The impact of educational sessions provided on prostate cancer, and its screening tests on the knowledge level, and participation behavior of the individuals in questionnaire surveys

Cantürk Çapık

ABSTRACT

Objective: The purpose of this study is to inform male participants aged fifty and older who have not been diagnosed with prostate cancer about prostate cancer screenings and to examine their participation behavior in these screenings.

Material and methods: In this study, in which an experimental design with a pretest-posttest control group was used, data were collected from 3 family health centers in the city center of Kars between April and July 2013. The sample group consisted of 113 male participants aged fifty years or over. A personal information and a knowledge test forms about prostate cancer screening were used to collect the data. The statistical power of the study was determined to be 0.99.

Results: The mean pretest knowledge scores of the participants were determined be similar. In the posttest, the mean knowledge score of the experimental group was significantly increased compared to that of the control group. In terms of screening participation frequency, there was no statistically significant difference between the two groups during the period after the training. The knowledge level was higher in patients who had previously undergone a prostate examination and/or their prostate specific antigen (PSA) level measured or those with a family history of prostate cancer or in cases with a history of a benign prostatic disease.

Conclusion: This study revealed that the knowledge level of the risk group can be increased by training. The study also found that the increase in the knowledge level did not affect the participation behavior of the individuals in the screening tests.

Key words: Early detection; prostate cancer; screenings; training.

Introduction

Lung, breast, colorectal, gastric, and prostatic tumours constitute the main causes of cancer deaths.^[1] Among member countries of the World Health Organization, prostate cancer is most frequently seen in the countries of America, and then some regions of Europe. Prostate cancer is least frequently seen in Southeastern Asia.^[1] The latest report released by Turkish Ministry of Health, and Social Welfare includes 2010 data, and accordingly, the incidence of prostate cancer is 36.3 cases per 10.000 healthy individuals.^[2] Mostly, older men get the diagnosis of prostate cancer. Number of individuals with the diagnosis of prostate cancer will increase in the elderly population.^[3] Prostate cancer is a rare cause of death before the age of 50, and mortality rates peak after age of 75.^[4] Therefore, countries

with a high proportion of aging population should prioritize preventive measures against the deleterious effects of prostate cancer on health. Early diagnosis of the prostate cancer can be established with suspect prostate examination findings, and increased blood prostate-specific antigen (PSA) levels with resultant prostate biopsy. However during the asymptomatic stage, controversial opinions have been proposed against using these diagnostic screening methods.^[5,6] In Turkey, and many other countries, these tests are not considered among routine screening programs, and they are performed on individual basis with the recommendation of the physicians.^[7,8]

Early diagnosis in cancer greatly affect treatment success in cancer. The most important components of early diagnosis in cancer are education, and encouragement for participa-

Department of Nursing, Kars
School of Health, Kafkas
University, Kars, Turkey

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Correspondence:
Cantürk Çapık
Department of Nursing, Kars
School of Health, Kafkas
University, 36100 Kars, Turkey
Phone: +90 474 212 85 34
E-mail: c_capik36@hotmail.com

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tion in early diagnostic procedures.^[9] Informing individuals about prostate cancer screening tests helps them to arrive at a decision about benefits, and harms incurred by screening programs, and specify the procedures to be followed in collaboration with their physicians.^[10] In England, Watson et al.^[11] informed the individuals about prostate cancer, and analyzed their attitudes concerning their participation into screening tests. As a consequence of the study, they reported significant increases in the knowledge of the individuals without any significant increase in their participation in screening tests at the end of 12 months. Çapık and Gözümlü^[12] gave web-assisted educational courses about prostate cancer, related screening tests in Turkey, and detected increases in the knowledge level of the trainees without any significant increase in participation in screening tests. If the screening method is painful, burdensome, complex, and time-consuming, then the individual will find it hard to participate in these screening tests. It has been acknowledged that many factors are preventing individuals from participating in the screening tests such as living in remote areas from the town, village, and city center, lower educational level, and lack of any health coverage.^[13] Besides, Nagler et al.^[14] indicated that the method of prostatic examination through rectal route also prevents individuals from participating in screening tests.

