



## ARAŞTIRMA / RESEARCH

# Relationship between knowledge levels of men about prostate cancer screenings and their health literacy

Erkeklerin prostat kanseri taraması konusundaki bilgi düzeyleri ve sağlık okuryazarlığı arasındaki ilişki

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### Abstract

**Purpose:** Prostate cancer is one of the cancer types most frequently causing death throughout the world. Early diagnosis of prostate cancer is important.

This study was directed towards examining the relation between knowledge levels of men aged over 40 about prostate cancer screenings and their health literacy.

**Materials and Methods:** The study has a descriptive and cross-sectional design and included 501 men selected through proportional cluster sampling. Data were collected with Socio-Demographic Features Form, the Knowledge about Prostate Cancer Screening Questionnaire and Health Literacy Survey Questionnaire.

**Results:** The mean score for the Knowledge about Prostate Cancer Screening Questionnaire was  $3.85 \pm 2.05$  and the mean score for Health Literacy Survey Questionnaire was  $80.87 \pm 16.03$ . There was a significant, positive and moderate relation between the mean score for the Knowledge about Prostate Cancer Screening Questionnaire and that for Health Literacy Survey Questionnaire. The mean score for Health Literacy Survey Questionnaire accounted for 48% of the variance in the scores for the Knowledge about Prostate Cancer Screening Questionnaire.

**Conclusion:** Knowledge levels of the participants about prostate cancer screenings were affected by their health literacy levels.

**Keywords:** Prostate cancer, screening tests, knowledge levels, health literacy

### Öz

**Amaç:** Prostat kanseri tüm dünyada ölüme neden olan kanser türlerinden biridir. Prostat kanserinin erken teşhisi tedavisi açısından önemlidir. Bu çalışma, 40 yaş üstü erkeklerin prostat kanseri taraması hakkındaki bilgi düzeyleri ile sağlık okuryazarlıkları arasındaki ilişkinin incelenmesine yöneliktir.

**Gereç ve Yöntem:** Çalışma tanımlayıcı ve kesitsel bir tasarım sahiptir ve orantılı küme örnekleme ile seçilen 501 erkek içermektedir. Veriler, Sosyodemografik Özellikler Formu, Prostat Kanseri Tarama Anketi ve Sağlık Okuryazarlığı Anketi Anketi Bilgileri ile toplanmıştır.

**Bulgular:** Prostat Kanseri Tarama Anketi Hakkında Bilgi için ortalama puan  $3,85 \pm 2,05$ , Sağlık Okuryazarlığı Anketi Anketi puan ortalaması  $80,87 \pm 16,03$  olarak bulundu. Prostat Kanseri Tarama Anketine İlişkin Bilgi için puan ortalaması ile Sağlık Okuryazarlığı Anketi Anketi toplam puanları arasında anlamlı, pozitif ve orta düzeyde bir ilişki vardı. Sağlık Okuryazarlığı Anketi Ortalama Puanı, Prostat Kanseri Tarama Anketi Hakkında Bilgi puanlarında varyansın %48'ini oluşturmaktadır.

**Sonuç:** Katılımcıların prostat kanseri taraması hakkındaki bilgi düzeyleri sağlık okuryazarlık seviyelerinden etkilenmiştir.

**Anahtar kelimeler:** Prostat kanseri, tarama testleri, bilgi düzeyleri, sağlık okuryazarlığı

## INTRODUCTION

Prostate cancer is one of the cancer types most frequently causing death throughout the world.

However, the incidence of this cancer varies with country, race and age <sup>1</sup>. In Turkey, prostate cancer is the second most frequent cancer which causes death in men. The five-year prevalence of this disease in

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Turkey has been reported to be 21.0%<sup>2</sup>. According to data from the Turkish Ministry of Health, the age standardized incidence of prostate cancer was 28.9/100000 in 2006 and 41.7/100000 in 2018. In addition, the incidence of this disease has incrementally grown after the age of 40 as age increases<sup>1</sup>. Turkey has the highest incidence of prostate cancer in the region where the country is located<sup>3</sup>. Prostate cancer is an important health problem both in Turkey and in the rest of the world due to a rapid increase in its morbidity and mortality<sup>2,4</sup>. Screening and early diagnosis of the disease is of essential importance in cases of prostate cancer. Prostate cancer information can be recognized early on and may lead to health seeking behavior.<sup>5</sup>

