

## Prostate Cancer Screening Behaviors and Health Beliefs Regarding Prostate Cancer Screening of Individuals Over 50 Years of Age: A Descriptive, Cross-Sectional Study

Hesna Gürler<sup>1\*</sup>, Pınar Yılmaz Eker<sup>2</sup>

<sup>1</sup>Vocational School of Healthcare Services, Sivas Cumhuriyet University, Sivas, Türkiye

<sup>2</sup>School of Suşehri Health, Sivas Cumhuriyet University, Sivas, Türkiye

### ABSTRACT:

**Purpose:** This descriptive cross-sectional study was conducted to assess prostate cancer screening behaviors and health beliefs related to prostate cancer screening among individuals aged 50 and over.

**Material and Methods:** The study sample consisted of 72 men aged 50 and over receiving treatment at the orthopedics and traumatology clinic of a university hospital. Data were collected between December 20, 2022, and March 20, 2023, using a "Personal Information Form" and the "Prostate Cancer Screening Health Belief Model Scale". Data analysis involved the use of frequency distributions, means, standard deviations, Chi-square analyses, the Mann-Whitney U test, and the Kruskal-Wallis test.

**Results:** The mean age of the participants in the study was 61.59±8.51 years. It was found that 22.2% of the participants had undergone Prostate-Specific Antigen testing, 73.6% had no knowledge about prostate cancer, and 75% had no knowledge about early detection tests for prostate cancer. Furthermore, participants who had knowledge about prostate cancer and early detection, had a family history of prostate cancer, and considered undergoing prostate examination had a higher rate of undergoing Prostate-Specific Antigen testing. Those who had never undergone a prostate examination, had no knowledge about prostate cancer and early detection tests, and did not plan to undergo prostate examination within the next six months had higher scores on the barrier perception scale, while those who had undergone Prostate-Specific Antigen testing and planned to undergo prostate examination within the next six months had higher scores on the health motivation perception scale.

**Conclusion:** The study revealed a low rate of Prostate-Specific Antigen testing for early detection of prostate cancer, and participants' knowledge and health beliefs and perceptions related to prostate cancer and early detection tests were identified as key factors influencing prostate cancer screening behaviors.

**Keywords:** Health belief model; Prostate cancer; Screening

\*Corresponding author: Hesna Gürler, email: [hesnaqurler@hotmail.com](mailto:hesnaqurler@hotmail.com)

### INTRODUCTION

Prostate cancer incidence has been steadily increasing in recent years (Poppel et al., 2022; Chung et al., 2020). According to international cancer data, prostate cancer is the 2nd most common type of cancer in men with a prevalence rate of 14.2% (Global Cancer Observatory, 2024). In Turkey, according to the 2018 cancer data, prostate cancer is the second most common cancer type in men after lung cancer, with an incidence rate of 40.3 per hundred thousand (Turkey Cancer Statistics, 2024).

The survival rate of prostate cancer is closely related to the clinical and pathological stage of the disease at the time of diagnosis, as prostate cancer is often asymptomatic (Abuadas et al., 2017; Zare et al., 2016). When prostate cancer is detected in the early stage, the five-year survival rate is 100%, whereas in metastatic prostate cancer, this rate drops to as low as 29.8% (Ivlev et al., 2018). Therefore, to reduce mortality rates associated with prostate cancer, the American Cancer Society recommends informing all men aged 50 and over with a life expectancy of at

least 10 years about early prostate cancer detection and screening and suggests performing a Prostate-Specific Antigen (PSA) test based on individual preference. PSA testing is the most commonly recommended practice for the early detection of prostate cancer and treatment planning (Chung et al., 2020; Jamieson et al., 2022; Zare et al., 2016), and this practice is supported by level C evidence (Jamieson et al., 2022). While participation in screening programs for prostate cancer is crucial in the fight against the disease, low awareness and participation rates in screening programs for the early detection of prostate cancer are observed worldwide (Abuadas et al., 2017; Aflakseir, 2016; Bilgili & Kitiş, 2019; Demirbaş & Onmaz, 2021; Yeboah-Asiamah et al., 2017).

