

Evaluation of the Relationship between the Levels of Knowledge about Prostate Cancer and the Anxiety-Depression Scale of Adult Individuals in Four Different Provinces of Türkiye

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Abstract

Prostate cancer is one of the most common types of cancer in men. The rate of early detection of prostate cancer is low in Türkiye. Therefore, it is important to measure the level of awareness regarding prostate cancer. In our research, we investigate the knowledge levels of prostate cancer among adult individuals in four different geographic region in Türkiye. In addition, we aimed to compare the level of awareness regarding prostate cancer and the depression and anxiety levels among the individuals. The prostate cancer awareness level survey was selected as the data collection tool. In the survey, 20 questions are asked to measure the knowledge level of the participants about prostate cancer. In addition, an evaluation of anxiety and depression was conducted by using the Hospital Anxiety and Depression Scale (HADS). Between April 2022 and December 2022, 834 participants were reached. 72.9% of the participants answered the questionnaire correctly. A significant difference was found in terms of correct response rates in four different provinces located in four different regions of Türkiye (79% in Eskisehir, 75.2% in Canakkale, 73% in Ankara, and 54.4% in Maras; $p < 0.05$). According to the HADS scale, 240 (28.8%) individuals were found to have anxiety and 129 (15.5%) of them had depression. The knowledge level of most of the participants about prostate cancer was found to be above the average. There was a significant difference between provinces in terms of knowledge levels. A significant relationship was observed between depression and knowledge level. However, no significant difference was found for anxiety.

Keywords

Prostate Cancer, Awareness, Knowledge of PCA, HADS Scale

1. Introduction

Prostate cancer has a worldwide incidence of 25.3 per 100,000 men and is one of the most common cancers in men [1]. The worldwide prostate cancer burden is expected to grow to almost 2.3 million new cases and 740,000 deaths by 2040 simply due to the growth and aging of the population [2]. Prostate cancer is also the most common form of cancer in Türkiye. It was determined that the incidence rate is 6.1 per 100,000 and the mortality rate is of 3.8 per 100,000 among Turkish men [1]. Digital rectal examination (DRE) and the biochemical Prostate Specific Antigen (PSA) test are used to screen for prostate cancer [3]. Unlike other types of cancer, most prostate cancers progress slowly; thus, the likelihood of treatment increases when diagnosed early. According to European guidelines, it is stated that those with a family history of prostate cancer should be checked for prostate cancer at least once a year, beginning at the age of 45 years, and healthy individuals should begin at the age of 50 years [4]. The rate of early detection of prostate cancer in Türkiye is rather low compared to that in Western countries. This indicates that the awareness of prostate cancer in the Turkish population is low [1]. Prostate cancer diagnosis, prevention, and treatment in recent decades have been heavily influenced by awareness and the intention to seek care for it. Men who were aware of the DRE/PSA test were more likely to have been screened compared to men who were not aware of it [5]. Therefore, it is important to measure the level of awareness among individuals regarding prostate cancer in the country.

We aimed to investigate the level of knowledge of adult individuals about prostate cancer in four provinces from different regions of Türkiye. In addition, anxiety and depression were evaluated using the Hospital Anxiety and Depression Scale (HADS), which is an easily applicable self-report scale. Although the scale was originally developed for hospitalized patients, it can be used as a screening test for both outpatients and the general public. The scale consists of 14 items in total, 7 of which measure symptoms of anxiety and 7 of which measure symptoms of depression. The aim of the scale is to measure the psychological state of the patients and screen them rather than making a diagnosis. The Turkish validity and reliability study of the scale was performed by Aydemir *et al.* [6]. Our study aims to determine the level of depression or anxiety levels in the survey participants and compare the level of awareness regarding prostate cancer and the depression or anxiety levels.

