah, the Qassim region remains underrepresented in KAP literature, suggesting an unmet need for local data to inform regional policies. Current data depict the attitude of Saudi Arabian patients toward prostate cancer screening. However, there is a knowledge vacuum, particularly in the Al-Qassim region. This study aimed to assess prostate cancer

screening practices, attitudes, and knowledge in Saudi Arabia's Al-Qassim region.

Subjects and Methods.

This descriptive cross-sectional study was conducted in the Qassim region of Saudi Arabia from January 2023 to January 2024. The inclusion criteria were males aged 20 years and above, while the exclusion criteria included males under 20 years, those diagnosed with prostate cancer previously, and women. Ethical approval for the study was obtained from the Institutional Review Board (IRB) of Al-Qassim University, Saudi Arabia (Reference Number 607/45/14875).

The sample size was 384, calculated using the Raosoft online sample size calculator (http://www.raosoft.com/samplesize.html). The sample was calculated with a confidence level of 95% and a margin of error of 5%, considering a male population in Al-Qassim aged 20 years and above of 624,369 [10]. A non-random selection technique called convenience sampling was used to survey men aged 20 years and above about their knowledge, attitudes, and screening practices regarding prostate cancer and related issues.

Data were collected using an online Arabic questionnaire. The questionnaire included items about participants' demographic characteristics, their work in the health-care field, their knowledge, attitudes, practices related to prostate cancer, and sources of information about prostate cancer. The survey items were adapted from previous studies [2,8,11]. For knowledge questions, each correct answer received a score of "1," while every incorrect answer or "I don't know" response received a score of "0," leading to a total score of 12. If a participant's score was less than 60% of the total, the overall awareness score was classified as poor; if the score was 60% or higher, it was considered good [12,13]. The reliability of the internal consistency of the study questionnaire was examined, yielding a Cronbach's alpha value of 0.84. A scale is considered internally consistent when the Cronbach's alpha value is greater than 0.7 [14].

Thirty-nine participants were involved in a pilot study, and the results of their responses were utilized to analyze reliability and validity. Validation analysis of the study questionnaire was performed by a panel of three experts, who reviewed the initial items for suitability and relevance. The task given to the subject matter experts was to rate each item on a 4-point scale. Each questionnaire item was evaluated as follows: if adequate (simple, relevant, and clear), it received a score of "4"; if adequate but needing minor revisions, a score of "3" was given; if major modifications were needed, a score of "2" was assigned; and if not adequate (could be omitted), a score of "1" was given. The percentage of items rated 3 or 4 by the experts is known as the content validity index (CVI). A questionnaire with an 80% score is considered to have good validity. The CVI of the study questionnaire was calculated to be 91.6%.

Data were analyzed using the SPSS application version 26. The Chi-squared test ($\chi 2$) was used for qualitative data presented as numbers and percentages to examine the relationship between the variables. Mean and standard deviation (Mean ± SD) were used for quantitative variables. Statistical significance is defined as a p-value of less than 0.05.

Results.

The study included 414 participants with diverse demographic characteristics. The majority were aged 20-29 years (177 participants, 42.8%), predominantly Saudi (274 participants, 90.3%), and married (208 participants, 50.2%). Educational levels were high, with 252 participants (60.9%) holding university degrees. Occupational status varied, with 204 participants (49.3%) employed, 105 participants (25.4%) as students, and 59 participants (14.3%) unemployed. Monthly family income was mostly below 5000 Saudi Riyals (189 participants, 45.7%). Only 69 participants (16.7%) worked in the health-care field (Table 1).