Studies investigating the participation of the community in prostate cancer screening programs and the factors influencing it have reported that older age (Jamieson et al., 2022; Ogunsanya et al., 2016), higher education (Jamieson et al., 2022), higher income level (Jamieson et al., 2022; Ogunsanya et al., 2016), being informed about PSA by a healthcare professional (Ogunsanya et al., 2016), being married (Jamieson et al., 2022), regular visits to healthcare facilities (Ogunsanya et al., 2016), knowing someone diagnosed with prostate cancer, experiencing urinary system complaints, and having a high sensitivity and seriousness perception increase participation in screening programs (Abuadas et al., 2017; Çapık & Gözüm, 2011; Demirbaş & Onmaz, 2021; Kahraman & Kılıç, 2019). On the other hand, perceiving prostate cancer as a disease of old age, lack of knowledge, considering oneself healthy, finding prostate examinations embarrassing and painful, fear of death and cancer, and a high barrier perception significantly hinder participation in prostate cancer screenings (Alshammari et al., 2021; Bamidele et al., 2022; Bilgili & Kitiş, 2019; Mbugua<sup>a</sup> et al., 2021; Mbugua<sup>b</sup> et al., 2021; Yeboah-Asiamah et al., 2017; Zare et al., 2016). The Health Belief Model (HBM) is a widely used model to determine the attitudes and beliefs that motivate individuals to take or not take actions related to health, such as prostate cancer screening behaviors and compliance with recommended medical regimens (Alshammari et al., 2021;

Demirbaş & Onmaz, 2021; Kahraman & Kılıç, 2019; Zare et al., 2016). A literature review indicates that there is limited research in Turkey that evaluates patients' prostate cancer screening behaviors using the HBM (Bilgili & Kitiş, 2019; Demirbaş & Onmaz, 2021; Kahraman & Kılıç, 2019). Considering the increasing number of individuals with prostate cancer, evaluating individuals' prostate cancer screening behaviors and their levels of health beliefs regarding these behaviors can contribute to increasing the early detection of prostate cancer and improving survival rates.

## **MATERIAL and METHODS**

### **Purpose and Type of the Study**

This study was conducted to assess the prostate cancer screening behaviors of individuals aged 50 and over and their health beliefs related to prostate cancer screenings. This study is a descriptive, single-center, and cross-sectional study.

### **Research Questions**

The research questions that this study aimed to answer were as follows:

- What are the factors influencing the prostate cancer screening behaviors of individuals aged 50 and over?
- What are the health beliefs of individuals aged 50 and over regarding prostate cancer screenings?

### **Sampling and participant**

This study was conducted at the Orthopedics and Traumatology Clinic of XXX University Research and Practice Hospital. The study population consisted of 160 patients receiving treatment at the Orthopedics and Traumatology Clinic of a university's Research and Practice Hospital between December 20, 2022, and March 20, 2023. The reason for choosing the orthopedics and traumatology clinic was that statistical data showed a higher number of males aged 50 and above admitted to the clinic within one year. Participants included individuals who were 50 years of age or older, spoke Turkish, had no history of cancer diagnosis, and agreed to participate in the study. A total of 88 individuals were excluded from the study, including those under 50 years old (71),

non-Turkish speakers (4), individuals aged 50 and above who had previously been diagnosed with colon (3) and prostate (2) cancer and declined to participate (8). Thus, the sample of the study consisted of 72 male participants.

### Data Collection

Patients were accommodated in single, double, or quadruple rooms. Therefore, it was considered that the presence of other individuals during data collection could affect the accuracy of responses. Data were collected in the plaster-dressing room of the orthopedics and traumatology clinic during hours when plaster/dressing procedures were not being performed. Data of participants staying in single rooms were collected in their patient rooms. The plaster-dressing room and single-patient rooms were well-lit and had an environment that did not distract the participants. Face-to-face interview technique was used for data collection. Each participant's completion of the questionnaire took approximately 30 minutes.

### Data Collection Tools

In this study, two data collection tools were used: "Personal Information Form" and "Prostate Cancer Screenings Health Belief Model Scale (PCSHBMS)."

