

RESEARCH ARTICLE

Editorial Process: Submission:07/28/2017 Acceptance:12/01/2017

Effects of an Educational Program for Prostate Cancer Prevention on knowledge and PSA Testing in Men Over 50 Years old in Community Areas of Shiraz in 2016

Zahra Molazem^{1*}, Mehdi Ebadi¹, Mohammad Khademian¹, Reza Zare²

Abstract

Background and Objectives: Prostate cancer was reported to be the second cause of cancer death in men in 2013. Studies have shown that those with higher knowledge levels are much more likely to undergo prostate cancer screening. The present study was aimed to determinate the effect of an educational program for prostate cancer prevention on knowledge and prostate-specific antigen (PSA) testing in men over 50 years old in community areas of Shiraz. **Methods:** This clinical trial was conducted among 93 men over 50 years old who were randomly divided into an intervention (n=48) and a control (n=45) group. The intervention group took part in an educational program focusing on the importance of prostate cancer prevention with emphasis on cultural and economic issues. Data were collected using a demographic information form, the Weinrich questionnaire for measuring the knowledge level about prostate cancer and screening, and also a researcher-made questionnaire covering reasons for not doing the test, before and 3 months after the intervention. Additionally, participation in PSA testing was evaluated 3 months after the intervention. All data were entered into the SPSS statistical software (version 14) and $p < 0.05$ was considered to be statistically significant. **Findings:** The results showed that the intervention group's participation in PSA testing increased from 6.12% to 36.4% three months after the intervention. However, no significant change was observed in the control group. In addition, the intervention group's mean score of knowledge increased by about 2.69 points after the intervention, and a significant difference was observed between the two groups in this regard ($p < 0.05$). **Conclusion:** The results of the current study revealed effectiveness of the educational program in increasing the knowledge about prostate cancer and participation in PSA testing in men over 50 years of age. Hence, managers and authorities should execute plans to educate men regarding prostate cancer screening and promote their health status.

Keywords: Education- PSA- knowledge

Asian Pac J Cancer Prev, **19** (3), 633-637

Introduction

The high prevalence of prostate cancer among middle-aged and old Men seems to be unique among other cancers (Ebrahimi, 2004). Prostate cancer is the most diagnosed, prevalent cancer among males. It is considered as the second sort of cancer causing death in men after lung cancer (Gulati et al., 2014; Pourmand et al., 2007; Rajaie and Shirzadeh, 2005; Simon, 2004; Society, 2013). Based on the reported statistical figures reported by American Cancer Society in 2013, prostate cancer is the second leading cause of death after lung cancer (Rajaie and Shirzadeh, 2005).

The death rate of prostate cancer in Iran compared to many other cancers is high. In 2003, about 1,309 death cases caused by prostate cancer has been reported in Iran. Based on this, the number of death of prostate cancer in every 100,000 case was estimated 85.3 ones in the same

year (Jabel Ameli and Bahadori, 1999).

Generally, the risk of clinical progress of prostate cancer in the life-time of a men is 1/6, in one out of 6 men (Rajaie and Shirzadeh, 2005).

At the same time, the average length of stay-in hospital for the patient suffering from prostate cancer is between 5-10 days which costs too high (Turini et al., 2003).

The long term complications of treatment such as incontinence, impotence, and rectal inflammation caused by radiation, have adverse impacts on patients' quality of life (Moore and Boyle, 2002). Mean while the incidence of the prostate cancer develops with the increase of age (Smith et al., 2008). However, unlike most of the cancers that have a limit age, the rate of prostate cancer increases as the age of the patient goes up (Gulati et al., 2014).

However, positive family history is responsible for 10-15% of prostate cancer. However, the prostate cancer

¹Department of Nursing, School of Nursing and Midwifery, Shiraz University of Medical Sciences, ²Islamic Azad University of Science and Research of Fars, Shiraz, Iran. *For Correspondence: molazem@sums.ac.ir

will be definitely and completely cured if it is diagnosed and detected early before its invasion and metastasis. Since there is no specific signs at the beginning, it is usually diagnosed when it can't be cured anymore and, therefore its morality is high (Jabel Ameli and Bahadori, 1999).

Cancer Society of America in 2013 has recommended that men over 50 must be informed about prostate cancer screening. In fact, the age of doing this procedure should be decreased for people who are at risk. The risk factors of cancer include race, family history, age, and obesity (Grubb 3rd and Kibel, 2007).