Table 1. *Distribution of studied participants according to their demographic characteristics and working in the health-care field (No.: 414).*

Variable	No. (%)
Age (years)	177 (42.8)
20-29	71 (17.1)
30-39	71 (17.1)
40-49	62 (15)
50-59	33 (8)
≥60	
Nationality	
Saudi	274 (90.3)
Non-Saudi	40 (9.7)
Marital status	
Widow	3 (0.7)
Single	186 (44.9)
Married	208 (50.2)
Divorced	17 (4.1)
Educational level	
Illiterate	33 (0.8)
Secondary school or less	99 (23.9)
University	252 (60.9)
Postgraduate	30 (7.2)
Occupational status	
Student	105 (25.4)
Unemployed	59 (14.3)
Retired	46 (11.1)
Employed	204 (49.3)
Monthly family income (SR)	
<5000	189 (45.7)
5000-10000	96 (23.2)
10000-15000	67 (16.2)
>15000	62 (15)
Working in the health-care field?	
No	345 (83.3)
Yes	69 (16.7)

Knowledge about prostate cancer was limited, with 255 participants (61.6%) having heard of it. Smoking was identified by 175 (42.3%) as the most common risk factor. Symptoms were better known, with blood in urine or semen recognized by 281 (67.9%), difficulty urinating by 267 (64.5%), and weak or interrupted urine flow by 269 (65%). Only 126 participants (30.4%) were aware of both the PSA blood test and rectal exam.

Regarding attitudes, only 45 participants (10.9%) had ever had a prostate exam, and 26 (6.3%) had a PSA test. Among those screened, blood in urination was the most common reason (11 participants, 42.4%). Only 72 participants (17.4%) followed a cancer-preventive diet, and 132 (31.9%) exercised for cancer prevention (Table 2).

Table 2. *Participants' responses to knowledge, attitude and practice questions related to prostate cancer (No.: 414).*

Variable	No. (%)
Knowledge about prostate cancer	
Have you heard of prostate cancer?	
No	159 (38.4)
Yes *	255 (61.6)
What are the risk factors for prostate cancer?	
Smoking *	175 (42.3)
Race or ethnicity*	126 (30.4)
Obesity*	99 (23.9)
Age*	4 (1)
Don't know	173 (41.7)
What are the symptoms of prostate cancer?	
Blood in urine or semen*	281 (67.9)
Pain or stiffness in the lower back, hips, or thighs*	171 (41.3)
Painful ejaculation*	220 (53.1)
Difficulty urinating*	267 (64.5)
Weak or interrupted urine flow*	269(65)
What types of prostate tests do you know?	
Prostate-specific antigen blood test	43 (10.4)
Rectal exam	45 (10.9)
Both*	126 (30.4)
Other	2 (0.5)
Don't know	198 (47.8)
Is a prostate exam the only way to diagnose prostate cancer?	
No *	109 (26.3)
Don't know	233 (56.3)
Yes	72 (17.4)
Attitude towards prostate cancer	
Have you ever had a prostate exam?	
No	369 (89.1)
Yes	45 (10.9)
If yes, when was the last time you had a screening test? (No: 45)	
Less than one year ago	1 (2.2)
1 year ago,	8 (17.7)
2 years ago,	15 (33.5)
More than 2 years ago	14 (31.1)
I don't remember	7 (15.5)
Have you ever had a PSA test?	
No	388 (93.7)
Yes	26 (6.3)
Why are you having a prostate cancer screening? (No..: 26)	
Family history of prostate cancer	5 (19.2)
Blood in urination	11 (42.4)
Dysureuria	9 (34.6)
Other	1 (3.8)
Practice related to prostate cancer	
Have you quit smoking to prevent prostate cancer?	
No	91 (22)
Don't smoke	285 (68.8)
Yes	38 (9.2)
Have you followed a diet to prevent cancer?	
No	342 (82.6)
Yes	72 (17.4)
Do you exercise to prevent cancer?	
No	282 (68.1)
Yes	132 (31.9)

The mean knowledge score was 5.07 ± 2.76, and based on the knowledge score classification, 94 (22.7%) of the participants had a good knowledge level about prostate cancer, while 320 (77.3%) had a poor knowledge level.

Knowledge was significantly associated with educational level, occupational status, and employment in the health care field (P <0.05). The source of information from relatives was associated with higher knowledge levels (39 out of 94, 41.5%). In contrast, other sources, like TV or social media (20 out of 94, 21.3%) and family doctors (15 out of 94, 16%) did not show significant differences (Table 3).