**Personal Information Form:** The form, based on the literature (Alshammari et al., 2021; Demirbaş & Onmaz, 2021; Kahraman & Kılıç, 2019), was developed by the researchers and consisted of 15 questions. The form included 4 questions about participants' demographics such as age, education level, monthly income, marital status, and 11 questions related to prostate cancer knowledge and behaviors.

**Prostate Cancer Screenings Health Belief Model Scale (PCSHBMS):** PCSHBMS was developed by Çapık and Gözüm (2011) in 2009 based on the health belief theory and tested to be valid and reliable. The scale is a five-point Likert scale (1- Strongly Disagree, 2- Disagree, 3- Undecided, 4- Agree, 5- Strongly Agree) and consists of five sub-dimensions: sensitivity perception (5 items), seriousness perception (4 items), health motivation perception (12 items),

barrier perception (16 items), and benefit perception (7 items), totaling 41 items. The scale does not have a total score; each sub-dimension has its own total score. Higher scores in sensitivity, seriousness, motivation, and benefit sub-dimensions indicate a positive condition, while a higher score in the barrier perception sub-dimension indicates a negative condition. In Çapık and Gözüm's (2011) study, the Cronbach's alpha coefficient of the scale was determined as 0.90 for sensitivity perception, 0.89 for seriousness perception, 0.96 for health motivation perception, 0.94 for barrier perception, and 0.91 for benefit perception. In this study, the Cronbach's alpha coefficients of the scale were determined as 0.88 for sensitivity perception, 0.94 for seriousness perception, 0.79 for health motivation perception, 0.92 for barrier perception, and 0.88 for benefit perception.

### Statistical Analysis

The data obtained from the study were analyzed using IBM SPSS Statistics 22.00 software (IBM Corporation, Armonk, NY, USA). For descriptive variables, numbers, percentage distributions, means, and standard deviations were used. Chi-square analyses (Pearson's Chi-square test, Fisher's Exact Chi-square test) were applied to reveal the relationship between variables. The normality of the data was assessed using the Kolmogorov-Smirnov (K-S) test. Due to the data not following a normal distribution, the Mann-Whitney U test was used for comparisons between two groups, and the Kruskal-Wallis test was used for comparisons between more than two groups. The level of statistical significance was set at  $p < .05$ .

### Ethical Approval

Ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of a university (Decision no: 2022-11/06; dated 16.11.2022), and institutional permission was obtained from the hospital where the study was conducted (Number: 2022-E1215). Written and verbal consent was obtained from the participants in the sample. The study was conducted in accordance with the Helsinki Declaration and research and publication ethics.

## RESULTS

The average age of the participants in the study was  $61.59 \pm 8.51$  years. It was determined that 52.8% of the participants were between the ages of 51-60,

40.3% had primary education, 87.5% were married, and 52.8% had a moderate monthly income (Table 1).

**Table 1.** Demographic Characteristics of Participants (n=72)

<i>Characteristics</i>		
Mean age: 61.59 (SD= $\pm$ 8.51)	n	%
<b>Ages</b>		
51-60 years	38	52.8
61 years and over	34	47.2
<b>Educational Level</b>		
Illiterate/Literate	18	25
Primary School	29	40.3
High School	15	20.8
University	10	13.9
<b>Marital Status</b>		
Married	63	87.5
Single	9	12.5
<b>Monthly Income Status</b>		
Low	27	37.5
Moderate	38	52.8
High	7	9.7
<b>Total</b>	72	100.0

*SD: Standard deviation*

The participants' knowledge and screening behaviors related to prostate cancer are presented in Table 2. When the table was evaluated, it was found that 31.9% of the participants had previously undergone prostate examination, and in 81.8% of these cases, the reason for the examination was related to prostate-related complaints. Additionally, 26.4% of the participants knew about prostate cancer, 25% were aware of early detection tests for prostate cancer, 22.2% had undergone a PSA test, and 12.5% had a family member with prostate cancer.

