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Perception of Screening of Healthcare Staff for the Prevention of Prostate Cancer: A Greek Perspective

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Rezumat

Percepția personalului medical privind screeningul pentru prevenția cancerului de prostată: o perspectivă din Grecia

Context: Screeningul cancerului de prostată se bazează în principal pe dozarea antigenului specific prostatic (PSA), însă modalitatea optimă de implementare rămâne controversată, inclusiv în rândul profesioniştilor din domeniul sănătății. Prezentul studiu a evaluat nivelul de cunoştințe şi practicile referitoare la screeningul cancerului de prostată în rândul personalului medical din Grecia.
Metode: A fost realizat un studiu multicentric, bazat pe chestionar, în cinci spitale de nivel secundar şi terțiar. Chestionarul anonim a colectat date demografice şi profesionale şi a evaluat cunoştințele privind metoda de screening, vârsta recomandată pentru dozarea PSA şi inițierea mai precoce a screeningului la bărbații cu antecedente heredocolaterale pozitive. Au fost analizate asocierile dintre nivelul de cunoştințe, comportamentul de screening, rolul profesional, tipul spitalului, nivelul de educație, venit şi experiența profesională.
Rezultate: În total, au participat 1.470 de lucrători din domeniul sănătății, incluzând medici, asistenți medicali, personal administrativ şi alte categorii de personal paramedical. Majoritatea respondenților (95,6%) au identificat dozarea PSA drept metoda de screening preferată. Cu toate acestea, cunoştințele privind vârsta adecvată de inițiere a screeningului au fost mai puțin omogene: 38,2% au indicat vârsta de 50 de ani pentru populația generală, iar 37,4% au indicat vârsta de 45 de ani pentru bărbații cu antecedente heredocolaterale pozitive. Medicii au obținut rate de

răspunsuri corecte semnificativ mai mari comparativ cu celelalte categorii profesionale, iar angajații spitalelor terțiare au avut rezultate superioare celor din spitalele secundare. Scorurile mai ridicate de cunoştințe s-au asociat cu angajarea într-un spital terțiar, venitul mai mare, profesia medicală, nivelul educațional superior şi categoria de specialitate. Dintre respondenții de sex masculin, 37,6% efectuaseră dozarea PSA, frecvent mai devreme decât vârsta recomandată.
Concluzii: Deşi gradul de conştientizare a rolului PSA ca principal instrument de screening al cancerului de prostată a fost ridicat, persistă lacune importante în ceea ce priveşte inițierea screeningului în concordanță cu ghidurile. Formarea profesională, tipul de unitate spitalicească şi nivelul de educație au influențat semnificativ cunoştințele şi practicile. Intervențiile educaționale țintite şi sistemele structurate de asistență preventivă ar putea îmbunătăți aderența la recomandările de screening bazate pe dovezi.

Cuvinte cheie: cancer de prostată, screening, PSA, profesionişti din domeniul sănătății

Abstract

Background: Prostate cancer screening relies mainly on prostate-specific antigen (PSA) testing, yet optimal implementation remains debated, even among healthcare professionals. This study assessed knowledge and practice patterns regarding prostate cancer screening among hospital workers in Greece.
Methods: A multicentre, questionnaire-based study was conducted across five secondary and tertiary hospitals. The anonymous questionnaire collected demographic and professional data and evaluated knowledge of the screening method, recommended age for PSA testing, and earlier screening in men with a positive family history. Associations between knowledge, screening behaviour, professional role, hospital type, education, income and work experience were analysed.
Results: Overall, 1,470 healthcare workers participated, including doctors, nurses, administrative staff and other paramedical personnel. Most respondents (95.6%) identified PSA testing as the preferred screening method. However, knowledge regarding the appropriate age to initiate screening was less consistent: 38.2% selected 50 years for the general population, while 37.4% selected 45 years for men with a positive family history. Physicians achieved significantly higher correct-response rates than other professional groups, and tertiary-hospital workers performed better than those from secondary hospitals. Higher knowledge scores were associated with tertiary hospital employment, higher income, medical profession, higher educational level and specialty category. Among male respondents, 37.6% had undergone PSA testing, often earlier than recommended.
Conclusions: Although awareness of PSA as the main prostate cancer screening tool was high, important gaps remain regarding guideline-consistent screening initiation. Professional background, hospital setting and education significantly influenced knowledge and practice. Targeted educational interventions and structured preventive-care systems may improve adherence to evidence-based screening recommendations.