Although prostate cancer has no specific sign, there are different ways for screening and early detection. Two common methods for the early detection of prostate cancer are DRE rectal exam (Digital Rectal Exam) and PSA laboratory tests (Prostate Specific Antigen) (Jabel Ameli and Bahadori, 1999).

That among them, the simplest and the most sensitive test among different methods for prostate cancer is serologic test called PSA.

Therefore, incidence and mortality of this cancer will be reduced by prevention measures and screening (Rezaeian et al., 2007)

It seems that the awareness about the disease is an effective factor in men's participation in cancer screening, because studies have shown that men with higher levels of knowledge are more likely to be screened (Rezaeian et al., 2007).

Cantruk Capik study and Sebahat Gozum showed that education done through web increases the participant's knowledge about the prostate cancer screening (Çapık and Gözüm, 2012) It was shown in carter et all's study that, after education prostate cancer screening, people's knowledge will be increased. Besides, 48% of people who were not screened from a year ago, referred to be screened (Carter et al., 2010).

At the same time, studies have shown that men have had more improper lifestyle rather than women, and careless about their disease, ignored warning signs, and referred to clinics later. However, prostate cancer is considered as one of the major threats for men's health (Çapık and Gözüm, 2012).

On the other hand, John S. Oliver's study has shown that 68.7% of the participants mentioned that the lack of knowledge about the process of prostate cancer screening was a barrier against doing this performance (Oliver et al., 2011).

Based on the researches conducted in other countries and the lack of doing these studies in our own country and also the lack of knowledge and awareness of people about cancer and it's screening ways (Zare et al., 2016), we decided to do this research aiming to determine the effect of an educational program for prostate cancer prevention on knowledge and Prostate-Specific Antigen(PSA) testing in men over 50 years old in Shiraz.

Materials and Methods

This study which is a clinical trial, has been done to determine the effect of an educational program for prostate cancer prevention on knowledge and Prostate-Specific

Antigen (PSA) testing in men over 50 years old referring to community areas in Shiraz in 2016. Sample size was determined based on the similar studies and by using the medcalc software and considering: 0/05 error, 85% test power and also 20% miss rate. Finally, 49 cases were put in every group. The cases was selected randomly. Inclusion criteria for this study included being over 50 years old, having no participation in the same studies, lacking of prostate cancer, desiring to participate to the present study and not having done PSA test in the last year. Exclusion criteria also included having no participation in educational classes and not desiring to continue the participation in research. The method implementation is as followed: the researcher refers to all the centers of Shiraz community areas (7 centers) after presenting his program to the faculty of Hazrat Fatima (SA) and based on the mentioned criteria. 14 Persons of the referred men to every center were selected based on the random number table. Then, they were divided into two groups including intervention and control using the Excel software. The intervention group was divided into two 15 and one 18 members groups for educational sessions.

Data collection tools in this study included demographic knowledge questionnaire containing 13 questions which were designed based on the existing resources and the expert's points of view. they provided some information about age, marital status, level of education and also some information about the history of the blood test including PSA for prostate cancer screening, family history of prostate cancer, awareness of prostate cancer, the manner of making aware and the history of smoking cigarette.

The other questionnaire measured knowledge level. This questionnaire was designed by Wienrich et all to measure the level of knowledge about prostate cancer and screening of the cancer in 2004. The mentioned questionnaire included 12 questions with "correct", "incorrect" or "I don't know" answers. The answer to the 12, 4, 2, 1, 5, 6, 7 and 11 questions were correct and the answer of 10, 3, 8 and 9 questions were incorrect. The questions answered "I don't know" were scored as the questions that were answered incorrect. Questions answered wrongly were scored 0 and the ones which answered correctly were scored 1/0. The score increase meant the knowledge increased as well. Finally, the knowledge level was divided into 3 levels including good (10-12 correct answers), medium (7,8,9 correct answers) and weak (below 7 correct answers) (Volk et al., 2008). The validity of the questionnaire in the Zare study (2016) was confirmed by a number of urology experts and professors. It's reliability is determined 98% (Zare et al., 2016).

Also, in order to determinate the reasons of not doing the PSA testing, the researcher-made questionnaires was used which were prepared based on the similar literature by the experts.