Prostate specific antigen (PSA) is commonly utilized in prostate cancer screening programs. Medical authorities do not agree that PSA should be used routinely<sup>6</sup>. In a randomized controlled study by Sandblom, Varenhorst, Lofman, Rosell, and Carlsson (2004), routine use of PSA did not help decrease deaths from prostate cancer and even caused unnecessary medical procedures<sup>7</sup>. Also, Ilic, O'Connor, Green, and Wilt (2011) did not find a significant difference between the patients undergoing routine tests for PSA and those not having the tests<sup>8</sup>. However, Bartsch et al. (2001) found that mortality due to prostate cancer significantly decreased in people screened for PSA<sup>9</sup>. Similarly, Labrie et al. (2004) reported that there was a significant difference in death rates between males having a test for PSA and those not having this test and that the test was life-saving<sup>10</sup>. In a randomized, controlled study by Schroder, Hugosson, and Roobol (2009) in Europe, there was evidence that screening for PSA decreased mortality from prostate cancer<sup>11</sup>.

In Turkey, Guide for Prostate Cancer Management was prepared by a committee involving specialists playing a role in diagnosis, treatment and follow-up of patients with prostate cancer by taking account of updated versions of the guidelines by The National Comprehensive Cancer Network, The European Society for Medical Oncology, The European Association of Urology and American Urological Association. It is recommended in the guide that community screenings and opportunistic screenings could be performed and that total serum PSA measurements and findings from digital examination should be evaluated together<sup>12</sup>.

In Turkey, the rate of having screenings for early diagnosis of prostate cancer is not as high as

expected. Çapık and Gözüm (2012) found that the rates of having a prostate examination and a PSA test in males aged 40 years were 9.3% and 6.7% respectively<sup>13</sup>. Tekpınar, Aşkın and Özen (2018) reported the rate of having a PSA test in males aged 18-69 years to be 6.8%<sup>14</sup>. In another study, the rates of having a prostate examination and a PSA test were found to be 36.2% and 23.9% respectively in males aged over 60 years<sup>15</sup>. Bayçelebi et al. (2015) in their study with 900 male participants aged over 50 years found the rate of having a screening for PSA to be 35.5%<sup>16</sup>.

Health literacy allows people to read and understand complex information offered about health, make the best decision about their health by making use of critical evaluations and put this decision into practice<sup>17</sup>. In people with poor health literacy, diagnosis of diseases can be made in their advanced stages. It also reduces the possibility of detecting prostate cancer in its early stages<sup>18</sup>.

Health literacy is one of the important factors affecting knowledge of cancer screenings. Gigenzer et al. (2009) emphasized in their study that increased health literacy levels could be effective in achieving the most benefits from screenings for prostate cancer<sup>19</sup>. The present study was directed towards examining the relation between levels of knowledge about prostate cancer screenings and health literacy in males aged 40 years.

## MATERIALS AND METHODS

This study is descriptive and cross-sectional. It was conducted in three family healthcare centers in Manisa between 30 November and 30 May 2016. The study population included all the men aged 40-70 years provided health care by three family healthcare centers and living in Şehzadeler, Manisa (N=16417).

The study sample was formed by using proportional cluster sampling of district populations. The sample size was calculated by using Epi Info 2000. The expected prevalence of prostate cancer was considered as 21%<sup>2,3</sup>. Based on the confidence interval of 99%, the standard error of 0.05 and the design effect of 1.45, the smallest sample size was found to be 445. Therefore, data were gathered from 501 males (n=501).

A total of 92 clusters were formed for cluster sampling. To determine the head of the cluster, one household detection form was randomly selected in

each district of each family healthcare center. Each cluster was composed of five households. To select five households, the fifth closest household on the left of the front door of the head of each cluster was determined. This process continued until the sample size was obtained. When there was no male aged 40-70 years or when the candidate declined to participate in the study, sampling was continued as described earlier and the next fifth household was selected. Data collection was performed at face to face interviews with the participants and took 15-25 minutes. No financial support was obtained for the study from any institutions or organizations.

The inclusion criteria were to be aged 40-70 years, male and literate, to live in a district provided care by three family healthcare centers included in the study, not to be diagnosed as prostate cancer, not to have a mental disability and to volunteer to participate in the study. Since the aim of the study was not to reveal whether the participants exhibited the behavior of having prostate cancer screening, the recommended age for prostate cancer screening was not taken into account to determine the age group of the sample. The age of the sample was based on data from Turkish Ministry of Health about the increasing incidence of prostate cancer after the age of 40. Ethical approval (20478486-410) was obtained from the local ethical committee of Celal Bayar University Medical School and the ethical board of Manisa Public Health Directorate. Both oral and written informed consent was obtained from all the participants.