Keywords: prostate cancer, screening, PSA, healthcare professionals

Introduction

Prostate cancer is the second most commonly diagnosed malignancy in men and the fifth leading cause of cancer-related deaths worldwide, with its incidence varying up to 25-fold across different regions (1). Despite this variability in incidence, mortality rates in developed countries have remained relatively stable over the past two decades (2). The average age at diagnosis is 70 years, although autopsy studies have revealed that 30% of men in their mid-50s and 60% of men in their 80s unknowingly suffer from the disease at the time of death from unrelated causes (3).

The diagnosis of prostate cancer is typically suspected in the presence elevated prostate-specific antigen (PSA) levels, or abnormal findings on a digital rectal examination. However, elevated PSA levels can also result from benign conditions such as ejaculation, perineal trauma, or prostatitis. To confirm the presence of prostate cancer, a biopsy is required, with histological analysis of the specimen providing information on the histologic subtype and disease grade, often assessed using the Gleason Score (4-6). Imaging modalities, such as computed tomography (CT) and magnetic resonance imaging (MRI), can aid in detecting lymphatic spread of the disease within the abdominal and pelvic regions. However, their low sensitivity limits their utility in low-risk patients (7-9). Bone scintigraphy remains the preferred diagnostic tool for identifying potential bone metastases (10).

In 1957, the United States Commission on Chronic Illness defined screening as: "The preliminary identification of diseases or abnormalities through clinical, paraclinical, or laboratory tests that are easy, inexpensive,

and quick to perform. Screening tests distinguish individuals who probably have a disease from those who are likely healthy. A screening test does not provide a definitive diagnosis; individuals with positive or suspicious findings should be referred for diagnostic testing and, if necessary, treatment" (11).

Screening programs can enhance overall population survival by enabling earlier detection and intervention, while simultaneously reducing healthcare costs by minimizing prolonged hospitalizations and expensive treatments that may ultimately be ineffective in advanced stages of the disease. However, the success of such programs depends on the presence of organized and consistent systems, as well as patient compliance.

The cornerstone of prostate cancer screening has traditionally been PSA testing, often supplemented by digital rectal examinations. While PSA-based screening strategies in the general population strike a favorable balance between cost-effectiveness and survival benefits, there is insufficient evidence to establish an ideal protocol for PSA screening (12). Screening has the potential to reduce prostate cancer mortality by up to 50%, which can outweigh the risks of overdiagnosis and overtreatment (13).

The aim of this study is to assess the knowledge and implementation of essential prostate cancer screening practices among healthcare workers. Additionally, the study explores potential correlations between various factors influencing both the awareness and adherence to screening protocols in this population—one that is generally expected to possess a higher level of awareness regarding preventive measures for prostate cancer.

Materials and Methods

The present study is a multicenter, questionnaire-based investigation. General information included in the introduction section was sourced from online databases such as PubMed and Scopus, as well as from official online resources provided by the World Health Organization (W.H.O.), relevant European organizations, and established guidelines regarding the diagnosis and treatment of prostate cancer.

The creation of an extensive questionnaire (*Appendix 1*) that was intended to be filled out anonymously served as the basis for this investigation. The survey was divided into four sections: demographic data, general questions measuring screening knowledge, questions concerning screening implementation for women, and questions about screening implementation for males.

The University General Hospital of Heraklion, Venizelio General Hospital of Heraklion, Agia Olga General Hospital, Kos General Hospital, and Thebes General Hospital were the three tertiary and two secondary hospitals chosen for this study. Employees in all departments of the five hospitals, including medical staff, nurses, administrative staff, and other paramedical staff, were given the questionnaire. The questionnaire was completed independently by the healthcare professionals.

The scientific council of each participating institution granted approval for the study, which took around six months to complete. Although they were occasionally retrieved the next day, the surveys were usually collected the same day they were delivered. To ensure that each employee could only complete one questionnaire, distribution and collection were coordinated with the relevant departmental staff.

A total of 1470 questionnaires were gathered: 506 from Heraklion's University General Hospital, 456 from Venizelio General Hospital, 273 from Agia Olga General Hospital, 123 from Kos General Hospital, and 112 from Thebes General Hospital (*Fig. 1*).