For the intervention group, the demographic data questionnaire was completed by the participants after the reintroduction of the research and prehension of written testimonial from them. Then, knowledge level questionnaire was distributed between them. It was

Table 1. The Comparison of Knowledge Level between Two Studied Groups before and 3 Months after the Intervention

Level of knowledge	group	intervention		control		p-value	
		Before intervention	3month after intervention	Before intervention	3month after intervention	Before intervention	3month after intervention
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
Low	20(41.7)	2(4.2)	24(49)	21(46.7)			
Medium	19(39.6)	16(33.3)	20(40.8)	18(40)	0.46		<0.0001
Good	9(18.8)	30(62.5)	5(10.2)	6(13.3)			

Low, knowledge level means below 7; Medium, knowledge level means between 7, 8, 9; Good knowledge level means between 10. 11. 12

collected after being completed.

After that, for each of the three intervention group, there was two-hour sessions in the form of presentation, film and slide and also presenting educational pamphlets about prostate cancer. The presented issues were included information about the anatomy and physiology of prostate gland, definition and the rate of prevalence and incident of the prostate cancer, its signs and symptoms, current treatments and side effects, prevention and screening ways and the early detection benefits, reasons and also the treatment of prostate cancer. Enough information was also provided about the test centers and the expenses of doing the test, late detection of the cancer, the consequences of not doing the test and any other probable problems.

In the educational programme, the emphasis was on the necessity of PSA testing for the early detection and the prevention of prostate cancer. A series of routine education about marriage or divorce, addiction or guilt, matrimony relationships and children education were presented to the control group. They took both pre-and post-tests as well. However, some educational pamphlets were presented to them at the end in order to regard moral consideration.

Also, we called all the participants and they took part in one training session with presence of the researcher. During the session, after research introduction and receiving consent form, the questionnaire was distributed among them. It is worth mentioning that, consent form and questionnaires were completed by co-researcher help. The amount of the participants' knowledge of both groups was measured using the mentioned questionnaire. After 3 months after the intervention, all the samples were called and asked if they did PSA testing or not. They were also asked to deliver the written results of the test to officials of the community areas if they did PSA testing.

Results

Based on the results of this study, in the intervention group the minimum and maximum age were 52 and 70 respectively, with the mean age of 61/4. In the control group the minimum and maximum age were 50 and 69 respectively with the mean age of 61/06.

91/7% of the samples were married in both control and intervention groups. 14/4% of them are illiterate, 37/1% had elementary, 21/7% guidance 8/26% diploma level of education or above.

77/9% of the participants had no family history of prostate cancer. They mentioned their brother, uncle, father and boy respectively, have suffered from prostate

Table 2. The Comparison of Mean Changes of Knowledge Score before and 3 Months after the Intervention.

group	mean \pm SD		p-value
	Before intervention	3month after intervention	
Intervention	7.10 \pm 2.40	9.79 \pm 1.48	<0.0001
Control	6.71 \pm 2.09	7.35 \pm 2.14	0.07

Table 3. The Comparison of the Rate of Participation of the Control and Intervention Groups in PSA Testing before and 3 Months after Intervention

Group	Statistic	Before intervention	3month after intervention	p-value
		Number (%)	Number (%)	
Intervention	3 (6.12)	18 (36.73)	0.0006	
Control	4 (8.16)	5 (10.2)	0.758	

cancer among those ones with positive family history.

67/8% have never done PSA testing for prostate cancer screening.

43/3% of the samples were unaware of the prostate cancer screening. Among those ones who were supposed aware of the mentioned screening, 36/3, 34/5, 16/3, 4/4 and 3/6 percent noted that their informing source were their family member's patient, physician, TV program, radio and their friends respectively.

86/3% of the participants had no history of benign prostatic hyperplasia.

Table 4. The Comparison of Reasons for Not Doing the Test in Both Studied Groups

Variable	Group	Intervention	Control	Total	P-value
		Number (%)	Number (%)	Number (%)	
Reasons	Economical problems	10(40)	11(31.4)	21(35.8)	
	Time taking	3(12)	12(34.3)	15(25.5)	
	Feeling Embarrassed	8(32)	8(22.9)	16(27.3)	0.274
	Fear of getting informed about their health problems	4(16)	4(11.4)	8(11.4)	

50% of the participants had the history of smoking as well.