In the study, it was found that 80.6% of the participants did not plan to have a prostate examination within the next six months, and among the reasons for not considering it, 47.2% considered themselves healthy, 18.1% had time constraints, and 13.9% stated that prostate examinations is embarrassing.

In the study, it was determined that the status of undergoing a PSA test did not statistically differ based on age, income status, marital status, and

educational background ( $p > 0.05$ ). However, among participants who had previously undergone a prostate examination, had knowledge about prostate cancer and early detection tests, had a family history of prostate cancer, and planned to have a prostate examination within the next six months, the rate of undergoing a PSA test was statistically significantly higher ( $p < 0.05$ ) (Table 3). When the participants' health beliefs regarding prostate cancer screening behaviors were evaluated, sensitivity perception score was determined as  $11.13 \pm 4.52$ , seriousness perception score as  $13.02 \pm 4.11$ , health motivation perception score as  $31.45 \pm 7.89$ , barrier perception score as  $44.58 \pm 13.55$ , and benefit perception score as  $27.38 \pm 5.79$  according to the sub-dimensions of the scale.

It was found that there was no significant difference in the scores of PCSHBMS sub-dimensions according to the demographic characteristics of the participants, such as age, monthly income, marital status, and the presence of a family member with

prostate cancer ( $p > 0.05$ ).

It was found that participants with a lower level of education, those who had not previously undergone a prostate examination, those who did not know about prostate cancer and early detection tests, and those who did not plan to have an examination for prostate cancer within the next six months had

higher barrier perception scale scores. Those who underwent a PSA test and those who planned to have an examination for prostate cancer within the next six months had higher health motivation perception scale scores and lower barrier perception scale scores, and the differences between the groups were found to be significant ( $p < 0.05$ ) (Table 4).

**Table 2.** Individuals' Knowledge and Screening Behaviors Related to Prostate Cancer (n=72)

	n	%
<b>Having a prostate examination before</b>		
Yes	23	31.9
No	49	68.1
<b>Timing of prostate examination</b>		
Within the last 0-3 months	3	13.0
Within the last 3-6 months	1	4.3
Within the last 6-9 months	5	21.7
Within the last 9-12 months	2	8.7
More than 1 year ago	12	52.3
<b>Reason for prostate examination</b>		
Having prostate-related symptoms	18	81.8
Receiving a recommendation from a healthcare professional	3	13.1
Reading brochures or written materials about prostate cancer	2	5.1
<b>Knowledge About Prostate Cancer</b>		
Yes	19	26.4
No	53	73.6
<b>Someone in the family has prostate cancer</b>		
Yes	9	12.5
No	63	87.5
<b>Knowing about early detection tests for prostate cancer</b>		
Yes	18	25.0
No	54	75.0
<b>Undergoing PSA testing</b>		
Yes	16	22.2
No	56	77.8
<b>The time since the PSA test /month</b>		
	20.93±1.14	
<b>Reason for undergoing PSA test</b>		
Having symptoms related to the prostate.	12	75.5
Recommendation from a healthcare professional.	3	18.8
Reading brochures or written materials about prostate cancer	1	5.7
<b>Thinking about getting screened for prostate cancer within the next six months</b>		
Yes	14	19.4
No	58	80.6
<b>Reasons for not considering undergoing prostate examination for early diagnosis of prostate cancer within the next six months*</b>		
Seeing oneself as healthy	34	47.2
Lack of time	13	18.1
Embarrassment about prostate examination	10	13.9
Not knowing where to apply	10	13.9
Transportation problems	7	9.7
Fear of undergoing prostate surgery	7	9.7
Fear of having prostate cancer	6	8.3
No specific reason	6	8.3