When the beneficial effects of developments in the treatment of prostate cancer, and screening tests are taken into consideration, patient education, and psychosocial support constitute the basis of patient-centered care. Individuals should be informed of alternative diagnostic tests with established benefit aiming at early diagnosis in the prostate cancer. Risks, benefits, and alternatives should be offered to them.^[3] In this study, we have aimed to inform male participants aged 50 years or over without any established diagnosis of prostate cancer about prostate cancer, and screening tests, and analyze their attitudes towards participation in screening test methods. In accordance with this aim, the hypotheses of this study encompass the following statements: (1) “offered educational courses increase level of knowledge” (2) “educational courses increase frequency of participation in screening tests”.

Material and methods

In this study where an experimental design with a pretest-posttest control group was used, data were collected from 3 primary health centers (PHC) in the city center of Kars between April and July 2013. From 3 regions covered by PHCs, Yenisehir, and Bülbül PHCs offered health care services very close to each other. In order to refrain from uncontrolled information exchange among participants, these two PHCs were considered as a single investigation site. Thus, two investigation sites as Yenisehir-Bülbül PHC, and Yusufpaşa PHC were assigned.

Ethical Considerations of the Study

Ethics committee approvals were obtained from Kafkas University, Directorate of Kars Health High School, Kars Provincial Directorate of Health, and Ethics Committee of Kafkas University Faculty of Medicine (written decree of ethics committee #34, dated 04.10.2013). All participants to be included in the study were informed about the study design, and volunteered individuals were included in the study.

Characteristics of the Sampling Method

Before starting the study, addresses of male participants aged 50 years or over were obtained from their medical files, and 120 participants were assigned to the study. Then 7 participants were excluded from the study for reasons as inability to make a contact with the participant, withdrawal from the study, and non-compliance with inclusion criteria of the investigation. As a consequence, the study was completed with 113 male participants. Among them 58 participants comprised experimental group (Yenisehir-Bulbul PHC region), and 55 participants constituted the control group (Yusufpaşa PHC region). Experimental or control groups were designated by casting lots. Literate individuals who volunteered to participate in the study, those without prostate cancer, and communication problem were included in the study.

Data Collection Tools

Personal information forms, and prostate cancer screening test forms were used for the collection of data. Personal information forms consisted of 14 questions which were derived from available literature information.^[12,15] Personal information form contained questions which aimed to collect personal information about demographic characteristics of the participants including “age, educational level, and marital status”, and his/her medical history. This form also contained items interrogating if he had been previously examined with the indication of prostate cancer, and whether any one of his relatives had previously and/or currently received a diagnosis of prostate cancer.

Prostate cancer screening test information form which contained 12 items was developed by Weinrich et al. in 2004, and its validation study in Turkish was performed by Çapık ve Gözümlü.^[15] Knowledge test contains the following items related to barriers (items 9-12.), signs (2. and 4. items), risk factors (1. and 3. items), side effects (6.-8. items), and screening age (5. item). Participants tick the small boxes printed following the question which he thinks to be appropriate as: “yes” (correct), “no” (false), and “I don’t know”. During the calculation process, the response of ‘I don’t know’ is evaluated as a false response. For the responses to the 8 items (1., 2., 4., 5., 6., 7., 11., and 12. questions) ‘yes’, and for 3., 8., 9., and 10. questions “no” option should be ticked. Prostate cancer knowledge test scores can vary between 0, and 12 points. Higher points signify increased level of knowledge about prostate cancer.^[15] KR-20 coefficient of the original^[16], and our forms were determined as 0.77.