In both groups, the awareness about prostate cancer and smoking history was similar, based on demographic variables such as age, marital status, educational level, the history of benign prostate hyperplasia and family history of prostate cancer. There was no meaningful difference between both groups related to the mentioned variables. ($p>0.05$).

Independent t-test showed no meaningful difference between both groups ($p>0.05$).

The results showed that most of the people in the intervention group had medium and good levels after educational intervention, but there was not seen any significant difference in the control group (Table 1).

Table 2, shows the comparison of the changes of mean scores of knowledge before and 3 months after intervention in both groups.

The results show that the rate of participation in prostate cancer screening in the group of received educational intervention 3 months after intervention increased from 6/12% to 36/7% ($p<0.05$) but in the control group, there was no meaningful difference statistically ($p>0.05$) (Table 3).

In this study, 35/8, 25/5, 27/3 and 11/4 percent of the studied cases attributed the reason of not doing the test to economical problems, its time-taking, feeling embarrassed and also fear of getting informed about their problem, respectively. There was no meaningful difference among them. ($p>0.05$)

Discussion

The results show that training in the intervention group had a great influence on the men's knowledge level who referred to the community areas. According to the training interventions, these results were expected, so that after training, there was a meaningful difference between the level of the knowledge of the group people in rather than before the intervention.

These results illustrate the positive effects of intervention on the meaningful increase of the awareness in the intervention group.

However, cantruk capik and sebahat gozum's study showed no significant change in the knowledge level of the studied people in comparison with the present research. Mean while, the assessment tool was the same in the mentioned studies (Çapık and Gözüm, 2012). The difference between two studies was in the used method of training and amount of training hours. so that, in the present study, pamphlet, powerpoint and 3 hours of verbal training were applied by through group discussion and question-answer method. While, in the mentioned study, 70 minutes were spent on how to use the site and the process by which they were supported. They were trained verbally and the demographic questionnaire was completed. The rest of them were trained by use of brochures desktop calendars and sms every three months without any need to participate directly. They were also received posters, ten days before intervention. It seems that verbal training in which the cases participate directly,

is much more effective on increasing the knowledge level.

As the same as the present study, carter (2010) did a research about prostate cancer screening promotion in African-American men (Carter et al., 2010). They finally found that there was a meaningful increase in knowledge after the intervention.

In Volk et al., (2003) conducted a study aiming to train the patient to make sound decision about prostate cancer screening. They used a 20- minute film before the appointment with the doctor for getting informed and, eventually, they found that knowledge level in the intervention group increased as a result of this training activity. This researcher and his Colleagues used two training methods, called entertainment and vocal booklet. In other study, in 2008 (Volk et al., 2003). They used the same methods for two groups with high and low health level of knowledge. They came to this conclusion that informative instructions, based on entertainment, can increase the knowledge level much more in people with low knowledge level. But, eventually, the knowledge level was increased among all the patients. Therefore, all the above studies indicate the importance of training and it's influence on people awareness. According to the positive influence of training on awareness promotion and individual's knowledge, it is recommended that managers and officials do the necessary planning in this case. One of the received results in this study has been the increase in the amount of PSA testing after the training in intervention group rather than control one, so that the amount of cooperation increased from 6/12% up to 36/73% in intervention group after 3months.

Meanwhile, in present study, this amount for the control group before and after the intervention, was 8/16% and 10/2%, respectively, which showed no statistical meaningful increase.

This figure, in the research of cantruk capik and sebahat gozum, increased from 7/6% to 31/4 % (Çapık and Gözüm, 2012).

The result of carter's study (2010), aiming at the promotion of prostate cancer screening among American-African men, showed that (Carter et al., 2010) 48% of people who have not done screening in the last year, referred to the centers to be screened.

In another study done by Wienrich et al., (1998), the researchers performed call prostate cancer training among American-African men. 357 men (71/8%) of the intervention group participated in the free screening.

The results of the 3 above studies are in line with our study. According to the positive influence of training on the development of people's participation in cancer screening and the importance of cancer, it is necessary for the managers and officials to provide a wide and community-based planning in this field.

The findings of this study showed that 35/8% of the samples, mentioned economic problems, 25/5% time-taking, 27/3% being embarrassed to do it and 11/4% Fear of getting informed about their health problems as the reasons for not doing the PSA testing. In the study of Oliver et al., (2011), 87/1% of the samples mentioned time-taking, 74/2% being embarrassed to do it, 68/7%, not being acquainted with screening and 70/2% fear of getting

informed about their health problems as the reasons for not doing the screening. Achieving this results leads to better understanding of the barriers to participate in prostate cancer screening. According to the fact that economic hardship is one of the main reasons for not doing the test, it is necessary to provide free-charge services in order to prevent this sort of cancer.

