



How much do we know about testicular cancer and testicular self-examination? The case of police officers in Türkiye

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Abstract

Aim: To assess police officers' health beliefs about testicular cancer and their level of knowledge about testicular self-examination (TSE).

Materials and Methods: The data for the study were collected from 120 volunteer police officers using a questionnaire asking for their introductory information and the Champion's Health Belief Model Scale on Testicular Cancer and Screening.

Results: 84.2% of the participants were married, 14.2% had a family history of cancer, 36.7% had never heard of testicular cancer, 81.7% had never heard of TSE and 87.5% had never performed TSE. The rate of those who do not know how to perform TSE is 80.8%. While 40.8% of police officers said that a palpable mass in the testicle was a sign of testicular cancer, 51.7% said that pain in the testicle, 29.1% swelling in the testicle, 47.5% pain or tenderness in the groin, 23.3% redness in the testicle and 20% weight loss would be signs of testicular cancer. Smokers had higher perceptions of the seriousness, benefits and barriers of TSE ($p=0.048$, $p=0.002$, $p=0.031$, respectively). Those with a family history of cancer and those with testicular problems had higher perceptions of sensitivity ($p=0.010$, $p=0.003$, respectively).

Conclusion: It was found that there was a lack of knowledge about testicular cancer and TSE among police officers. It is recommended that health training is planned to provide information and to put the acquired knowledge into practice, and that qualitative public health studies are carried out on larger samples to identify the factors that prevent the implementation of TSE.



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Introduction

Testicular cancer is one of the most common solid tumours in young men, accounting for 1% of newly diagnosed malignant tumors [1]. The incidence of testicular cancer is increasing in developed countries and is the most common cancer in young men aged 15-44 years. The incidence of testicular cancer varies between countries, races and socio-economic classes. This incidence has been reported to be 9 per 100,000 in Western and Northern Europe and less than 1 per 100,000 in African countries. The incidence is two times lower in people from higher socio-economic classes [2]. Approximately 50,000 new cases of testicular cancer are reported worldwide each year, with approximately 10,000 deaths [3]. In the United States of America (USA), an average of 8000 new cases of testicular cancer are diagnosed each year, while in the UK, an average

of 1400 new cases of testicular cancer have been reported each year since 2005 [4]. In our country, testicular cancer is the most common cancer in men aged 15-24 years [5]. Testicular cancer can be treated if diagnosed at an early stage [6,7].

Regular testicular self-examination (TSE) plays an important role in the early detection of testicular cancer [8]. Regular monthly self-examinations help to detect differences in testicular tissue at an early stage [9]. Given that the most common symptom is a painless scrotal mass, it can be suggested that testicular self-examination may aid in early diagnosis and thus potentially improve treatment outcomes and prognosis [10]. Literature has shown that young and adult men are not sufficiently informed about the prevalence of testicular cancer and almost never undergo TSE [9,11].

Knowledge and awareness of testicular cancer and TSE is low among men worldwide [12-15]. In our country, there is a limited number of studies on young adults' attitudes to-

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wards testicular cancer and their behaviour towards early diagnosis [16]. It is important for the literature to evaluate the health beliefs about testicular cancer and the level of knowledge about TSE in police officers, who belong to the group of young adults. The aim of our study was to assess male police officers' health beliefs about testicular cancer and their level of knowledge about TSE.

Materials and Methods

Type of research and sample

This study was descriptive and cross-sectional in nature. The data was collected between 01/04/2021 and 15/05/2021 from male police officers who agreed to participate in the study and were affiliated with Şanlıurfa Provincial Police Directorate. In the power analysis for the sample of the study, the number of 111 samples was determined in the calculation made by accepting the effect power of 0.3, confidence interval of 0.95 and margin of error of 0.05. The study was completed with a total of 120 police officers who voluntarily participated in the study. The inclusion criteria were being over 40 years of age and working as a police officer. The exclusion criteria were being under 40 years of age and having previously had testicular cancer. The study was conducted with the approval of Harran University Faculty of Medicine Ethics Committee dated 03/02/2021, number 7897, and institutional approval dated 24/03/2021, number 21568. An informed consent form was read to all participants and their consent was obtained.