Table 1. Comparison of demographic characteristics of the participants*

Variables	Experimental Group (n=43) Mean	Control Group (n=37) SD	Mean	SD	
Age	64.1	9.7	62.6	6.6	t=-0.969 p=0.335
Educational level	n	%	n	%	
Literate	11	19.0	12	21.8	
Primary Education	29	50.0	36	65.5	X ² =6.746 p=0.080
Lycée	14	24.1	4	7.3	
University	4	6.9	3	5.4	
Marital Status	n	%	n	%	
Married	53	91.4	50	90.9	X ² =0.00 p=1.00
Single/His spouse is dead	5	8.6	5	9.1	
Prostatic examination	n	%	n	%	
Yes	17	29.3	14	25.5	X ² =0.211 p=0.646
No	41	70.7	41	74.5	
PSA test	n	%	n	%	
Yes	8	13.8	11	20.0	X ² =0.778 p=0.378
No	50	86.2	44	80.0	
A relative with a prostate cancer	n	%	n	%	
Yes	8	13.8	10	18.2	X ² =0.406 p=0.524
No	50	86.2	45	81.8	
Presence of prostate cancer in the neighbourhood	n	%	n	%	
Yes	12	20.7	8	14.5	X ² =0.778 p=0.378
No	46	79.3	47	85.5	
Past history of prostatic disease	n	%	n	%	
No	43	74.1	46	83.6	X ² =4.263 p=0.234
Prostatic hyperplasia	10	17.2	4	7.3	
Prostatitis	2	3.4	4	7.3	
Other	3	5.3	1	1.8	
Intention to participate in the screening tests	n	%	n	%	
Yes	20	34.5	26	47.3	X ² =2.030 p=0.362
Not sure	22	37.9	18	32.7	
No	16	27.6	11	20.0	
Source of knowledge about prostate cancer, and its screening tests	n	%	n	%	
Environment	44	75.9	42	76.4	
Health care personnel	8	13.8	2	3.6	X ² =5.055 p=0.168
Internet	4	6.9	7	12.7	
TV	2	3.4	4	7.3	

*SD: standard deviations; PSA: prostate specific antigen; TV: television; X²: Chi-square test

Application of data collection tools, realization of educational courses, and implementation of final tests were performed by two experienced surveyors. The surveyors who were assigned for data collection, and conduction of educational courses were trained about relevant subjects as data collection, and educational techniques, and the first 10 home visits were realized together with the investigators.

Procedure

1. Home visits were initiated priorly in the experimental group. Male participants over 50 years of age with known home addresses were contacted. Then they were informed about the questionnaire survey, and pretests (personal information form, knowledge test about prostate cancer screening) were performed. Afterwards, booklets containing illustrations depicting prostate cancer, and its screening tests were given to the participants, and the information in booklets was explained face-to-face to the participants. Each educational session was completed within nearly 25-30 minutes. This process continued for approximately one month. During this period, control group was not intervened in any way, and only pretest forms were collected.
2. Following pretest, and educational process, posttest forms (personal information form, and prostate cancer screening knowledge test) were collected. Collection of posttests was completed within a nearly 1.5 months. Then the data were entered into a computerized data base for evaluation. After application of posttests, booklets containing illustrated concise information about prostate cancer, and its screening tests were distributed to the participants in the control group.

Statistical analysis

For statistical analysis of the study data, numbers, percentiles, and X^2 test, t -test for dependent, and independent variables, variance analysis, least significant difference (LSD), multiple comparisons-test, correlation analysis, and KR-20 internal consistency coefficients were used. Normality of distribution was determined using Kolmogorov Smirnov-Lilliefors test. Level of significance was accepted as $p < 0.05$. Study data were evalu-

ated using Statistical Package for the Social Sciences (SPSS) 20 (IBM Corporation, New York).

Statistical power of the study was performed to test the adequacy of the sampling size. Statistical power of the study was tested for t -test on 58 participants in the experimental, and 55 participants in the control group. Effect size was calculated as 1.304. Besides, statistical power of the study was determined as 0.99 at a $p = 0.05$, and within 95% confidence limit.