\* More than one answer has been given

**Table 3.** Factors Affecting Individuals' PSA Testing Behavior (n=72)

Characteristics	PSA Tested		Not PSA Tested		Test
	n	%	n	%	
<b>Ages</b>					
51-60 years	9	23.6	29	76.3	$\chi^2=1.876$ $p=.373$
61 years and over	7	20.6	27	79.4	
<b>Educational Level</b>					
Illiterate/Literate	2	10.0	16	90.0	$\chi^2=4.299$ $p=.367$
Primary School	8	27.6	21	72.4	
High School	2	13.3	13	86.7	
University	4	40.0	6	60.0	
<b>Monthly Income Status</b>					
Low	4	14.8	23	85.2	$\chi^2=1.389$ $p=.499$
Moderate	10	26.3	28	73.7	
High	2	28.6	5	71.4	
<b>Having A Prostate Examination Before</b>					
Yes	14	60.9	9	39.1	$\chi^2=29.205$ $p<.001^{**}$
No	2	4.1	47	95.9	
<b>Knowledge about Prostate Cancer</b>					
Yes	9	47.4	10	52.6	$\chi^2=9.433$ $p=.002^*$
No	7	13.2	46	86.8	
<b>Someone in The Family Has Prostate Cancer</b>					
Yes	5	55.6	4	44.4	$\chi^2=6.661$ $p=.010^*$
No	11	17.5	52	82.5	
<b>Knowing about Early Detection Tests for Prostate Cancer</b>					
Yes	9	50.0	9	50.0	$\chi^2=10.714$ $p=.001^{**}$
No	7	13.0	47	87.0	
<b>Thinking about Getting Screened for Prostate Cancer within The Next Six Months</b>					
Yes	8	57.1	6	42.9	$\chi^2=12.262$ $p=.002^*$
No	8	13.8	50	86.2	

\* $p<.05$ , \*\* $p\leq.001$

**Table 4.** Comparison of Health Belief Model Scale Sub-Dimension Scores According to Individuals' Demographic Characteristics (n=72)

Demographic Characteristics	Sensitivity Perception	Seriousness Perception	Health Motivation Perception	Barrier Perception	Benefit Perception
<b>General score</b>	11.13±4.52	13.02±4.11	31.45±7.89	44.58±13.55	27.38±5.79
<b>Ages</b>					
51-60 years	10.22±4.16	14.59±4.43	32.23±9.18	40.80±13.02	27.88±6.15
61 years and over	11.35±4.96	13.05±3.86	31.17±6.90	48.17±14.17	26.79±5.28
<b>Test</b>	Z=0.655 p=.721	Z=1.364 p=.506	Z=0.243 p=.886	Z=4.143 p=.126	Z=1.936 p=.380
<b>Monthly Income Status</b>					
Low	11.14±4.87	11.92±3.85	31.29±7.47	47.44±14.12	26.29±6.69
Moderate	11.00±4.13	13.36±4.06	31.10±8.43	43.23±12.83	27.76±5.37
High	11.85±5.72	15.42±4.54	34.00±7.02	40.85±15.10	29.57±3.55
<b>Test</b>	KW=0.091 p=.956	KW=4.616 p=.099	KW=0.720 p=.698	KW=3.035 p=.219	KW=1.938 p=.379
<b>Marital Status</b>					
Married	11.58±4.41	12.77±4.10	30.53±7.87	44.92±13.04	27.06±5.87
Single	7.00±3.16	14.62±4.20	38.12±4.70	43.00±18.47	30.37±4.68
<b>Test</b>	Z=-2.917 p=.314	Z=-1.170 p=.242	Z=-2.676 p=.117	Z=-0.600 p=.548	Z=-1.353 p=.176

\* $p<.05$

**Table 4.** (Continued) Comparison of Health Belief Model Scale Sub-Dimension Scores According to Individuals' Demographic Characteristics (n=72)