There was no significant difference in having had a prostate exam between those with poor knowledge ($\chi^2 = 1.1$, $p = 0.294$). Similarly, no significant difference was found in having had a PSA test ($\chi^2 = 1.02$, $p = 0.311$). Regarding screening reasons, family history of prostate cancer was more common among those with good knowledge (3 out of 94, 3.2%) compared to those with poor knowledge (2 out of 320, 0.6%; $\chi^2 = 7.9$, $p = 0.095$). In terms of practices, quitting smoking to prevent prostate cancer was more common among those with good knowledge (13 out of 94, 13.8%) compared to those with poor knowledge (14 out of 320, 4.4%; $\chi^2 = 5.75$, $p = 0.056$). However, no significant differences were observed in following a cancer-preventive diet ($\chi^2 = 0.52$, $p = 0.467$) or exercising for cancer prevention ($\chi^2 = 0.26$, $p = 0.61$) (Table 4).

Discussion.

The purpose of this study was to examine the screening practices, attitudes, and knowledge of prostate cancer in the Saudi Arabian population in the Qassim region. Our results, moreover, show that whilst awareness of prostate cancer symptoms is high, understanding of disease and screening methods remains relatively poor. According to the study, awareness of prostate cancer was modest; fewer than two-thirds had prior knowledge of the disease. For example, while 30.4% were aware of both the PSA blood test and the DRE, 47.8% reported no knowledge of any screening tests. These findings are consistent with two studies in Riyadh and Jazan, where 64% of participants had adequate knowledge about prostate cancer, yet only 23% and 25.6% had undergone screening tests, respectively [7,15]. Our findings also align with a Middle East study by Sayan et al.,

Table 3. *Relationship between knowledge level about prostate cancer and participants' demographics and working in the health care field (No.: 414).*

Variable	Knowledge level		χ2	p-value
	Poor knowledge No. (%)	Good knowledge No. (%)		
Age (years)				
20-29	127 (39.7)	50 (53.2)	7.67	0.104
30-39	54 (16.9)	17 (18.1)		
40-49	60 (18.8)	11 (11.7)		
50-59	53 (16.6)	9 (9.6)		
≥60	26 (8.1)	7 (7.4)		
Nationality				
Saudi	288 (90)	86 (91.5)	0.88	0.667
Non-Saudi	32 (10)	8 (8.5)		
Marital status				
Widow	2 (0.6)	1 (1.1)	4.26	0.234
Single	136 (42.5)	50 (53.2)		
Married	167 (52.2)	41 (43.6)		
Divorced	15 (4.7)	2 (2.1)		
Educational level				
Illiterate	29 (9.1)	4 (4.3)	9.63	**0.022**
Secondary school or less	76 (23.8)	23 (24.5)		
University	198 (61.9)	54 (57.4)		
Postgraduate	17 (5.3)	13 (3.8)		
Occupational status				
Student	65 (20.3)	40 (42.6)	19.18	**<0.001**
Unemployed	49 (15.3)	10 (10.6)		
Retired	39 (12.2)	7 (7.4)		
Employed	167 (52.2)	37 (39.4)		
Monthly family income (SR)				
<5000	139 (43.4)	50 (53.2)	5.2	0.157
5000-10000	82 (25.6)	14 (14.9)		
10000-15000	52 (15.3)	15 (16)		
>15000	47 (14.7)	15 (16)		
Working in the health care field?				
No	189 (90.3)	56 (59.6)	19.42	**<0.001**
Yes	31 (9.7)	38 (40.4)		
Sources of information about prostate cancer				
Relatives	97 (30.3)	39 (41.5)	6.16	**0.046**
TV / social media	44 (13.8)	20 (21.3)	3.94	0.139
Family doctors	33 (10.3)	15 (16)	2.41	0.299

reporting that while 83.8% of Middle Eastern men had heard of prostate cancer, only 19.1% were aware of the PSA test's role in screening. Globally, prostate cancer is a significant health issue, with its burden rising substantially in regions like the Middle East and North Africa. From 1990 to 2021, the age-standardized incidence of prostate cancer in the MENA region increased by 125.1%, thus highlighting its importance as a public health concern [16].