Statistical Analysis

The data was analyzed using the R statistical computing language and environment (R Foundation for Statistical Computing, Vienna, Austria, http://www.R-project.org). For descriptive statistics, we computed frequency and relative frequency for each element of the relevance tables for categorical variables and mean value +-standard deviation (Mean, SD) for continuous variables with a normal distribution and median value and interquartile range (Median, IQR) for non-normal variables. Statistical analysis included descriptive and inferential methods. The Shapiro-Wilk test was used

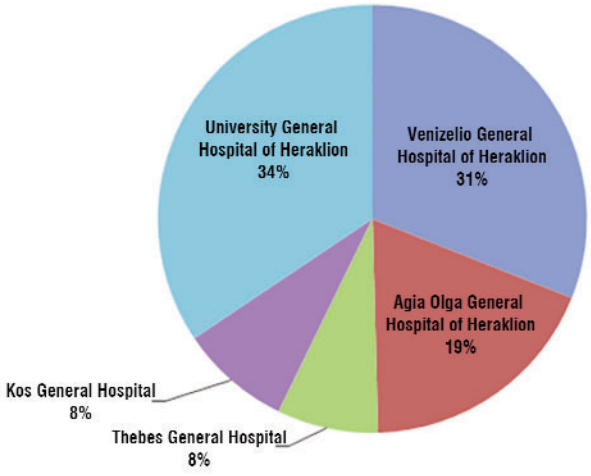


Figure 1. Rate per hospital

to determine whether the data distribution was normal. Bar charts were used to display frequencies, while box-and-whisker plots were used to show continuous variables. The Mann-Whitney U test for non-parametric data or Student's t-test for normally distributed data were used to compare continuous variables between subgroups. The one-sample t-test was used to compare sample values with the right response. When anticipated cell counts were less than five, the Fisher's exact test or the chisquare test were used to evaluate categorical variables. The Kruskal-Wallis rank-sum test was used to assess ordinal variables. Statistical significance was defined as a p value < 0.05.

Results

The University General Hospital of Heraklion completed 506 (34.4%) of the 1,470 completed questionnaires; Venizelio General Hospital of Heraklion completed 456 (31%); Agia Olga General Hospital completed 273 (18.6%); Kos General Hospital completed 123 (8.4%); and Thebes General Hospital completed 112 (7.6%). Of these, 1,235 were from tertiary hospitals and 235 from secondary hospitals. The average participant age was 43.52 years, with 985 (67.1%) female respondents and 485 (32.9%) male respondents. In terms of marital status, 114 (7.8%) were divorced, 13 (0.9%) were widowed, 447 (30.5%) were single, and 893 (60.9%) were married.

556 (37.8%) doctors, 493 (33.6%) nurses, 232 (15.8%) other paramedical personnel, and 188 (12.8%) administrative staff were among the respondents' professional occupations. In terms of their educational background, 345 (23.5%) had a master's or doctorate degree, 896 (61%) had postsecondary education, and 228 (15.5%) had finished secondary school. Additionally, 794 individuals (54.1%) reported making more than €1,000 per month, while 675 participants (45.9%) reported making less than €1,000. 384 (26.1%) had worked for 0-5 years, 236 (16.1%) for 5-10 years, and 849 (57.8%) for more than 10 years at their respective schools.

Regarding participants' knowledge of prostate cancer prevention, 95.6% (1,396) identified PSA (Prostate-Specific Antigen) testing as the screening method of choice. When asked about the appropriate age to initiate screening, 38.2% (558) stated it should begin at 50 years, while 42.4% (620) believed it should start at 45 years. For individuals with a positive family history of prostate cancer, 37.4% (547) suggested screening should begin at 45 years, while 52.8% (771) stated it should commence at 35 years (*Tables 1, 2, 3*).

The respondents were categorized into two age groups: those under 40 and those over 40. No significant differences were observed between these groups concerning the belief that PSA testing is the optimal screening method (>40 years: 96.4% [846], ≤40 years: 94.3% [533], p=0.092), the belief that screening should start at 50 years (>40 years: 36.9% [324], ≤40 years: 39.8% [225], p=0.289), or the belief that screening should begin at 45 years for individuals with a positive family history (>40 years: 37.6% [330], ≤40 years: 37.5% [212], p=1.000).