2. Materials and Methods

This cross-sectional survey study was enrolled in four different regions and city

centers (in the city centers of Canakkale, Eskisehir, Kahramanmaras, and Ankara) between April and December 2022. The participants for this research were selected randomly and homogeneously and data collection took place from 834 participants. All participants gave their informed consent for inclusion before study enrollment. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Canakkale 18 Mart University Clinical Research Ethics Committee and has an Ethics Approval Number 2021-10.

By using Middle effect size and targeting 85% power, the minimum number of samples was calculated as 800. A pool of questions was prepared by 2 urology specialists with experience in prostate cancer by reviewing the literature [1] [3]. The question pool was sent to 2 different urology specialists and 1 assessment and evaluation specialist. According to their feedback, the survey questions were revised.

This survey was conducted face-to-face by professional pollsters, with the permission of the municipality, in crowded areas in the city centres of four different provinces. Every individual over the age of 18 who agreed to participate and whose written consent was obtained was included in the study. Moreover, the sociodemographic data of the participants was recorded. The prepared survey questions were examined by three experts and one academician competent in measurement and evaluation and arranged according to the suggestions made. In a total of 20 questions in the survey, information regarding prostate cancer was asked; if it was a male individual, his ideas of and attitude toward the prostate examination were evaluated. The survey questions are shown in **Table 1**. From among these 20 questions, a scale of 7 questions that could be evaluated as “true” or “false” was created. According to this scale of scoring, two points are given for each correct answer and one point for each incorrect answer. As a result of the scoring, the score range varies between a minimum of seven and a maximum of fourteen. Those who scored above the average score were categorized into the “informed” group, and those who scored below the average score were categorized into the “uninformed” group. In addition, anxiety and depression were evaluated using the HADS scale, whose validity and reliability have been proven in extant research [6]. After the completion of the survey, an information leaflet on prostate cancer was given to all the participants.

Statistical Analysis

All the conditions and stages of our study were performed in accordance with the Declaration of Helsinki. All statistical data were recorded using SPSS 20. The means and standard deviations were calculated for quantitative variables; and numbers and percentage were calculated for categorical variables. The chi-square test was applied for the nominal variables in the groups. When the assumption of normality was used for both groups, the Student’s t-test was used for group comparison. If the normality assumptions did not correspond to any or both groups, the equivalent non-parametric Mann-Whitney U test was applied.

Table 1. Prostate cancer knowledge and awareness level survey form.

Prostate Cancer Knowledge and Awareness Level Survey Form

Gender:

Age:

Marital Status:

Educational Status:

Cities Where Education Was Given (more than one):

Income (TL) (... - 2500, 2500 - 5000, 5000 - ...):

Number of Children (If you have):

Frequency of Newspaper Reading:

How many books do you read on average per year?

What is the incidence of prostate cancer in men?

Rare Frequent

In which age ranges is prostate cancer more common?

Children Young Adolescent Group Middle age Group Elderly

Can women get prostate cancer too?

Yes No

Do you know that the role of the prostate is to carry urine and contribute to the formation of semen?

Yes No

Prostate cancer can occur in men at any age.

True False

Did you know that prostate cancer may not show symptoms?

Yes No

In case of early diagnosis can prostate cancer be treated?

Yes No

Which of the following factors do you think increase the risk of prostate cancer?

Smoking Genetic Drinking less water
 Alcohol Race Nutrition Environmental Factors

Have anyone of your close relative (father, uncle, sibling) prostate cancer?

Yes No

Did you know that individuals with a family history of prostate cancer have an increased risk of developing prostate cancer?

Yes No

Do you think regular sexual intercourse affects reducing the risk of prostate cancer?

Yes No

Is prostate cancer transmitted during sexual intercourse?

Yes No

Continued

How often do you think a man over 50 should have a prostate exam?

- Never 1 time in 2 years 1 time in 5 years 1 time per year 1 time in 3 years I don't know

Do you think that a rectal examination is the only diagnostic method for prostate cancer?

- Yes No

What is the source of information about curability of prostate cancer if diagnosed at an early stage?