Results

Originally, the study was planned to be initiated with 120 male participants. However 7 patients were not included in the study for various reasons, and participation rate dropped to 94.1% ($n = 113$). Mean age of the patients in the experimental group was 64.1 ± 9.7 years, and 50% of them had a primary school education. Most of them (91.4%) was married, and 75.1% of them haven't had any prostatic disease before. Mean age of the patients in the control group was 62.6 ± 6.6 years, and 65.5% of them had a primary school education. Most of them (90.9%) was married, and 83.6% of them haven't had any prostatic disease before. Demographic variables related to the experimental, and control groups were compared, and their similar designs as for statistical purposes were also determined (Table 1).

Knowledge levels of the experimental, and the control groups related to prostate cancer, and its screening tests are presented in Table 2.

As seen in Table 2, experimental, and control groups had statistically comparable mean knowledge scores in the pretest ($p = 0.927$). However in the posttest, mean knowledge score of the experimental group was higher than that of the control group ($p = 0.001$), and mean pretest score of the experimental group ($p = 0.001$).

Most of the correct responses were given to the pretest item 'Some treatment modalities for prostate cancer complicate urinary continence of men' by the participants both in the experimental, and the control groups. This question was responded correctly by 56.9, and 67.3% of the participants in the experimental, and the control groups, respectively. Most of the study participants both in the experimental, and the control groups ticked the incorrect option for the item "An abnormal serum prostate-specific antigen (PSA) test definitively indicates the presence of prostate cancer". The correct response to this item was not known by most of the participants in both groups, and the correct answers to this item were given by 13.8, and 9.1% of the participants in both groups, respectively (Table 3).

Rates of participation in screening tests in the experimental, and the control groups following completion of educational sessions are given in Table 4. Six individuals in the experimental, and one participant in the control group participated in the prostate cancer screening tests after completion of the educational ses-

Table 2. Knowledge levels about prostate cancer, and its screening tests in the experimental, and control groups

Study Group	n	Pretest Scores mean $\pm$ SD	Posttest Scores Mean $\pm$ SD	
Experimental group	58	4.39 $\pm$ 3.07	7.53 $\pm$ 2.01	$t = -8.672$ $p = 0.001$
Control group	54	4.35 $\pm$ 2.82	4.20 $\pm$ 3.03	$t = -0.861$ $p = 0.393$
		$t = -0.092$ $p = 0.927$	$t = -6.931$ $p = 0.001$	-

*SD: standard deviation; n: frequency; t: t -test

Table 3. Percentages of correct answers to the items (pretest)

Item	Experimental Group (%)	Control Group (%)
1. Individuals with a relative diagnosed as prostate cancer have a higher risk of contracting prostate cancer	32.8	49.1
2. Any sign and/or symptom may not be detected in a prostate cancer patient	31.0	29.1
3. Prostate cancer affects young men rather than elderly	53.4	34.5
4. Frequently recurring low back pains might be an indication of prostate cancer	37.9	27.3
5. Majority of the older people over 80 years of age don't need to participate in prostate cancer screening tests	34.5	27.3
6. Some treatment modalities for prostate cancer complicate urinary continence in men	56.9	67.3
7. Some treatment modalities applied for prostate cancer might deteriorate sexual abilities of men.	55.2	60.0
8. Some treatment modalities applied for prostate cancer might restrict their driving abilities.	29.3	29.1
9. Physicians say that some men might die from prostate cancer, while others do not	20.7	14.5
10. An abnormal serum prostate specific antigen (PSA) test result absolutely indicate the presence of prostate cancer	13.8	9.1
11. Prostate cancer might be detected despite normal PSA (prostate specific antigen test) test results	25.9	30.9
12. Prostate cancer might progress slowly in some men	48.3	56.4

Table 4. Analysis of the experimental, and control groups regarding participation in screening tests (PSA or examination) after educational courses*

Study group	Yes		No		
	n	%	n	%	
Experimental group	6	40.3	52	59.7	p=0.114 [#]
Control group	1	1.8	54	98.2	

*n: frequency

[#]Fisher's exact Chi-square test was used

sions. A statistically significant difference was not detected between both groups as for participation in screening tests after completion of educational sessions (p=0.114).