The respondents were further divided into four professional groups: administrative staff, doctors, nursing staff, and other paramedical personnel. Significant differences were observed among these groups regarding knowledge of PSA testing as the preferred screening method (doctors: 97.8% [543], administrative staff: 93.5% [173], other paramedical staff: 93% [214], nurses: 94.9% [465], p=0.006), the initiation of screening at 50 years (doctors: 47% [261], administrative staff: 34.1% [63], other paramedical staff: 28.3% [65], nurses: 34.5% [169], p<10^-6), and the initiation of screening at 45 years for individuals with a positive family history (doctors: 45.4% [252], administrative staff: 25.9% [48], other paramedical

Table 1. Absolute number and response rates of respondents to the prostate cancer screening test of choice.

Examination of election	n (%)
PSA	1396 (95.6)
Computed Tomography (CT)	21 (1.4)
General urine test	17 (1.2)
Abdominal ultrasound	27(1.8)

Table 2. Absolute number and percentages of respondents regarding the age at which prostate cancer screening should be performed for the first time.

Age at which the election examination should take place for the first time	n (%)
35	234 (16)
45	620 (42.4)
50	558 (38.2)
60	36 (2.5)
No need	13 (0.9)

Table 3. Absolute number and percentages of respondents regarding the age at which prostate cancer screening should be performed for the first time in case of a positive family history.

Age at which the election examination should take place for the first time in case of positive family history	n (%)
35	771 (52.8)
45	547 (37.4)
50	138 (9.4)
60	5 (0.3)

Table 4. Absolute number and response rates of respondents who answered the PSA as an election exam and categorization by age, workgroup, and specialty.

Categorization of employees based on age, workgroup, and specialty	n (%) of employees who answered the PSA as an election test
Age	
≤ 40 age	533 (94.3)
>40 age	846 (96.4)
p-value	0.092
Working group	
Physician	543 (97.8)
Nurse	465 (94.9)
Other paramedical staff	214 (93)
Administrative	173 (93.5)
p-value	0.006
Specialty	
Pathological	314 (98.7)
Surgical	141 (95)
Laboratory	76 (100)
p-value	0.011

Table 5. Absolute number and percentages of respondents answering 50 years as the age at which PSA should be first performed and categorization by age, workgroup, and specialty.

Categorization of employees based on age. workgroup. and specialty	n (%) of workers who answered 50 years as the age at which PSA should be performed for the first time
Age	
≤ 40 age	225 (39.8)
> 40 age	324 (36.9)
p-value	0.289
Working group	
Physician	261(47)
Nurse	169 (34.5)
Other paramedical staff	65 (28.3)
Administrative	63 (34.1)
p-value	$<10^{-6}$
Specialty	
Pathological	153 (48.1)
Surgical	90 (50.3)
Laboratory	27 (35.5)
p-value	0.087

staff: 31.3% [73], nurses: 35.7% [175], p<10^-5).

Further categorization of physicians into laboratory, pathological, and surgical specialties revealed significant differences in the proportion of correct responses identifying PSA testing as the screening method of choice (laboratory specialty: 100% [76], pathological specialty: 98.7% [314], surgical specialty: 95% [141], p=0.011). However, no significant differences were observed in identifying the appropriate age for initiating screening at 50 years (laboratory specialty: 35.5% [27], pathological specialty: 48.1% [153], surgical specialty: 50.3% [90], p=0.087) or the initiation of screening at 45 years for those with a positive family history (laboratory specialty: 48.7% [37], pathological specialty: 48.4% [154], surgical specialty: 93% [147], p=0.072) (*Tables 4, 5, 6*).

The percentage of respondents who correctly identified PSA testing as the preferred screening method did not differ significantly across the five hospital institutions (Venizelio General Hospital: 96.5% [436], University General Hospital of Heraklion: 96.8% [487], Agia Olga General Hospital: 96.0% [262], Thebes General Hospital: 92.8% [103], Kos General Hospital: 88.5% [108], p=0.007). The appropriate age to start screening for people with a positive family history was found to be 45 years old (Venizelio General Hospital: 36.5% [164], University General Hospital of Heraklion: 41.0% [206], Agia Olga General Hospital: 35.2% [96], Thebes General Hospital: 44.1% [49], Kos General Hospital: 26.2% [32], p=0.001), and the appropriate age to start screening at 50 years old.