- Television Doctor/Nurse Radio Newspaper Scientific Publications Friend/Relative

***** Questions to be asked if the individual is male:**

Have you ever been to the urology outpatient clinic?

- Yes No

Are you planning to go?

- Yes No

Have you had any medical tests for prostate within the last 5 years?

- Yes No

Are you afraid of the prostate examination?

- Yes No

***** If yes, why?:**

It is said that standing to urinate has a negative effect on prostate cancer. Do you think this is true?

- Yes No

3. Results

In this research, 330 people (39.5%) evaluated were female and 504 (60.4%) were male. The average age of the individuals was 35.13 (14.95) (min.: 18; max.: 85) years. The average number of children they have was 0.91 (1.37) (min.: 0; max.: 9), and the average number of books read per year was 9.15 (13.96) (min.: 0; max.: 100). A large part of the surveyed population (59.2%) consists of singles. The most frequent undergraduate graduates participated in our survey study (57.7%). When we questioned the participants newspaper reading frequency, the individuals who answered "never" represented 47.6% of the population. According to the HADS scale, 240 (28.8%) individuals who participated in the survey were found to have anxiety. The results revealed that 129 (15.5%) of them had depression (**Table 2**).

Most questions were answered correctly, and the results of the statistical analysis of the answers given by the participants to our survey are summarized in **Table 3**. Further, 72.9% of the participants answered the survey correctly; 79% of the respondents in Eskisehir, 75.2% in Canakkale, 73% in Ankara, and 54.5% in Maras gave correct answers to the survey, and the rate of correct answers was statistically significant among provinces ($p = 0.004$). 79.4% of women and 68.7% of men answered the questionnaire correctly, and a statistically significant dif-

ference was found in terms of knowledge level ($p = 0.001$). There was also a significant relationship between educational status and level of knowledge ($p = 0.001$). 65% of individuals with depression and 74.3% of individuals without depression answered the questionnaire correctly, showing that there was a significant relationship between the presence of depression and the level of knowledge ($p = 0.03$). No significant relationship was observed between marital status, income level, presence of anxiety and having prostate cancer in a relative with knowledge levels ($p < 0.05$). Comparisons of groups that answered the survey correctly and those that did not are presented in **Table 4**.

Table 2. Demographic distribution of the participants.

	N (%)
Gender	
Female	330 (39.6)
Male	504 (60.4)
Marital Status	
Married	339 (40.8)
Single	495 (59.2)
Educational Status	
Primary School	86 (10.3)
Secondary School	30 (3.6)
High School	208 (24.4)
Bachelor's Degree	482 (57.7)
Master's Degree	27 (3.2)
Doctorate Degree	1 (0.2)
Frequency of Reading Newspaper:	
Never	397 (47.6)
Sometimes	216 (25.9)
Every day	220 (26.4)
Income	
Low Income	414 (49.5)
Middle Income	215 (25.8)
High Income	205 (24.6)
Anxiety	
Yes	240 (28.8)
No	594 (71.2)
Depression	
Yes	129 (15.5)
No	705 (84.5)

n: Number, %: Percentage. SS: Standard Deviation.

Table 3. Responses of participants to some questions about prostate cancer.

Survey Questions	Wrong answer	Correct answer
	N (%)	N (%)
Can women get prostate cancer too?	619 (74.2)	215 (25.8)
In case of early diagnosis can prostate cancer be treated?	729 (87.4)	105 (12.6)
Did you know that individuals with a family history of prostate cancer have an increased risk of developing prostate cancer?	511 (61.3)	323 (38.7)
Do you think regular sexual intercourse affects reducing the risk of prostate cancer?	436 (52.3)	398 (47.7)
It is said that standing to urinate has a negative effect on prostate cancer. Do you think this is true?	149 (30.4)	341 (69.6)
Do you think that a rectal examination is the only diagnostic method for prostate cancer?	145 (17.4)	686 (82.6)
	YES	NO
Have anyone of your close relative (father, uncle, sibling) prostate cancer?	180 (21.6)	654 (78.4)
Have you had any medical tests for prostate within the last 5 years?	81 (16.5)	409 (83.5)
Are you afraid of prostate examinations?	99 (20.2)	391 (79.8)

n: Number, %: Percentage. *questions asked only to male individuals.