Factors effective on the knowledge level of the participants are analyzed in Table 5.

As seen in Table 5, knowledge level about prostate cancer, and its screening tests of the participants changed significantly with their educational levels (p=0.001). LSD tests were performed to determine the source of difference regarding educational level, and in hardly literate individuals significantly lower knowledge level was detected when compared with those with higher educational levels. However, the highest knowledge scores were estimated for lycée graduates. Besides, higher knowledge levels about prostate cancer, and its screening tests were detected in individuals who had previously undergone prostatic examinations, PSA tests, and those suffered from a prostatic disease other than prostate cancer or had a relative with an established diagnosis of prostate cancer. A statistically significant correlation was not detected between the age of the participants, and their knowledge scores (p>0.05, r=0.55). Marital status, presence of prostate cancer in close friends, intention to participate in screening tests, and source of

information about prostate cancer did not effect the knowledge level of the individuals (p>0.05).

Discussion

In this study, these two groups with similar demographic characteristics received educational sessions about prostate cancer, and its screening tests by means of home visits. Before initiating educational sessions, knowledge level of both groups was measured, and detected to be comparable. After completion of educational sessions, their knowledge levels were rated again. In compliance with the goal of the study, the first hypothesis was "knowledge level increases by the training provided" Comparisons between pretest, and posttest, and also between the experimental, and control groups indicated that in the experimental group significantly higher knowledge levels had been attained. This finding demonstrates acceptability of the first hypothesis. The second hypothesis was 'the training provided increases the frequency of participation in screening tests.' Though a significant increase occurred in the knowledge score of the experimental group, any intergroup difference as for participation in screening tests was not detected. This finding indicates that the second hypothesis of the study was not supported, on the contrary it was rejected.

Our study results were comparable to those of the previous studies. Watson et al.^[11] informed their study participants about prostate cancer, and analyzed their attitudes in favour of participation in screening tests. At the end of the study a significant increase in the knowledge level of the participants was detected without any meaningful increase in the number of participants undergoing screening tests. In Turkey, Çapık and Gözümlü^[12]

Table 5. Factors effective on the knowledge level of prostate cancer, and its screening tests*

Educational level	n	Ort.	SS	
Literate	23	2.4	2.4	
Primary Education	65	4.5	2.8	F=7.907
Lycée	18	6.4	2.5	p=0.001
University, master degree	7	4.7	3.4	
Marital status				
Single	10	4.2	3.4	t=-0.193
Married	103	4.4	2.9	p=0.848
Prostatic examination				
No	82	3.8	3.1	t=-4.791
Yes	31	6.0	1.8	p=0.001
PSA test				
No	94	4.1	3.1	t=-2.797
Yes	19	5.6	1.9	p=0.008
A relative diagnosed as prostate cancer				
No	95	3.9	2.9	t=-5.333
Yes	18	6.6	1.6	p=0.001
Presence of prostate cancer in the environment				
No	93	4.2	2.9	t=-1.394
Yes	20	5.2	3.3	p=0.166
Past history of prostatic disease				
No	89	4.0	3.1	t=-3.443
Yes	24	5.7	1.8	p=0.001
Intention to participate in prostate cancer screening tests in the future				
No	27	4.3	2.9	F=1.031
Not sure	40	3.9	2.9	
Yes	46	4.8	2.9	p=0.360
Source of knowledge about prostate cancer, and its screening tests				
Environment	86	4.3	3.0	
Health care personnel	10	6.0	1.9	F=1.368
Internet	11	3.6	2.9	p=0.25
TV	6	4.0	2.5	