When comparing responses based on hospital classification, participants from tertiary hospitals demonstrated significantly higher accuracy in identifying PSA testing as the screening method of choice (tertiary: 96.5% [1,185], secondary: 90.6% [211], p=0.001). However, no significant differences were observed in identifying the correct age to initiate screening at 50 years (tertiary: 39.3% [483], secondary: 32.2% [75], p=0.233) or at 45 years for individuals with a positive family history (tertiary: 37.9% [466], secondary: 34.8% [81], p=0.056) (*Table 7*).

Scoring was based on a maximum value of 3, where groups received one point for each correct answer regarding the screening method, the initiation age, and the initiation age for individuals with a positive

Table 6. Absolute number and response rates of respondents who answered 45 years as the age at which PSA should be performed for the first time in case of positive family history and categorization by age, workgroup, and specialty.

Categorization of employees based on age, workgroup, and specialty	n (%) of workers who answered 45 years as the age at which PSA should be performed for the first time in case of a positive family history
Age	
≤40 age	212 (37.5)
>40 age	330 (37.6)
p-value	1.000
Working group	
Physician	252 (45.4)
Nurse	175 (35.7)
Other paramedical staff	73 (31.3)
Administrative	48 (25.9)
p-value	$<10^{-5}$
Specialty	
Pathological	154 (48.4)
Surgical	147 (93.6)
Laboratory	37 (48.7)
p-value	0.072

Table 7. Absolute number and response rates of respondents in the five hospitals who answered PSA as the test of choice for prostate cancer screening, as the age at which it should be performed for the first time at 50 years, and as the age at which it should be performed for the first time in adjectival family history at 45 years.

Answers	Venizelio General Hospital of Heraklion	Agia Olga General Hospital	Thebes General Hospital	Kos General Hospital	Heraklion University General Hospital
	n(%)	n(%)	n(%)	n(%)	n(%)
PSA	436 (96.5)	262 (96)	103 (92.8)	108 (88.5)	487 (96.8)
50	184 (40.7)	94 (34.4)	41(36.9)	34 (27.9)	205 (40.8)
45	164 (36.3)	96 (35.2)	49 (44.1)	32 (26.2)	206 (41)

family history. Workers in tertiary hospitals scored significantly higher than those in secondary hospitals (tertiary: 1.80, secondary: 1.56, p<0.001). Additionally, participants earning more than €1,000 per month scored significantly higher than those earning less (≥€1,000: 1.92, <€1,000: 1.58, p<0.001). Scores across professional groups, specialist categories, and educational levels similarly showed significant variances, although marital status and years of employment did not show any significant differences (*Table 8*). For both colorectal cancer and prostate cancer screening, the total score for each group was determined by adding the answers to the questions about the method of screening selection, the start of screening, and the start of screening in the presence of a positive family history (with a score range of 0 to 6). Next, the percentage of replies was calculated.

Workers in tertiary hospitals scored far higher overall than those in secondary hospitals, and those with net monthly incomes over 1000 euros scored higher than those with incomes under 1000 euros. Furthermore, work groups, specialist categories, and educational levels all showed a significant variation in the overall score; however, marital status and years of work experience did not show any significant differences (*Table 8*).

Among the 484 men, 37.6% (181) had undergone a PSA test. Of these men, 16.1% (29) presented with symptoms, while 8.3% (40) had a positive family history. A significant difference was found in the average age of screening, depending on the presence of symptoms (general population: 45.61 ± 7 years; symptomatic: 39.38 ± 9.48 years; p = 0.003). However, no significant difference was found between the general population and those with a positive family history (general population: 45.61 ± 7 years; positive family history: 43.95 ± 7.07 years; p = 0.275). Consequently, respondents tended to undergo PSA screening earlier than the recommended age of 50 (p < 0.001), while they generally had a positive family history around the age of 44 (p = 0.515). Regarding the accuracy of their knowledge, a significant difference was found in the average age of screening between those who correctly answered when to undergo PSA screening and those who answered incorrectly (correct: 48.37 ± 6.54 years; incorrect: 44.03 ± 6.85 years; p < 0.001). In contrast, no significant difference was found in relation to those with a positive family history (correct: 44.00 ± 3.74 years; incorrect: 43.93 ± 8.23 years; p = 0.979) (*Table 9*).