Table 4. Participants' knowledge levels of prostate cancer.

	Correct answer to the survey	Wrong answer to the survey	p-value
	N (%)	N (%)	
PROVINCES			0.004
Eskisehir	164 (79.0%)	52 (24.8%)	
Canakkale	156 (75.2%)	56 (27.0%)	
Ankara	153 (73.0%)	44 (21.0%)	
Kahramanmaras	114 (54.5%)	95 (45.5%)	
GENDER			0.001
Female	262 (79.4%)	68 (20.6%)	
Male	346 (68.7%)	158 (31.3%)	
EDUCATIONAL STATUS			0.001
Primary School	49 (57.0%)	37 (43.0%)	
Secondary School	17(56.7%)	13 (43.3%)	
High School	144 (69.2%)	64 (30.8%)	

Continued

Bachelor's Degree	376 (78.2%)	105 (21.8%)	
Master's Degree	20 (74.1%)	7 (25.9%)	
Doctorate Degree	1 (100%)	0 (0.0%)	
MARITAL STATUS			0.180
Single	371 (75.1%)	123 (24.9%)	
Married	237 (69.6%)	103 (30.4%)	
INCOME			0.618
Low	294 (71.2%)	119 (28.8%)	
Middle	158 (73.5%)	57 (26.5%)	
High	155 (75.6%)	50 (24.4%)	
HAVE A RELATIVE WITH PROSTATE CA			0.883
Yes	132 (73.3%)	48 (26.7%)	
No	476 (72.8%)	178 (27.2%)	
ANXIETY			0.393
Yes	170 (70.8%)	70 (29.2%)	
No	438 (73.7%)	156 (26.3%)	
DEPRESSION			0.030
Yes	84 (65.1%)	45 (34.9%)	
No	524 (74.3%)	181 (25.7%)	

$p < 0.05$ was considered significant.

4. Discussion

Prostate cancer is one of the most common types of cancer in men. Early diagnosis is the most important step in the treatment. Therefore, it is important to measure the level of awareness regarding prostate cancer in society. We observed that 608 (72.9%) of our study participants gave correct answers to the survey. Interestingly, it was found that the awareness rate of female individuals was higher. In addition, as a result of our statistical analysis, it was determined that individuals who do not have depression gave correct answers to a large extent.

Ceber *et al.* [1] demonstrated that only 35.2% of patients who were screened for prostate cancer agreed to a rectal prostate examination. At the top of the list of factors that discourage rectal examination, factors such as unjustified factors, embarrassment, and refusal were included. This situation reveals the low level of awareness against prostate examinations in Turkish society. Contrary to this situation, in our study, it was determined that the awareness of prostate cancer among the respondents was high.

Further, in our study, the rates of correct answers to questions regarding the

possibility of early diagnosis and treatment of prostate cancer as well as those regarding the fact that manual examination is not the only diagnostic method were found to be 87.4% and 82.6%, respectively. Turkan *et al.* [3] and Al-Azri *et al.* [7] found that 88.4% and 67% of the men who participated in their studies, respectively, gave the correct answer—that treatment is possible with early diagnosis.