Data collection tools

The socio-demographic data form prepared by the researchers in accordance with the literature and Champion's Health Belief Model Scale on Testicular Cancer and Screenings, which was conducted by Pınar et al., for reliability and validity in our country [16]. The data were collected using the face-to-face questionnaire method.

Champion's Health Belief Model Scale (HBMMS) in testicular cancer screening

This scale was developed by Barnes in 2000 [17]. Its validity and reliability in our country were conducted by Pınar et al., in 2011. The scale consists of 26 items and five sub-dimensions: sensitivity (5 items), care/seriousness (7 items), benefits (3 items), barriers (5 items), self-efficacy/confidence (6 items). The scale is a 5-point Likert scale ranging from 1 to 5. A minimum of 26 points and a maximum of 130 points can be obtained from the scale. The sub-dimensions of the scale are scored separately. There is no total score. The Cronbach's alpha coefficient of the scale varies between 0.64 and 0.92. In this study it was between 0.73 and 0.97.

Statistical analysis

Data analysis was performed using IBM SPSS (version 25, Armonk; NY: USA). Statistical analyses were performed with a 95% confidence interval and a significance level of $p < 0.05$. The Kolmogorov-Smirnov test was used to determine whether the data were normally distributed.

Non-normally distributed data were analysed using non-parametric tests. Descriptive characteristics were evaluated using numbers, percentages and means. Mann-Whitney U and Kruskal-Wallis tests were used to determine the relationship between descriptive characteristics and scale scores. The reliability and validity of the scales used in the study were determined using Cronbach's alpha coefficient.

Results

In Table 1, the descriptive characteristics of the police officers participating in the study are given. 84% of the participants are married, 70.8% have moderate economic status, 40% smoke, 76.7% do not do regular physical activity, 14.2% have a family history of cancer, 36.7% have never heard of testicular cancer, % 95.8 of them do not have a testicular problem, 95.0% of them follow the changes in their body. 81.7% of the police officers have never heard of the TSE, 87.5% do not do the TSE, 80.8% do not know how to do the TSE, and 85.8% do not consider going to the examination. The average age of all participants is 32.74 (Table 1).

Table 1. Distribution of descriptive characteristics of the participants.

Descriptive Characteristics	n	%		
Marital status	Married	101	84.2	
	Single	19	15.8	
Economical situation	Good	30	25.0	
	Middle	85	70.8	
	Bad	5	4.2	
Smoking	Yes	48	40.0	
	No	72	60.0	
Doing Regular Physical Activity	Yes	28	23.3	
	No	92	76.7	
Cancer in the Family	Yes	17	14.2	
	No	103	85.8	
Testicular Ca hearing	Yes	76	63.3	
	No	44	36.7	
Testicular Problem	Yes	5	4.2	
	No	115	95.8	
Tracking Changes in the Body	Yes	114	95.0	
	No	6	5.0	
Hearing TSE	Yes	22	18.3	
	No	98	81.7	
Making TSE	Yes	15	12.5	
	No	105	87.5	
Reason for Not Making TSE	Not knowing how to do it	97	80.8	
	Other	23	19.2	
Examination Thinking	Yes	17	14.2	
	No	103	85.8	
Age	Min-max	21.00-51.00	Mean	32.74

Ca: Cancer, TSE: Testicular self-examination.

Table 2. The distribution of participants' opinions about testicular cancer symptoms.