Discussion

In this study, 1,470 employees from five hospitals completed questionnaires about prostate cancer screening. The respondents' responses were predicated on their understanding of and use of screening procedures in the field of preventive. The prostate-specific antigen (PSA) test is the preferred screening technique, according to a sizable majority of respondents, 95.6% (1,396). Responses from medical, nursing, administrative, and other paramedical staff regarding PSA as the preferred screening method, the recommended age for starting screening (50 years), and the age for starting screening in the event of a positive family history (45 years) showed notable differences.

In all of these categories, doctors gave the greatest proportion of accurate answers. Compared to doctors in pathology and surgery, a much larger percentage of doctors in laboratory specialties accurately identified 50 as the optimum age to start screening. Significant variations in the age at which screening should begin were discovered at the hospital level. The University General Hospital of Heraklion had the highest percentage of correct answers for the age of 50 and the General Hospital of Thebes for the age of 50 for 45 years in the case of a positive family history. A significant difference in correct answers regarding PSA as the screening test was observed between secondary and tertiary hospital workers, with tertiary workers outperforming their secondary hospital counterparts.

Upon analyzing the responses to generate a total score, workers in tertiary hospitals and those with a net monthly income of more than 1,000 euros scored significantly higher than their counterparts in secondary hospitals and those earning less than 1,000 euros. Additionally, significant differences were noted in the

total score among various occupational groups, with physicians achieving the highest scores. Pathological specialties scored the highest among specialty categories, while those with postgraduate or doctoral degrees outperformed other educational groups. Regarding screening practices, a significant difference was found in the average age at which PSA screening was initiated, with and without symptoms or a positive family history, particularly in relation to symptoms. A notable difference in the average age of testing was observed between those who answered correctly and those who answered incorrectly when asked about the appropriate age for initiating PSA screening. In other sub-categories, a significant difference in the average age of screening implementation was found between single, divorced, or widowed individuals and married individuals, with the latter group closer to the recommended age of 50 years. Additionally, workers with 5 to 10 years of experience and those with over 10 years of experience showed significant differences in their adherence to the recommended screening ages.

A study that conducted telephone interviews with 266 physicians aged over 49 years explored their knowledge and approach to prostate cancer screening. The sample included 42% general practitioners, 16% general surgeons, 4% pathologists, and 3% urologists. This study differs from ours in its demographic structure, as it excluded no participants based on age, sex, or hospital job. In that study, 55% of respondents felt that PSA screening should be performed every two years, while 45% had already undergone PSA testing. Age (≥60 years) and a positive attitude towards prostate cancer screening were identified as positive predictors for undergoing screening. These findings may be correlated with our study's results, where workers who answered our questionnaire correctly had PSA tests closer to the recommended age, in accordance with guidelines. Additionally, workers with over 10 years of experience in the hospital system also adhered more closely to the recommended screening age. Therefore, both knowledge and age emerged as important prognostic factors in our study (14).

Another relevant comparison can be made with a study of 82 physicians (pathologists and general practitioners) working in medical facilities in San Francisco, who completed a questionnaire series. In this study, 98% of respondents considered PSA to be the method of choice for detecting prostate cancer, although 86% of them performed routine PSA tests in fewer than 60% of their patients over 50 years old. In our study, 97.8% of physicians and 95.6% of the entire sample considered PSA to be the screening method of choice. Therefore, correct theoretical knowledge about prostate cancer screening appears to be widespread within the medical community (15).

Additionally, a national study in the United States included 146 urologists, 96 pathologists, and 118 general practitioners who completed questionnaires. In this study, 87% of participants aged over 50 and 21% under the age of 50 had undergone PSA testing. Among urologists, 95% had undergone screening, while 78% of non-urologists had participated in screening. While direct comparison with our study's implementation rates is challenging, this study suggests a trend toward early screening, regardless of family history (16).