According to the guidelines of the European Association of Urology, DRE, serum PSA measurement, and transrectal ultrasonography (TRUS) are the methods used in the diagnosis of prostate cancer [4]. In our study, when we asked whether DRE was the only diagnostic method for prostate cancer, 82.6% answered “no”. Turkan *et al.* [3] found that when asked how prostate cancer can be diagnosed, 46.1% answered with “physical examination”. The respondents in Al-Azri *et al.*'s [7] study responded similarly when asked whether it is possible to diagnose prostate cancer with DRE; moreover, 78.5% stated that they did not have such information. Thereafter, when we asked only male individuals whether they were afraid of prostate examination and whether they had had a prostate examination in the last five years, 83.5% of them answered “no” and 79.8% answered “yes”. When we examine studies in various countries, most of the articles define the greatest obstacle to screening as a lack of information regarding prostate cancer [8] [9]. In line with these answers in our country, it can be suggested that more detailed studies should be carried out to evaluate the reasons for the low rate of doctor visits, although the majority of them do not hesitate to undergo a prostate cancer examination and they know that DRE is not the only diagnostic method.

The risk of developing prostate cancer is two to three times higher in those with a first-degree relative who has a history of prostate cancer [10]. In certain studies in the literature, individuals with a family history of prostate cancer have been found to have higher awareness levels than individuals without a family history of prostate cancer [3] [7]. Although 21.6% of the people who participated in our survey had a history of prostate cancer in their first-degree relatives, as a result of the statistical analysis, no significant relationship was found between the people with and without a family history of prostate cancer in terms of knowledge level.

In addition, education, access to diagnostic services, and the financial burden of cancer treatments are among several variables for prostate cancer diagnosis [11]. In our study, the people who gave the survey correctly; when we analyze the relationship between education status and statistically, there is a significant relationship. It has been observed that as the level of education increases, the level of knowledge also increases. The study of Ogundele *et al.* also supports our study [12]. However, no significant relationship was found between income status and knowledge level in our study. Assefa *et al.* [5] revealed in their studies, it has been revealed that the level of knowledge of individuals with a relatively higher income level will also be higher. However, in our study, no significant relationship was found between income status and level of knowledge.

Studies conducted in different part of the society have shown many examples of how the level of knowledge about prostate cancer can be improved after training [13] [14] [15]. This indicates that the knowledge about PCa in the health education that will be given to society will change in a positive way. Awareness about the disease will be the first step for people to present themselves for screening [12].

When we reviewed the literature, no study was found on how individuals with anxiety and depression affect their knowledge and awareness levels about prostate cancer. While no significant relationship was found between the level of knowledge and anxiety among individuals, it was determined that the accuracy rate of the answers given by individuals with depression to the survey questions was lower. Cognitive impairment is a main symptom of depression, and diminished ability to concentrate or think is commonly seen in depressed individuals. Depression may also negatively affect individuals' emotions, attention and decision-making that causing functional impairment, and low quality of life [16] [17]. From this point of view, we can explain the significant relationship between the presence of depression and the level of knowledge with cognitive and functional impairment in participants with depression. In this regard, we think that the negative effects of cognitive and functional disorders caused by depression should not be ignored in academic researches that require concentration and attention for the participants.

As a limiting factor of our study, our inability to question participants in all the cities reflecting different socio-cultural characteristics in the seven regions of Türkiye may affect the generalizability of the results to the entire country. Since our survey was conducted face-to-face, there may be a bias in choosing individuals who will participate in the survey, albeit with a low probability. Another limitation of our study was that the individuals participating in the survey were not questioned about whether or not they had a medical history of prostate cancer. However, our survey could be a valuable resource for guiding future studies in terms of its application to both men and women. In addition, the absence of any previous study on the relationship between depression and anxiety status and knowledge and level of consciousness evaluated with the HADS scale is another aspect that makes our study special.

In conclusion, the knowledge level of most of the participants about prostate cancer was found to be above average. There was a significant difference between provinces in terms of knowledge level. A significant relationship was observed between depression and knowledge levels. However, no significant difference was found for anxiety. We believe that various types of training will be beneficial in order to create a more conscious society and also reduce the health care burden. Since prostate cancer is a disease with an increasing rate of early diagnosis and treatment, social information is necessary in order to increase the awareness of the disease among individuals in general. Therefore, by using various opportunities (education, media, etc.) to increase the level of knowledge, early diagnosis and early treatment can be provided.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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