Demographic Characteristics	Sensitivity Perception	Seriousness Perception	Health Motivation Perception	Barrier Perception	Benefit Perception
<b>Educational Level</b>					
Illiterate/Literate	12.44±6.031	12.22±4.09	30.61±7.15	52.72±14.01	26.00±6.05
Primary School	10.62±3.72	12.65±4.41	29.93±8.63	43.24±12.08	26.82±6.30
High School	10.53±3.09	13.06±3.41	32.06±7.62	42.20±11.14	28.40±5.53
University	11.20±5.45	15.50±3.77	36.50±5.93	37.40±14.99	30.00±3.12
<b>Test</b>	KW=1.025 p=.599	KW=0.576 p=.750	KW=0.806 p=.669	<b>KW=6.163</b> <b>p=.046*</b>	KW=2.316 p=.314
<b>Having A Prostate Examination Before</b>					
Yes	12.26±5.65	13.34±4.98	31.21±8.12	39.13±11.33	26.65±6.60
No	10.61±3.83	12.87±3.67	31.57±7.87	47.14±13.84	27.73±5.41
<b>Test</b>	Z=-0.786 p=.432	Z=-0.668 p=.504	Z=-0.042 p=.966	<b>Z=-2.626</b> <b>p=.009*</b>	Z=-0.437 p=.662
<b>Knowledge about Prostate Cancer</b>					
Yes	12.22±3.55	14.33±4.33	32.00±8.29	39.11±12.21	26.77±7.03
No	10.77±4.77	12.59±3.97	31.27±7.83	46.70±13.58	27.59±5.37
<b>Test</b>	Z=-0.515 p=.606	Z=-0.418 p=.676	Z=-0.154 p=.878	<b>Z=-2.269</b> <b>p=.020*</b>	Z=-0.527 p=.598
<b>Knowing about Early Detection Tests for Prostate Cancer</b>					
Yes	12.22±3.55	14.33±4.33	32.00±8.29	39.11±12.21	26.77±7.03
No	10.77±4.77	12.59±3.97	31.27±7.83	46.40±13.58	27.59±5.37
<b>Test</b>	Z=-1.495 p=.135	Z=-1.531 p=.126	Z=-0.345 p=.730	<b>Z=-2.459</b> <b>p=.014*</b>	Z=-0.360 p=.719
<b>Undergoing PSA Testing</b>					
Yes	11.43±5.22	15.18±3.78	31.87±9.78	40.37±13.71	25.43±7.44
No	11.05±4.35	12.41±4.02	31.33±7.37	45.78±13.38	27.94±5.17
<b>Test</b>	Z=-0.34 p=.973	<b>Z=-2.473</b> <b>p=.010*</b>	Z=-0.502 p=.616	Z=-1.742 p=.820	Z=-1.062 p=.288
<b>Someone in The Family Has Prostate Cancer</b>					
Yes	13.77±5.04	14.11±3.21	33.44±7.85	37.55±7.61	27.11±4.25
No	10.76±4.35	12.87±4.22	31.17±7.93	45.58±13.95	27.42±6.00
<b>Test</b>	Z=-1.717 p=.086	Z=-1.019 p=.308	Z=-0.324 p=.726	Z=-1.789 p=.074	Z=-0.599 p=.549
<b>Thinking about Getting Screened for Prostate Cancer within The Next Six Months</b>					
Yes	12.78±5.23	14.57±3.79	37.00±7.47	36.14±9.99	29.42±4.29
No	10.74±4.29	12.65±4.12	30.12±7.45	46.6±13.57	26.89±6.02
<b>Test</b>	Z=1.299 p=.194	Z=-1.653 p=.980	<b>Z=-2.750</b> <b>p=.006*</b>	<b>Z=-2.677</b> <b>p=.007*</b>	Z=-1.409 p=.159

\*p&lt;.05

## DISCUSSION

Cancer screening programs have been developed globally with the aim of detecting breast, cervix, colon-rectum, and prostate cancers at an early stage to increase the chances of recovery and reduce the probability of metastasis and cancer-related mortality (Chung et al., 2020; Jamieson et al., 2022; Poppel et al., 2022). Despite efforts to promote the widespread adoption of approaches aimed at early detection of cancers, it has been reported that the rate of recommended PSA testing for early detection of prostate cancer is universally low (5%-47.6%)