Testicular Cancer Signs and Symptoms	True		Wrong		I don't know	
	n	%	n	%	n	%
Mass palpable in testis	49	40.8	5	4.2	66	55.0
Pain in the testicles	62	51.7	4	3.3	54	45.0
Swelling in the testicles	35	29.1	1	0.8	84	70.0
Pain or feeling of pain in the groin	57	47.5	4	3.3	59	49.2
Redness in the testicles	28	23.3	8	6.7	84	70.0
Weight loss	24	20.0	9	7.5	87	72.5

Table 2 shows the distribution of participants' thoughts about testicular cancer symptoms. While 40.8% of the police officers stated that a palpable mass in the testis was a sign of testicular cancer, 51.7% said pain in the testicles, 29.1% swelling in the testicles, 47.5% pain or pain in the groin, 23.3% redness in the testicles, 20% of them stated that weight loss would be a sign of testicular cancer (Table 2).

In Table 3, the scores of the participants in the sub-dimensions of the scale were compared according to their descriptive characteristics. When the marital statuses, economic status, the status of following the changes in the body, hearing the TSE, performing the TSE and going to the examination, and the scores of the police officers from the sub-dimensions of the scale were compared, no statistically significant relationship was found. The scores obtained in the sub-dimensions of caring severity perception, perception of TSE benefits and TSE barriers perception were found to be significantly higher in favor of smokers ($p=0.048$, $p=0.002$, $p=0.031$, respectively). The TSE of those who did not do regular physical activity was found to be significantly higher than those who perceived disability ($p=0.045$). Sensitivity sub-dimension mean scores of those with a family history of cancer were significantly higher than those without a family history of cancer ($p=0.010$), similarly, those with testicular cancer had significantly higher perceptions of caring, and those with testicular problems had a significantly higher perception of sensitivity ($p=0.003$) (Table 3).

Discussion

Approximately 9,500 men are diagnosed with testicular cancer each year worldwide, and 410 of those diagnosed will die from the disease [18,19]. The fact that it is a curable cancer in oncology [20] increases the importance of early diagnosis and treatment. It is important to be cancer aware and to perform TSE [21]. The study looked at the attitudes of male police officers, including at-risk groups in terms of age and gender, towards testicular cancer and testicular self-examination. 36.0% of the participants stated that they had never heard of testicular cancer. In the study conducted in our country by Kuzgunbay et al, 11.1% were aware of testicular cancer [22].

The rate of hearing about testicular cancer was reported to be 26% in the study conducted by Lechner et al [23], 11.3% in the study conducted by Rudberg et al [24] with university students and 91% in the study conducted by

Vasudev et al [25]. It was found that 81.7% of the participants in our study had never heard of TSE, only 12.5% had performed TSE and 80.8% did not know how to perform TSE. In the study of Göçgeldi and Koçak [26], 20.7% of the participants had heard of TSE, 8.8% had performed TSE at least once in their life, and in the study of Özbaş et al [27], 4.5% of the participants had performed TSE.

The rate of hearing about testicular cancer was reported to be 26% in a study by Lechner et al. [23], 11.3% in a study of university students by Rudberg et al. [24] and 91% in a study by Vasudev et al [25]. It was found that 81.7% of the participants in our study had never heard of TSE, only 12.5% had performed TSE and 80.8% did not know how to perform TSE. In the study of Göçgeldi and Koçak [26] it was found that 20.7% of the participants had heard of TSE, 8.8% had performed TSE at least once in their life, and in the study of Özbaş et al. [27] it was found that the rate of performing TSE was 4.5%. It is suggested that the results are due to the participants' low level of awareness of testicular cancer (Table 2) and their lack of sufficient knowledge of how to perform TSE. No significant relationship was found between marital status and economic status of the participants and the scale scores. Smokers had significantly higher scores in the sub-dimensions of perceived seriousness of care, perceived benefits and barriers of TSE. Similarly, the mean score for the perception of barriers to TSE was higher in those who did not engage in regular physical activity. This situation suggests that beliefs and knowledge about issues such as the harms of smoking, the value of health, early diagnosis and screening, and the prevention of some diseases through physical activity are not sufficient.