## Measures

Data collection was performed by utilizing Socio-Demographic Features Form, the Knowledge about Prostate Cancer Screening Questionnaire and Health Literacy Survey Questionnaire.

### Sociodemographic Features Form

It was created by the researchers in light of the literature and is composed of 15 questions.

### Knowledge about Prostate Cancer Screening Questionnaire (KPCSQ)

The questionnaire was developed by Weinrich et al. in (2004) <sup>20</sup>. It was adapted to Turkish by Çapık and Gözüm (2011) <sup>21</sup>. It is composed of 12 questions. Responses to the questions are yes, no or I do not know. It is a single dimensional scale and the number of the correct answers yields the total score for each

participant. The score for the questionnaire varies from zero to 12. As the scores for the scale increases, so does the level of knowledge. Weinrich et al. (2004) and Çapık and Gözüm (2011) also reported that the score of seven or a lower score shows a low level of knowledge, scores of 8-10 show a moderate level of knowledge and scores of 11-12 show a high level of knowledge <sup>20,21</sup>. Kuder Richardson 20 coefficient of the questionnaire was reported to be .69 by Çapık and Gözüm (2011) <sup>21</sup>. It was found to be 0.70 in the present study.

### Health Literacy Survey Questionnaire (HLSQ)

The questionnaire was developed by Sgrensen et al. (2015) <sup>22</sup>. It was adapted to Turkish by Bayık Temel and Aras (2017) <sup>23</sup>. It is composed of 25 items and four subscales; namely, access (items 5-25), understanding (items 7-35), evaluation (items 8-40) and implementation (items 5-25). It is a five-point scale and five corresponds to “I never have difficulty”, two “I have little difficulty”, three “I have some difficulty”, four “I have a lot of difficulty” and five “I can’t do/impossible”. The lowest and the highest scores for the questionnaire are 25 and 125 respectively. No cut-off value was reported by the authors developing the scale to evaluate the responses to the items. It was noted that low scores show poor and problematic health literacy and that high scores show sufficient health literacy. However, which scores were low and which scores were high were not explained by the authors who created the scale. Cronbach’s alpha coefficient for the scale was reported to be 0.90 <sup>23</sup>. It was found to be 0.90 in the present study.

### Statistical analysis

Obtained data were analyzed with Statistical Package for Social Science 25.0. Since the data had a normal distribution, parametric tests were utilized. The descriptive statistics frequency, percentage, mean and standard deviation were used to analyze data about socio-demographic features. Independent Samples t test, One-way ANOVA, Posthoc Tukey HSD, Pearson correlation analyses and simple linear regression analyses were utilized to determine the relation between the scores of the questionnaires and socio-demographic variables. The statistical significance level was set at 0.05.

## RESULTS

Socio-demographic features of the participants in the

present study, who were men aged 40 years or over 40, are presented in Table 1. The participants were aged 40-70 years with a mean of  $52.04 \pm 8.40$ . Of all the participants, 56.5% were aged 52 years or

younger, 88.2% were married, 51.1% were living in a city for the longest, 74.1% had a moderate income, 27.7% were high school graduates and 92.6% had a health insurance (Table 1).

**Table 1 Sociodemographic features**

Variable	n	%
Age (Mean. $52.04 \pm 8.40$ , Min.40, Max.70)		
≤52 years old	283	56.5
>52 years old	218	43.5
Marital Status		
Not married	59	11.8
Married	442	88.2
Living Place		
Rural	112	22.4
Town	133	26.5
City	256	51.1
Income		
High	86	17.2
Moderate	371	74.1
Low	44	8.8
Education		
literate	37	7.4
Primary school	108	21.6
Middle School	113	22.6
High school graduate	139	27.7
University	104	20.8
Health Insurance		
Yes	464	92.6
No	37	7.4
Total	501	100.0

The mean scores for KPCSQ and HLSQ were compared in terms of socio-demographic features. The participants aged 52 years and younger, those living in a city for the longest, those reporting to have a high income, those graduating from high school or having a higher level of education and those having a health insurance had significantly higher mean scores for KPCSQ and HLSQ ( $p < 0.05$ ). However, there was not a significant difference in the mean scores for KPCSQ and HLSQ between the married participants and the single participants ( $p > 0.05$ ) (Table 2).

The mean scores for KPCSQ and HLSQ were  $3.85 \pm 2.05$  and  $80.87 \pm 16.03$  respectively. Ninety-point six percent of the participants had low scores for KPCSQ and 9.4% of the participants had moderate scores. None of the participants got high scores for KPCSQ (11-12). The participants having moderate scores for KPCSQ had significantly higher

scores for HLSQ and its subscales than those having low scores for KPCSQ ( $p < 0.001$ ) (Table 3).