In this study, 'positive attitude' was operationalized as willingness to undergo screening, adoption of preventive behaviors, and support for awareness campaigns. Despite the limited knowledge, this study's participants exhibited a positive attitude toward prostate cancer screening. This is consistent with findings from other countries. In Zambia, 98.5% of participants had a positive attitude toward prostate cancer screening [17]. Similarly, a study in Italy found that 72.7% of respondents had heard about the PSA test, and 51.1% were willing to undergo it [18]. Another study in the UAE among men aged 40 years and older found low levels of knowledge, practices, and attitudes toward prostate cancer and its screening methods [19].

Regarding preventive practices, 68.8% of participants did not smoke, 17.4% followed a cancer-preventive diet, and 31.9% exercised for cancer prevention. These figures suggest that while some individuals engage in health-promoting behaviors, a significant portion do not adhere to practices that could reduce cancer risk. A systematic review of cancer screening programs in Saudi Arabia reported low levels of practicing cancer screening programs, ranging from 10% to 15%, underscoring the need for enhanced public health initiatives [20]. These practices are also comparable to those observed in other studies within Saudi Arabia. For example, Alothman et al. reported that 87.5% of participants had never had a PSA test, and their doctors had not informed 93.6% about the advantages of PSA testing [11]. A study in Limpopo, South Africa, revealed that inadequate knowledge and poor attitudes about prostate cancer negatively affect early screening practices among males [21].

Table 4. *Relationship between knowledge level about prostate cancer and their attitude and practice.*

Variable	Knowledge level		χ2	p-value
	Poor knowledge No. (%)	Good knowledge No. (%)		
Attitude toward prostate cancer				
Have you ever had a prostate exam?				
No	288 (90)	81 (86.2)	1.1	0.294
Yes	32 (10)	13 (13.8)		
If yes, when was the last time you had a screening test? (No.: 45)				
Less than one year ago	1 (0.3)	0 (0.0)	4.09	0.536
1 year ago	6 (1.9)	2 (2.1)		
2 years ago	11 (3.4)	4 (4.3)		
More than 2 years ago	8 (2.5)	6 (6.4)		
I don't remember	6 (1.9)	1 (1.1)		
Have you ever had a PSA test?				
No	302 (94.4)	86 (91.5)	1.02	0.311
Yes	18 (5.6)	8 (8.5)		
Why are you having a prostate cancer screening? (No.: 26)				
Family history of prostate cancer	2 (0.6)	3 (3.2)	7.9	0.095
Blood in urination	10 (3.1)	1 (1.1)		
Dysureuria	5 (1.6)	4 (4.3)		
Other	1 (0.3)	0 (0.0)		
Practice related to prostate cancer				
Have you quit smoking to prevent prostate cancer?				
No	77 (24.1)	14 (14.9)	5.75	0.056
Don’t smoke	218 (68.1)	67 (71.3)		
Yes	25 (7.8)	13 (13.8)		
Have you followed a diet to prevent cancer?				
No	262 (81.9)	80 (85.1)	0.52	0.467
Yes	58 (18.1)	14 (14.9)		
Do you exercise to prevent cancer?				
No	220 (68.8)	62 (66)	0.26	0.61
Yes	100 (31.3)	32 (34)		

This study found that 32.9% of participants identified relatives as their primary source of information about prostate cancer, followed by social media (15.5%) and family doctors (11.6%). In Nigeria, a study found that 21.2% of participants became aware of prostate cancer through the media, while only 9% received information from health-care workers [22]. Our findings also contrast with a cohort study by Ngowi et al., which found that 70.3% of participants reported mass media as their primary source of prostate cancer knowledge, with health-care professionals contributing less significantly [23]. In contrast, a study in Rwanda reported that 77% of participants obtained prostate cancer information from health-care providers, with the internet being a less common source [24]. Digital platforms are increasingly utilized for health awareness. A study in Canada found that 65% of men used the internet as a source of prostate cancer information, with 40% expressing confidence in using online information to make health decisions [25]. However, it is essential to note that while social media can enhance health awareness, it also poses challenges related to misinformation. The National Cancer Institute has highlighted the prevalence of cancer-related misinformation on social media, which can impact patient decisions and cancer care [26].