The mean scores of the sensitivity sub-dimension were significantly higher among participants in our study who had a family history of cancer. In a study investigating factors influencing breast cancer awareness among university students, those with a family history of cancer were found to have higher sensitivity [28]. In the study by Oran Tuna et al, those who had a family history of cervical cancer were more likely to be screened than those who did not [29]. The presence of cancer in the family is thought to increase sensitivity because it makes the individual aware of the vital risks of cancer, makes them sensitive to cancer, and makes them perceive the consequences of the disease as a serious and vital threat. When analysing the literature, there are other studies that parallel the results of our study [30,31].

Among the police officers who participated in the study, smokers exhibited heightened perceptions of the seriousness of caring about testicular cancer and of the benefits and barriers of TSE compared to non-smokers. Given that smoking increases the risk of cancer by a factor of 30-40 [32], it was anticipated that smokers would exhibit heightened perceptions of the importance and seriousness of testicular cancer. Police officers with testicular problems and a family history of cancer demonstrated high levels of sensitivity, as anticipated. In a study conducted by Bozkurt [33] on young adults engaged in seasonal agricultural work, those with testicular problems exhibited high perceptions of seriousness and self-efficacy. It is reasonable to assume that those with testicular problems would

Table 3. Distribution of the Scores of the participants from the Health Belief Model Scale by descriptive characteristics.

Descriptive Characteristics	n	Sensitivity	Perception of Caring	Perception of TSE	Perception of TSE	Perception of Self	
		Perception	Seriousness	Benefits	Barriers	Effectiveness	
		$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	
Marital status	Married	101	11.29 ± 4.05	19.41 ± 6.12	9.30 ± 2.61	11.38 ± 3.20	16.67 ± 3.98
	Single	19	11.52 ± 3.45	17.94 ± 5.77	8.63 ± 2.96	10.73 ± 3.98	14.42 ± 4.67
	Test		Z = -0.348 p=0.728	Z = -0.901 p=0.368	Z = -0.628 p=0.530	Z = -0.431 p=0.667	Z = -1.707 p=0.088
Economical situation	Good	30	11.66±3.86	19.56±6.61	9.43±2.67	11.36±2.95	17.23±4.55
	Middle	85	11.05±3.75	19.00±5.89	9.10±2.73	11.21±3.22	16.12±4.74
	Bad	5	14.00±7.10	20.00±6.81	9.40±1.51	12.00±6.96	14.00±7.87
	Test		KW =1.286 p=0.526	KW =0.111 p=0.946	KW =0.345 p=0.842	KW =0.052 p=0.974	KW =1.872 p=0.392
Smoking	Yes	48	11.81±4.47	20.52±6.09	10.12±2.40	12.08±3.43	16.66±4.65
	No	72	11.01±3.56	18.29±5.93	8.58±2.67	10.75±3.17	16.08±4.98
	Test		t =1.084 p=0.281	t =1.995 p=0.048	t =3.216 p=0.002	t =2.180 p=0.031	t =0.644 p=0.521
Doing Regular Physical Activity	Yes	28	10.64±3.61	18.82±6.18	9.35±2.90	10.17±3.30	16.67±5.66
	No	92	11.54±4.05	19.28±6.06	9.15±2.60	11.61±3.28	16.20±4.59
	Test		t =-1.055 p=0.293	t =-0.359 p=0.720	t =0.354 p=0.724	t =-2.029 p=0.045	t =0.450 p=0.654
Cancer in the Family	Yes	17	13.82±3.48	21.35±3.35	9.35±1.72	11.76±1.98	17.11±3.99
	No	103	10.92±3.89	18.82±6.35	9.17±2.80	11.20±3.50	16.18±4.97
	Test		Z =-2.575 p=0.010	Z =-1.667 p=0.095	Z =-0.433 p=0.665	Z =-0.437 p=0.633	Z =-0.480 p=0.631
Testicular Ca hearing	Yes	76	11.32±3.71	20.11±5.32	9.25±2.59	11.26±3.13	16.68±4.99
	No	44	11.34±4.38	17.56±6.95	9.11±2.83	11.31±3.68	15.68±4.55
	Test		t =-0.016 p=0.987	t =2.255 p=0.026	t =0.268 p=0.789	t =-0.087 p=0.931	t =1.093 p=0.578
Testicular Problem	Yes	5	17.00±3.93	22.60±4.82	10.40±2.07	12.40±5.45	14.40±5.02
	No	115	11.08±3.78	19.03±6.09	9.14±2.68	11.23±3.23	16.40±4.84
	Test		Z =-2.989 p=0.003	Z =-1.27 p=0.204	Z =-0.908 p=0.364	Z =-0.245 p=0.807	Z =-1.035 p=0.301
Tracking Changes in the Body	Yes	114	11.38±3.92	19.28±6.06	9.21±2.63	11.25±3.32	16.28±4.82
	No	6	10.33±4.88	17.16±6.43	8.83±3.60	11.83±3.71	17.00±5.58
	Test		Z =-0.529 p=0.597	Z =-0.724 p=0.469	Z =-0.079 p=0.937	Z =-0.752 p=0.452	Z =-0.484 p=0.629
Hearing TSE	Yes	22	10.77±3.80	17.95±6.25	8.63±3.12	10.31±3.64	17.31±5.09
	No	98	11.45±3.99	19.45±6.02	9.32±2.55	11.50±3.24	16.09±4.78
	Test		Z =-0.565 p=0.572	Z =-1.360 p=0.174	Z =-0.839 p=0.432	Z =-1.328 p=0.184	Z =-1.345 p=0.179
Making TSE	Yes	15	10.73±5.18	19.93±6.64	9.00±3.46	10.33±4.36	17.53±7.02
	No	105	11.41±3.77	19.07±6.01	9.22±2.55	11.41±3.16	16.14±4.46
	Test		Z =-0.993 p=0.321	Z =-0.139 p=0.889	Z =-0.064 p=0.949	Z =-1.881 p=0.060	Z =-1.558 p=0.119
Examination Thinking	Yes	17	11.64±4.16	19.64±5.57	9.11±2.86	10.05±3.11	15.58±5.62
	No	103	11.28±3.93	19.10±6.17	9.21±2.65	11.48±3.33	16.43±4.72
	Test		Z =-0.574 p=0.566	Z =-0.200 p=0.842	Z =-0.182 p=0.855	Z =-1.617 p=0.106	Z =-0.257 p=0.797

