CASE SERIES

22(94), November- December, 2018

ISSN 2321–7359 EISSN 2321–7367

Medical Science

Investigating the effect of health literacy and self-care on preventing prostate cancer in Tehran male municipality staff in 2017

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Introduction: **Cancer is the third cause of death in Iran. Health literacy and self-care have a significant impact on the incidence and complications of prostate cancer. The present study was conducted to determine the relationship between health literacy and self-care with the prevention of prostate cancer in Tehran's municipality staff.** ***Materials and Methods:*** **The present descriptive-analytic cross-sectional study was conducted on 328 male personnel aged over 50 years selected through random sampling; required data was collected using a researcher-made questionnaire the validity and reliability of which were confirmed. SPSS 22 was used for the analysis of collected data and P <0.05 was considered as significance level.** ***Results:*** **The mean literacy score of individuals was 12.22 from the maximum score of 17, and the level of literacy was significantly related with education (P = 0.0001) and employment duration (P = 0.007). The mean self-care score of individuals was 6.82 from the maximum score of 14; the self-care level of the present study showed that self-care had a significant relationship with age (P = 0.005) and duration of employment (P = 0.002), so that subjects with higher education and longer periods of employment had higher health literacy and the rate of health literacy increased with increase in age and education.** ***Conclusion:*** **Health literacy and self-care have a huge impact on health; thus, health indicators can be increased in society, making the society healthier, through improving these indices.**

INTRODUCTION

The incidence of prostate cancer was 21,730,000 in the world in 2010, accounting for 28% of the world's total cancer incidence; additionally, there have been 32050 deaths, accounting for 11% of all deaths from cancers (1). With an estimated 1600,000 new cases annually and 366,000 deaths per year, prostate cancer is the second most common cancer in men worldwide (2). In the United States, it is estimated that 165,000 incidence cases and 29,000 deaths will occur in 2018 (3). For an American, the risk of developing cancer is 16% over his lifetime, but the risk of prostate cancer is only 2.9% (4). Many other cases of prostate cancer are not clinically detectable; as revealed in the autopsies, prostate cancer 30% of men aged 55 years and 60% aged 80 are diagnosed with prostate cancer (5). Such statistics suggests that prostate cancer often grows slowly, as most men die of other causes before the disease progresses clinically.

The survival of prostate cancer patients depends on many factors, especially the severity and size of tumor at the time of diagnosis. A five-year relative survival rate is guaranteed among men with exclusive prostate cancer (local) or only with a 100% regional expansion, compared to 23.9% among those with remote metastasis (4). By avoiding exposure to the following key factors, one can prevent the occurrence of more than 30% of cancers; these factors include tobacco, overweight or obesity, low consumption of fruits and vegetables, lack of physical activity, sexual transmission of HPV infection, alcohol, urban pollution, and fossil fumes available at home (6). The prevalence of prostate cancer rises with age. Several risk factors have been identified for prostate cancer; these factors include aging, being of American-African ethnicity, positive family history of prostate cancer, and low age of the incidence of prostate cancer in family members; secondary risk factors include high-fat diet, contact with cadmium through, for example, smoking, contact with alkaline batteries and metal industries and the history of previous vasectomy (7).

In 2014, prostate cancer accounted for 27% of all male cancers and 10% of total cancer deaths in males. In general, out of every 6 men, one person develops prostate cancer during his life and this risk increases with aging (8). Prostate cancer is one of the most important causes of death in Iranian men (9). Despite major differences in incidence, prostate cancer is predominantly a disease related to men over 65 years, because more than 75% of new cases have been diagnosed in men over

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Table 1 Table of classification of health literacy and self-care scores of subjects

Table of scores	Weak		Moderate		Good		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Health literacy	47	14.3	251	76.5	28	8.5	326	99.3
Self-care	66	20.1	208	63.4	53	16.2	327	99.7

the age of 65 (10 and 11), mainly because of disregarding the disease in the early stages, as the presence of symptoms often suggests advanced localized disease or metastasis (10). However, other causes of the disease include race disorders (12) genetic and environmental factors, familial history (13) hormone changes associated with age (14) infection, inappropriate nutrition (especially saturated fats) (15), cigarettes, alcoholic beverages (16), etc. The high mortality rate of prostate cancer and the presence of appropriate treatment in the early stages of life have made early diagnosis quite essential in increasing the rate of survival (17). Increasing the number of men over 65 years old with this disease by 4 times by 2050, as well as the heavy burden of prostate cancer on the therapeutic system have made this disease quite central in discussions of medicine and disease prevention. (18) One way to reduce mortality due to an unobserved prostate cancer is through screening used to diagnose the disease in asymptomatic people (19). In this regard, the American Cancer Society has recommended screening and reporting of prostate cancer for all men over 50 years of age (20). There are several screening and diagnostic methods, one of the most important of which is the serum PSA assay test, which is the most usable, easy, yet most sensitive screening test with 97% and 67% sensitivity; this method is the most available one to detect and track prostate cancer as every year from the age of 50 (20, 21). Early diagnosis of prostate cancer by performing PSA blood test, timely treatment and eradication of prostate cancer make the treatment of metastasis possible (20).