To evaluate the relation between the scores for KPCSQ and the scores for HLSQ and its subscales, Pearson correlation analysis was made (Table 4). There was a significant, positive and moderate relation between the scores for KPCSQ and the scores for HLSQ and its subscales access, understanding and evaluation ( $r = 0.693$ ;  $r = 0.575$ ;  $r = 0.575$ ;  $r = 0.627$ ). A significant, positive and weak relation was found between the scores for KPCSQ and the implementation subscale of HLSQ ( $r = 0.496$ ). Simple Linear regression model showed that the scores for HLSQ were responsible for 48% of the variance in the scores for KPCSQ. Other variables should be taken into account to explain the remaining variance of 52% ( $r = 0.693$   $R^2 = 0.48$   $p < 0.00$ ) (Table 5).

**Table 2 Comparison of socio-demographic features and the knowledge about Prostate Cancer Screening Questionnaire (KPCSQ) and Health Literacy Survey Questionnaire (HLSQ) Score averages**

KPCSQ	n	PPCSQ mean±SS	HLSQ Mean ±SS
Age (52.04±8.40, Min.40, Max.70)			
≤52 years old	283	4.06±1.99	83.51±15.65
>52 years old	218	3.59±2.12	77.45±15.91
Test\ significant		t=2.490 p= 0.01	t=4.261 p= 0.00
Marital Status			
Married	442	3.91±2.03	81.41±15.77
Not married	59	3.40±2.25	76.88±17.47
Test\ significant		t=1.643 p= 0.08	t=2.045 p=0.06
Living Place			
Rural (a)	112	3.33±1.92	76.56±16.17
Town (b)	133	3.84±1.90	81.75±16.03
City (c)	256	4.08±2.16	82.81±13.75
Test\ significant		F=5.123 p= 0.01	F=5.514 p= 0.00
Posthoc		a<c	a<c
Income			
High (a)	86	4.11±1.75	86.39±14.47
Moderate (b)	371	3.99±2.03	81.37±15.04
Low (c)	44	2.20±2.16	65.88±18.30
Test\ significant		F =16.485 p= 0.00	F=27.055 p= 0.00
Posthoc		c<a	c<a
Education			
Primary education and lower	258	3.27±1.91	74.83±14.83
High school and higher	243	4.47±2.04	87.29±14.73
Test\ significant		t=6.736 p= 0.00	t= 9.428 p= 0.00
Health Insurance			
Yes	464	3.94±2.03	81.83±15.37
No	37	2.70±2.10	68.83±19.21
Test\ significant		t=3.464 p= 0.01	t=4.015 p= 0.00

**Table 3. Comparison of the mean scores for KPCSQ and HLSQ**

	# of Questions	Min-Max	Range Min-Max	Low scores for KPCSQ (0-7) mean±SD	Moderate scores for KPCSQ (8-10) mean±SD	P/t
HLSQ total score	25	40-119	25-125	78.70±14.88	102.39±10.05	0.00/14.45
HLSQ access	5	5-25	5-25	16.96±4.09	22.28±2.29	0.00/13.67
HLSQ understanding	7	8-34	7-35	21.05±5.05	27.47±3.69	0.00/10.81
HLSQ evaluation	8	11-40	8-40	25.37±5.33	32.65±3.71	0.00/12.08
HLSQ implementation	5	6-25	5-25	15.30±3.90	20.00±3.80	0.00/7.778

**Table 4. Relationship between KPCSQ score and HLSQ score**

HLSQ and KPCSQ	1	2	3	4	5	6
1 HLSQ (Total)	-	-	-	-	-	-
2 HLSQ (Access)	0.758 <sup>a</sup>	-	-	-	-	-
3 HLSQ (Understanding)	0.879 <sup>a</sup>	0.597 <sup>a</sup>	-	-	-	-
4 HLSQ (Evaluation)	0.882 <sup>a</sup>	0.538 <sup>a</sup>	0.697 <sup>a</sup>	-	-	-
5 HLSQ (Implementation)	0.775 <sup>a</sup>	0.422 <sup>a</sup>	0.570 <sup>a</sup>	0.618 <sup>a</sup>	-	-
6 KPCSQ	0.693 <sup>a</sup>	0.575 <sup>a</sup>	0.575 <sup>a</sup>	0.627 <sup>a</sup>	0.496 <sup>a</sup>	-