In conclusion this study is done aiming at investigating the influence of training programme of prostate cancer prevention on PSA testing in men over 50 years old referring to the community areas of Shiraz in 2016. Training sessions caused to increase significantly the awareness of people in the intervention group and also PSA testing rather than the control group. However, it is recommended that, for further similar studies, education programmes would be done in a longer-term periods with higher number of samples.

References

- Çapık C, Gözümlü S (2012). The effect of web-assisted education and reminders on health belief, level of knowledge and early diagnosis behaviors regarding prostate cancer screening. *Eur J Oncol Nurs*, **16**, 71-7.
- Carter VL, Tippet F, Anderson DL, Tameru B (2010). Increasing prostate cancer screening among African American men. *J Health Care Poor Underserved*, **21**, 91-106.
- Ebrahimi M (2004). Prevalence of hormone dependent cancers in Iran during 1986–1997. *Int J Gynecol Cancer*, **14**, 204.
- Grubb 3rd R, Kibel A (2007). Prostate cancer: screening, diagnosis and management in 2007. *Mol Med*, **104**, 408-13; quiz 413-404.
- Gulati R, Tsodikov A, Etzioni R, et al (2014). Expected population impacts of discontinued prostate-specific antigen screening. *Cancer*, **120**, 3519-26.
- Jabel Ameli P, Bahadori M (1999). Early detection of prostatic cancers. *Med J Islam Repub Iran*, **3**, 231-8.
- Moore AD, Boyle G (2002). Assessing the knowledge, self-efficacy and health behaviors of male beneficiaries assigned to the national capital area regarding participation in prostate screening. Uniformed services university of the health sciences.
- Oliver JS, Grindel CG, DeCoster J, Ford CD, Martin MY (2011). Benefits, barriers, sources of influence, and prostate cancer screening among rural men. *Public Health Nurs*, **28**, 515-22.
- Pourmand G, Salem S, Mehrsai A, et al (2007). The risk factors of prostate cancer: a multicentric case-control study in Iran. *Asian Pac J Cancer Prev*, **8**, 422.
- Rajaie M, Shirzadeh H (2005). Prostate specific antigen (Psa) more than 4 Ng/MI in men referred to urology clinic compared to cardiologic patients. *J Shahrekord Univ Med Sci*, **6**, 56-62.
- Rezaeian M, Tabatabaei Z, Naeimi R, et al (2007). Knowledge, attitude and practice of Rafsanjan male pensioners towards prevention of prostate cancer in the year 2006. *Horizon Med Sci*, **12**, 19-25.
- Simon H (2004). On call. My doctor gave me a prescription for uroxatral to treat my enlarged prostate. I tried to look up this medicine in your harvard medical school guide to men's health, but I couldn't find it. What can you tell me about Uroxatral?. *Harv Mens Health*, **8**, 7.
- Smith DR, Tanagho EA, McAninch JW (2008). Smith's general urology: Lange medical books/McGraw-Hill.
- Society AC (2013). Cancer facts and figures 2013: American Cancer Society Atlanta.
- Turini M, Redaelli A, Gramegna P, Radice D (2003). Quality of life and economic considerations in the management of prostate cancer. *Pharmacoeconomics*, **21**, 527-41.
- Volk RJ, Jibaja-Weiss ML, Hawley ST, et al (2008). Entertainment education for prostate cancer screening: a randomized trial among primary care patients with low health literacy. *Patient Educ Couns*, **73**, 482-9.
- Volk RJ, Spann SJ, Cass AR, Hawley ST (2003). Patient education for informed decision making about prostate cancer screening: a randomized controlled trial with 1-year follow-up. *Ann Fam Med*, **1**, 22-8.
- Weinrich S, Holdford D, Boyd M, et al (1998). Prostate cancer education in African American churches. *Public Health Nurs*, **15**, 188-95.
- Zare M, Ghodsbin F, Jahanbin I, et al (2016). The effect of health belief model-based education on knowledge and prostate cancer screening behaviors: a randomized controlled trial. *Int J Community Based Nurs Midwifery*, **4**, 57.



This work is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License.