X: Mean, SD: Standard Deviation, Ca: Cancer, TSE: Testicular self-examination.

demonstrate sensitivity perceptions. The study had several limitations. As the research was conducted in a single province and among a single occupational group, the findings are only applicable to the sample in the province where the research was conducted.

Conclusion

Among police officers, 63.3% had heard of testicular cancer, 18.3% had heard of TSE, and 12.5% had performed TSE, which is a relatively low proportion. The majority of the participants (80.8%) stated that they did not know how to perform TSE and did not think of going to the examination (85.8%). Of all participants, 14.2% had a family history of cancer.

The majority of respondents indicated that they were unsure of the symptoms of testicular cancer.

These findings align with the lack of knowledge about testicular cancer and TSE among police officers. Therefore, it is recommended that targeted health training be implemented to provide information and facilitate the translation of knowledge into practice. Additionally, qualitative public health studies should be conducted in larger samples to identify the factors impeding the implementation of TSE.

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Declaration of competing interest

The authors did not experience any conflict of interest in the writing of this article.

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Data availability statement

The data sets obtained in the analysis of this study can be obtained with a request from the responsible author.

Ethical approval

Before starting this study, the permission of the institution dated 24.03.2021 and numbered 21568 and the approval of Harran University Faculty of Medicine Ethics Committee dated 03.02.2021 and numbered 7897 were obtained.

Author contributions

MK: Conceptualization, Control, Data Collection, Data improvement, Writing – Original draft preparation, Writing-Review and Editing, Supervision. NK: Conceptualization, Methodology, Data collection, Software, Validation, Writing – Original draft preparation, Control, Supervision. GK: Control, Resources, Writing-Original draft preparation, Software, Formal analysis, Writing-Review and Editing, Control, Supervision. We certify that all authors named in this article have read the final version.

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