The significant difference in correct responses between physicians and other hospital staff, particularly in terms of screening methods and the recommended ages for testing, is a result that we consider expected, as this information is largely cognitive in nature and directly relevant to medical professionals. Similar results were seen in the studies mentioned. Laboratory specialties demonstrated a higher rate of correct responses regarding the age of 50 as the appropriate starting age for PSA screening, potentially due to both knowledge and practical experience correlating with the typical age of patients being referred for analysis. This finding also supports the results of the aforementioned surveys, which show that tertiary hospital workers had a significantly higher level of knowledge regarding prostate cancer screening initiation compared to their secondary hospital counterparts. This could be attributed to the higher case volume and the need to manage a large number of patients, as well as time and equipment constraints. Postgraduate or doctoral degree holders also scored significantly better in overall knowledge, emphasizing the role of educational background in improving understanding and adherence to screening guidelines. Workers with over 10 years of experience and married individuals were more likely to adhere to the recommended ages for screening, a result consistent with other studies, which suggest that clinical experience and personal circumstances contribute to better screening practices in hospital settings.

In this study, the investigation focused on whether healthcare workers within medical institutions possess the necessary knowledge and adherence to guidelines for conducting preventive tests aimed at prostate cancer prevention. The size of the sample, combined with the ability to compare our findings with those from similar studies, enabled us to construct a relatively comprehensive understanding of the research questions. This exploration also paved the way for identifying potential strategies to enhance knowledge and practices regarding prostate cancer screening.

Finally, the modernization and digital transformation

of the healthcare system are of paramount importance. Developing a centralized database for the insured population, containing detailed personal and family medical histories, could facilitate proactive prevention efforts. This system could notify individuals, via text messages or during hospital visits, of the appropriate times for undergoing specific screening tests. Such an initiative would not only improve chronic and routine patient monitoring but also streamline urgent care and foster a cultural shift toward preventive healthcare in the general population.

Additionally, research indicates that patients who undergo screening for one disease are more likely to pursue screenings for others (17). This highlights the broader impact of promoting preventive care, which could lead to increased compliance and engagement in health maintenance across multiple domains. By implementing these strategies, the healthcare system can move closer to bridging the gaps in knowledge, fostering collaboration among professionals, and cultivating a preventive mindset across the broader population.

Limitations

Despite its strengths, this study has several limitations that should be acknowledged. First, we conducted a cross-sectional questionnaire-based study, which by its nature could be prone to response bias. Second, multivariate models to identify independent predictors of knowledge are lacking, creating a limited bias gap. In addition, no psychometric validation was included to the questionnaire used. Last, but not least, the participants consisted of healthcare staff, which does not actually depict the perceptions of general population.

Conclusions

The participants consisted of staff from secondary and tertiary hospitals. While the participants do not represent the general population, it does reflect a part that, due to their professional roles, would be expected to demonstrate greater awareness and a more proactive approach toward prostate cancer prevention. The findings revealed that most respondents, due to their profession, are aware of the risks associated with malignancy and the critical importance of preventive measures. Despite that, there is clear room for improvement - not only in their practices but also in extending these improvements to the general population.

Conflicts of Interest

No conflict of interest.

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Appendix 1

Choose only one answer.

A. PERSONAL INFORMATION

1. Questionnaire completion date:

Day Month Year

2. Sex:

Male
Female

3. Age:

4. Marital status:

Single
Married
Divorced
Widowed

5. You work at the hospital as:

Physician
Nurse
Administrator
Other paramedical staff

6. If you are a doctor, what is your specialty?

7. If you are a nurse, in which department do you work?

8. If you are an administrator, in which department do you work?

9. If you are a paramedic, write your specialty:

10. You have completed your studies in:

Primary school
High School
Higher education
Postgraduate studies
Ph. D

11. What is your average monthly salary?

0-1000
1000-3000
>3000

12. Years of service in a hospital:

0 – 5
5 – 10
>10

B. QUESTIONS CONCERNING YOUR KNOWLEDGE OF CASE-CONTROL

13. What test is considered most important for preventing prostate cancer?

PSA
General urine test
Abdominal ultrasound
Computed Tomography (CT)

14. At what age should the above examination be done for the first time?

35
45
50
60

15. If a man has a 1st degree relative who has had prostate cancer, at what age should the above test be done for the first time?

35
45
50
60

C. CONTINUE HERE IF YOU ARE MALE:

16. Have you ever had a rectal prostate exam or PSA test?

Yes
No

17. If so, when did you first have a rectal prostate exam or PSA test?

18. If so, was it preceded by any symptoms? (e.g. hematuria, pain, dysuria, etc.)

Yes
No

19. Have you had a 1st degree relative with prostate cancer?

Yes
No