(Abuadas et al., 2017; Aflakseir, 2016; Mbugua<sup>a</sup> et al., 2021; Mbugua<sup>b</sup> et al., 2021; Shungu & Sterba, 2021). In Turkey, participation rates in prostate cancer screenings vary between 4% and 21.2%, which are insufficient (Bilgili & Kitiş, 2019; Çapık, 2014; Demirbaş & Onmaz, 2021; Kahraman & Kılıç, 2019). In this study evaluating prostate cancer screening behaviors, it was found that 31.9% of the participants had undergone prostate examination, and 22.2% had undergone PSA testing for early diagnosis of prostate cancer. While the PSA testing rate obtained in this study is relatively high

compared to some national (Çapık, 2014; Demirbaş & Onmaz, 2021; Kahraman & Kılıç, 2019) and international studies (Abuadas et al., 2017; Aflakseir, 2016; Alshammari et al., 2021; Mbugua<sup>a</sup> et al., 2021), it is still not at the desired level. This suggests the possibility of delays in the early diagnosis of prostate cancer in our sample group.

In this study, it was determined that the primary reason for participants to undergo PSA testing was prostate-related complaints, and the majority did not consider getting screened for prostate cancer within the next six months. Reasons for not considering screening included seeing oneself as healthy, time constraints, embarrassment associated with prostate examination, not knowing where to go for examination, transportation problems, and fear of prostate surgery and cancer. Prostate cancer is often perceived as a disease of old age by most men, leading middle-aged individuals without symptoms to view themselves as healthy and perceive their risk of prostate cancer as low. Consequently, due to considering prostate examination via the rectal route as embarrassing, uncomfortable, and painful, individuals tend to avoid going to the hospital for prostate examination, significantly hindering participation in screenings (Alshammari et al., 2021; Bamidele et al., 2022; Bilgili & Kitiş, 2019; Mbugua<sup>a</sup> et al., 2021; Mbugua<sup>b</sup> et al., 2021; Shungu & Sterba, 2021; Zare et al., 2016). Individuals' thoughts related to prostate cancer, including the perception that the diagnosis and treatment of prostate cancer are major life events causing stress (Jakimowicz et al., 2020), lack of knowledge and awareness, the fear of cancer diagnosis affecting their masculinity, and fear of death and cancer diagnosis, as well as financial constraints, have been reported as reasons for not undergoing prostate examination and early diagnosis testing (Bamidele et al., 2022; Bilgili & Kitiş, 2019; Demirbaş & Onmaz, 2021; Zare et al., 2016). Due to such thoughts of individuals related to prostate cancer, 75% of prostate cancer cases are diagnosed at an advanced stage, significantly reducing the chances of treatment and increasing mortality rates (Yeboah-Asiamah et al., 2017). In line with the results obtained from the literature and this study, it can be said that developing routine

screening programs for PSA testing for men aged 50 and over, close monitoring of healthcare services on digital platforms, identification of factors affecting participation in prostate cancer screening programs, determining motivating and inhibiting factors for individuals, and providing information to overcome barriers may increase early diagnosis and cancer-related survival rates.

In this study, it was found that the PSA testing status did not differ according to sociodemographic factors such as age, income level, marital status, and education level. These findings differ from most of the studies conducted on the subject (Aflakseir, 2016; Bilgili & Kitiş, 2019; Demirbaş & Onmaz, 2021). In the literature, sociodemographic factors are considered important in participation in screening programs, with advanced age, higher education level, and employment status increasing the participation rate in prostate cancer screening behaviors (Aflakseir, 2016; Bilgili & Kitiş, 2019; Demirbaş & Onmaz, 2021). The difference between our study and other studies may be due to differences in the sociodemographic characteristics of the sample group studied. However, research findings of the study conducted by Çapık (2012) support our study. These different results in the literature suggest the need for more extensive multi-center studies and the importance of integrating the results with screening programs. In this study, it is observed that having a family history of prostate cancer increases the participation rate in prostate cancer screening behaviors. In the literature, having a family member diagnosed with prostate cancer is emphasized as an important factor affecting the willingness to undergo PSA testing (Abuadas et al., 2017; Aflakseir, 2016; Bilgili & Kitiş, 2019; Demirbaş & Onmaz, 2021). The finding from this study and the literature suggests that participants with a family history of prostate cancer may believe they are genetically predisposed to cancer, share the experiences of their relatives diagnosed with prostate cancer closely during their fight against cancer, and therefore be aware of the importance of early diagnosis in cancer.