Table 5. KPCSQ and HLSQ simple linear regression model

KPCSQ (R <sup>2</sup> =0.48)	HLSQ			
	Regression Coefficient	Standart Error	t	p
	0.089	0.004	21.466	0.00
Model	Sum Of Square	S.D	Mean Square	
Regression	1023.723	1	1023.723	
Residual	1108.641	499	2.222	
Total	2132.363	500		
	F=460.778	p= 0.00		

## DISCUSSION

In the present study, the participants, who were males aged 40-70 years, got  $3.85 \pm 2.05$  for KPCSQ. This suggested that they had low levels of knowledge about prostate cancer screening. Their score for HLSQ was  $80.87 \pm 16.03$ . When the lowest and the highest scores for scale were taken into consideration (25-125), the participants seemed to have health literacy likely to be sufficient to understand what they read about health. Despite their sufficient health literacy, they had low levels of knowledge about prostate cancer screenings. This can be attributed to their lack of awareness about the issue.

The younger participants, the high-school graduates or the participants having higher levels of education, the participants living in the city the longest, those having higher incomes and those having a health insurance had higher scores for KPCSQ. Agho and Lewis (2001)<sup>24</sup> reported an inverse relation between age and knowledge of prostate cancer screenings. In their study, as age advanced, the amount of knowledge decreased. However, Çapık and Gözümlü (2012)<sup>13</sup> did not find a significant relation between age and knowledge of prostate cancer screenings in a study in Turkey. That older men have lower levels of knowledge of prostate cancer screenings can be explained by their decreased abilities to learn and their difficulty in remember what they have learned<sup>25</sup>. Oliver et al.(2011)<sup>26</sup> found out that men living in a small town have lower levels of knowledge of prostate cancer and screening tests than those living in a city, which is compatible with the results of the present study. This suggests that individuals living in small towns can have limited access to knowledge of health. In a study by Woods et al.(2006)<sup>27</sup>, men with higher incomes were found to get higher scores for KPCSQ, which is consistent with the results of the current study. According to a report from the WHO in 2008, there is a relation between socio-economic

factors and health knowledge and health status<sup>28</sup>. Winterich et al.(2009)<sup>29</sup> and Çapık and Gözümlü (2012)<sup>13</sup> also reported that individuals with higher levels of education had higher levels of knowledge about prostate cancer screenings. As education levels increase, so does awareness about how to access knowledge<sup>28</sup>. Casey et al.(2012)<sup>30</sup> discovered in their study that individuals having a health insurance received higher scores for KPCSQ. It may be that people with lower socio-economic status less frequently present to health centers and less frequently meet health professionals. In a study by Oliver et al.(2001)<sup>31</sup> on 94 African American men, health professionals were reported to be the most important factor affecting having prostate cancer screenings.

In the current study, the participants having moderate scores for KPCSQ got significantly higher scores for HLSQ and its subscales than those having low scores for KPCSQ. There was also a significant, positive and moderate relation between the mean score for KPCSQ and the mean score for HLSQ. Forty-eight percent of the variance in the scores for KPCSQ was explained by the scores for HLSQ. In studies by Kim et al. (2001)<sup>32</sup> and Kayser et al. (2015)<sup>33</sup>, the participants' knowledge of prostate cancer was shown to be affected by health literacy. Likewise, Mahal et al. (2015)<sup>34</sup> and Oldach et al. (2014)<sup>35</sup> reported that health literacy was effective in what their participants knew about prostate cancer screening and treatment methods.

It has been shown in the literature that individuals with low levels of health literacy are less likely to have screenings and preventive interventions like PAP smears, mammography and prostate examination and more likely to face breast and prostate cancers in advanced stages<sup>36</sup>. Results of several studies have revealed a relation between health literacy and risk factors affecting health and prevention of diseases<sup>37</sup>.

Knowledge of health plays an important part in maintenance of good health. Access to high quality knowledge of health can be achieved by improving health literacy. So that prostate cancer can be detected in its early stages, such attempts as provision of printed media, television programs, webpages and brochures offering high quality knowledge of health should be made to increase health literacy. It could be useful to take levels of health literacy into consideration and to create material appropriate for different levels of health literacy while conducting these attempts. As a result, men's awareness about prostate cancer will increase and a higher rate of men will have prostate cancer screening. This will help to diagnose prostate cancer in its earlier stages.

Improvement of health literacy can be an effective factor likely to increase knowledge of prostate cancer screening. This will allow earlier detection of prostate cancer. It is important that health care providers and policy makers should be aware of the relation between health literacy and knowledge of prostate cancer screening and take appropriate precautions.

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