The present study revealed that the mean knowledge score about prostate cancer was 5.07 ± 2.76, with 77.3% of participants categorized as having poor knowledge. This finding is in accordance with many global studies, including a Lebanese study reporting a mean knowledge score of 18.10 ± 2.23 out of 27, translating to approximately 67% knowledge. However, only 4.6% of participants demonstrated adequate knowledge, with nearly 95% categorized under limited knowledge levels [27]. In contrast, a study reported that 82.1% of men had sufficient knowledge about prostate cancer. This suggests that factors such as health-care infrastructure and public health initiatives play a crucial role in shaping awareness levels [18].

Our study found that participants aged 20–29 had the highest proportion of good knowledge, while those aged 50–59 had the lowest. Educational attainment was strongly correlated with prostate cancer knowledge in our study. This pattern aligns with a study in Zambia indicating that younger men were more likely to practice prostate cancer screening, highlighting the impact of age on health behaviors [17]. The same study found that secondary or tertiary education had higher knowledge levels about prostate cancer [17]. Participants working in the health-care field had a higher proportion of good knowledge (40.4%) compared to those not employed in health-care (59.6%). This is consistent with findings from South Africa, where primary health-care providers demonstrated better knowledge about prostate cancer screening compared to their counterparts [28].

In our study, we found no significant difference in the proportion who had undergone prostate exam or PSA test in those with good and poor knowledge. This correlates with a study in Lebanon where 4.6% of participants had adequate knowledge about prostate cancer, but this did not influence screening practices [27]. In Tanzania, research found 72% of men had heard of prostate cancer, but only 43.9% knew of screening methods, and fewer men participated in screening behaviors [29]. Global studies have demonstrated that higher prostate cancer knowledge is often associated with higher prostate cancer screening rates. As an example, a study conducted in the UAE showed that although men were educated about prostate cancer and its screening processes, the actual prostate cancer screening uptake was low because of factors like fear, cultural stigma, and perceived low cancer risk [19]. The disconnection between knowledge and behavior may stem from a complex interplay of cultural stigma, low-risk perception, inadequate physician communication, and logistical barriers to accessing screening services.

Several factors may contribute to the observed lack of significant differences in screening behavior when knowledge levels vary. A study in South Africa revealed that primary health-care providers showed poor knowledge (64.8%) and practice (40.0%) in relation to prostate cancer screening, which could affect screening behaviors of the general population [28]. Moreover, a review on prostate cancer screening practices in the Middle East and North Africa found that attitudes, limited access to hospitals and insufficient awareness among providers were barriers to screening [30].

This study has several limitations. First, the use of non-random, online convenience sampling may limit the generalizability of the findings, particularly among older adults and rural populations who may be underrepresented. The reliance on online data collection introduces a potential selection bias due to disparities in digital literacy, which may have skewed participation toward younger, more educated, and technologically proficient individuals. Consequently, the true extent of knowledge and awareness gaps among less digitally connected or socioeconomically disadvantaged groups may have been underestimated. Future research should adopt mixed-methods designs incorporating community-based sampling and qualitative interviews to ensure a more representative understanding of prostate cancer knowledge, attitudes, and practices across diverse demographic segments.

Conclusion.

The findings highlight significant gaps in knowledge, attitudes, and practices regarding prostate cancer and its screening methods among men in the Qassim region. These results emphasize the need for targeted educational campaigns to improve awareness, particularly in underserved populations. Future interventions should target improving accessibility to screening programs, increasing the involvement of health-care providers in patient education, and tackling cultural barriers for early detection. Moreover, additional research is needed to examine regional differences in prostate cancer knowledge and to assess the impact of media and health-care provider-driven efforts to encourage screening behavior.

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