In this study, where we evaluated individuals' health beliefs regarding prostate cancer screenings, the sensitivity perception scale score was determined as



11.13±4.52, the seriousness perception score was 13.02±4.11, the health motivation perception score was 31.45±7.89, the obstacle perception score was 44.58±13.55, and the benefit perception score was 27.38±5.79. These findings obtained from the study can be interpreted as individuals' perception of their susceptibility to prostate cancer was low and their perception of obstacles to prostate cancer screening behaviors was high. The sensitivity, seriousness, health motivation and benefit perception scores obtained from the study are similar to the results of other studies conducted on the subject (Zare et al. 2016; Abhar et al. 2022; Demirbaş and Onmaz 2021; Kahraman and Kılıç 2019), but the obstacle perception score was significantly higher than the results of other studies (Abhar et al. 2022; Demirbaş and Onmaz 2021; Kahraman and Kılıç 2019). This finding shows that individuals have obstacles to prostate cancer screening and interventions should be planned to identify and eliminate obstacles.

When the scale scores were compared according to the characteristics of the individuals in the study, it was found that there was no difference between the scale scores according to age, monthly income, marital status, and having someone in the family diagnosed with prostate cancer ( $p>0.05$ ), while the obstacle perception scale score was higher in individuals with lower education levels. In Demirbaş and Onmaz's (2021) study, it was determined that the obstacle perception score was higher in those who were not working, and there was no relationship between other variables and health belief sub-dimensions. In Kahraman and Kılıç's study, it was determined that working time and age significantly affected the perception of seriousness. Yeboah-Asiamah et al. (2017) found that there was no relationship between demographic variables and perceptions about prostate cancer.

In the study, the obstacle perception scale score was found to be high in those who had not had a prostate examination before, who did not know about prostate cancer and early diagnosis methods, and who did not plan to be examined for the diagnosis of prostate cancer within six months. In the study, it was also determined that the health motivation perception scale score was higher in those who had a PSA test and planned to be examined for the

diagnosis of prostate cancer within six months. These findings obtained from the study show that health motivation perception specific to prostate cancer is important in the participants' decision to have a PSA test, and obstacle perception is important in not having or considering having a PSA test. Similar studies evaluating individuals' prostate cancer screening behaviors using the health belief model also reported that individuals with high scale scores of prostate cancer-specific sensitivity (Abuadas et al. 2017), seriousness (Kahraman and Kılıç, 2019), benefit (Abuadas et al. 2017; Demirbaş and Kanmaz, 2021; Kahraman and Kılıç, 2019), health motivation perception (Abuadas et al. 2017; Demirbaş and Kanmaz, 2021; Bilgili, Kitiş, 2019) and low obstacle perception scale score (Abuadas et al. 2017; Demirbaş and Kanmaz, 2021; Bilgili, Kitiş, 2021) had a higher rate of PSA testing. In line with the findings obtained from this study, it can be said that planning interventions that increase individuals' motivation for prostate cancer screening and reduce their obstacle perceptions can increase the rate of PSA testing.

## CONCLUSION

The study revealed that individuals have low level of knowledge regarding prostate cancer and early diagnostic tests, the rate of PSA testing is low and motivation and obstacle perception are important for prostate cancer screening. Health beliefs and perceptions were identified as fundamental factors influencing prostate cancer screening behaviors. Information provided by healthcare professionals plays a significant role in patients' decisions to participate in cancer screening. Therefore, healthcare professionals should provide information about prostate cancer and screening both in clinical settings and at the community level, assess individuals' perceptions regarding screenings, and support men in making decisions about undergoing tests. The results of this study serve as a preliminary assessment for future research. Therefore, we recommend to support nurse-intensive work areas to increase cancer screenings and to conduct studies with a large number of samples.

## Limitations

There are some limitations to this study. Firstly, the PSA values of the participants were not known. Secondly, the relatively small sample size in single-center is another limitation of the research.

## Conflict of Interest

There is no conflict of interest between the authors.

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