*SD: standard deviation; n: frequency; PSA: prostate-specific antigen; TV: television; t: t-test; F: analysis of variance

have detected an increase in the knowledge level of the individuals after web-assisted face-to-face training without any change in the participation frequency Partin et al.^[17] informed their patients using videotapes (Group 1), booklets (Group 2) as educational material, and their third group was the control group. The authors detected a significant increase in the knowledge level of the first two interventional groups without any differ-

ence among three groups as for PSA measurement frequencies. Our study results were similar to those of the three investigations. It appears that increase in the knowledge level does not exert a change in the participation behaviour. Therefore, controversy between increased knowledge level about prostate cancer, and its early diagnosis, and fewer applications for screening tests should be specifically analyzed. Cultural level, socioeconomic status, sociodemographic, and sociocultural characteristics of the individuals, and individual concerns about rectal examination methods might prevent them from participation in screening tests. These specified barriers can be analyzed in other studies.

In both groups, the item 'treatment modalities for prostate cancer might create problems in the control of urinary continence' was the most frequently known correct information (in the experimental, and the control groups 56.9%, and 67.3% of the participants gave correct answers). The item 'Higher PSA levels definitively signify presence of prostate cancer' was the most frequently, and incorrectly known false information (in the experimental, and the control groups only 13.8, and 9.1% of the participants gave correct answers). In another study performed in Turkey, the least number of study participants gave correct responses to that item.^[18] These two outcomes suggest that in addition to the information given about prostate cancer, diagnostic methods for the early diagnosis of prostate cancer should be revealed to the public.

In this study changes in the participation behaviours in the experimental, and the control groups, and factors potentially effective on the knowledge level were analyzed. For this analysis, pretest data of the comparable experimental, and control groups were used. Hardly literate individuals were significantly less knowledgeable than those with higher educational levels. High school had the highest knowledge level. In addition to educational level, individuals who had undergone prostatic examinations, and suffered from prostatic disease apart from prostate cancer, and participants who had measured their PSA levels, and those with a relative diagnosed as prostate cancer had higher knowledge levels. Some of the results of the previous studies where factors effective on knowledge levels were analyzed, are in compliance with some of our findings, while others are contradictory. For instance, Çapık^[18] detected that educational level, previous PSA examination, and relative with a prostate cancer were effective factors on the knowledge level, while past history of a prostatic disease apart from prostate cancer was not influential on the knowledge level. Winterich^[19] indicated that the educational level had an impact on knowledge level concerning screening tests for prostate cancer, however Casey et al.^[20] determined that individuals under a health insurance coverage had relatively higher knowledge levels about prostate cancer. Many studies have determined numerous sociodemographic

factors which might be effective on knowledge level concerning prostate cancer, and its screening tests. This study has revealed that previously planned training courses provide an increase in the knowledge levels of individuals. However all these outcomes arrive at a common concept which indicates that increase in the knowledge level does not absolutely signify a higher participation in screening tests. Although not statistically significant, individuals with a certain degree of information about prostate cancer, and its screening tests participate in screening tests relatively more frequently. Therefore interventions aiming at increasing knowledge level still retain their importance.

Non-randomized sampling method of the study, and conduction of educational courses without any common theoretical context are limitations of the study.

This study revealed that educational courses can increase the knowledge level in the risk group. Though, conceivably, increase in the knowledge level will increase participation frequency, on the contrary, it didn't effect participation behaviour of the individuals. Therefore, theoretical, and methodological studies effective on participation behaviour of the individuals should be performed. Besides, detailed interviews should be performed with the decliners, and the reasons for not participating in the screening tests should be investigated, despite, they were informed beforehand.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Kafkas University Faculty of Medicine (10.04.2013/34).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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