METHODS

The present descriptive-analytic cross-sectional study was conducted to determine the effect of health literacy on the prevention of prostate cancer among Tehran municipality male personnel in 2017. Age over 50 years and being employed in municipal organization were the main inclusion criteria. Random sampling among Tehran's municipality districts was used to select subjects, the ultimate rate of which turned out to be 328 individuals. After coordinating with the public relations and protection of the districts and areas of Tehran municipality and obtaining personal consent, the demographic information questionnaire, health literacy and self-care questionnaires for prostate cancer were studied. Required data was collected using a researcher-made questionnaire based on reliable reference books and articles, and it was tried to implement valid scientific methods. The most important questions about health literacy included computing comprehension and reading comprehension as well as self-care from prostate cancer. A questionnaire was distributed among 11 faculty members including physicians and health and epidemiology educators. After collecting opinions and obtaining Content Validity Indicators (CVI) and Content Validity Ratio (CVR), questionnaires were distributed among the target population and collected after receiving the response.

The health literacy questionnaire consisted of 9 questions in the computing section, with correct answers to point 1 and incorrect answers to 0; however, in the second part of reading comprehension of the questions, it was necessary to fill in empty spaces with the correct option, with 9 gaps and 1 score for each correct answer and a total of 9 points for all; then, in prostate cancer self-care questionnaire, the first two questions had one point and question 3 to 8 from had 0 to 2 points, making a total of 14 points.

The sample size included 328 male employees working in the municipality of Tehran selected through simple random sampling. The researcher-made questionnaire on health literacy and self-care rate was completed by subjects. Based on the results of this step, the levels of men's health and self-care can be determined. A written consent was obtained from the participants. Data was analyzed by SPSS-22 using descriptive tests such as frequency, percentage, mean and standard deviation and analytical tests (t, chi-square test, Pearson correlation coefficient, and analysis of variance and linear regression).

FINDINGS

With a minimum of 50 and maximum of 85 years, the mean age of the subjects was 56.79 ± 5.5 years. The majority of subjects were between 50 and 59 years old (77.7% of participants), and the lowest group was over the age of 75 (0.6%). The distribution of education status among subjects was like the following: 17 illiterate cases (2.5%), 49 cases of elementary education (14.9%), 67 cases of high school education (20.4%), 83 cases of diploma (25.3%) and 112 cases of academic education (34.1%); thus, the majority of participants had academic education; with an average of 3.86, the household size ranged from 1 to 9 members. 131 households had 1-3 members, 178 households had 4-6 members, and 8 households had 7-9 members; thus, the majority of households had 4-6 members. Employment duration ranged from 1 year to 42 years, with a mean of 24.3 years. The insurance status was as follows: 309 subjects were insured (94.2%) and 17 (2.5%) were not insured. 44 subjects (13.4%) had prostate disease history and 282 (86%) had no history of the disease. The duration of the prostate varied from 1 to 20 years, 73% of which had lasted less than 5 years;64 subjects (19.5%) went through PSA testing, and 263 (80.2%) did not perform this test, and the number of PSA tests varied from 1 to 11 times.

Based on the mean (12.24) and standard deviation (2.7) of the health literacy scores and with the mean ±standard deviation formula, three modes of weak, moderate and good score was obtained, with 9.71 score categorized in the weak group, between 9.71-12.5 categorized in the moderate, and higher than 12.5 categorized in the good group. According to the mean score (6.82) and standard deviation (2.7), three modes of weak, moderate and good score was obtained, with 4.12 categorized in the weak group, 4.12-9.29 in the moderate and higher than 9.29 in the good group. 14.3% of male subjects employed in Tehran municipality had poor health literacy, 76.5% had moderate and 8.5% had good health literacy; 20.1% had weak self-care, 63.4% had modest and only 2.16% had good and acceptable health literacy (Table 1).

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DISCUSSION

Prostate cancer has a direct impact on men over the age of 50 years. Sung et al study showed that a higher level of health literacy leads to better mental satisfaction and greater physical well-being. With increase in health literacy, the factors associated with the disease are controlled more efficiently (22). In regard with the present study, the mean health literacy score was 12.22 with a standard deviation of 2.7 and the mean self-care score was 6.82 with a standard deviation of 2.7. Only 8.5% of subjects had acceptable health literacy; so, serious effort is required to increase this rate. Mock showed that oral and maxillo-prophylactic treatment reduces the risk of tooth decay significantly in a prostate cancer patient by following a 3-month follow-up (23). Tobias Makarado examines the effects of health literacy on prostate cancer screening with rectal examination (DRE) and the effect of low literacy on the incidence of advanced prostate cancer (24). Rectum and PSA testing were performed annually, and only 18.9% of the subjects performed both tests, 22.6% performed just one of the two and the rest did not perform any of the mentioned tests. Age is another risk factor for prostate cancer; the mean age of the subjects was 56.79 in the present study. By studying on Chinese men, Kane X indicated that in rural areas, the risk ratio of age was 15.9, 17.3 for marriage, 3.9 for regular consumption of alcohol more than once a day, 2.5 for insufficient light at night, 2.6 for lack of sleep (less than 6 hours in day), 16 for pesticides, 5.5 for blood pressure, and 2.9 for the incidence time of prostate cancer, with a 95% confidence interval. However, only old age, low sleep and high blood pressure were independent risks; in regard with urban areas, risk ratio for family history was 2.3,15.15 for old age, 7.5 for marriage, 9.7 for using androgenic steroids, 1.2 for inadequate lighting at night, 2 for inadequate sleep, 4.9 for pesticides, and 3.3 for age. According to the findings of the present study, using social media and mobile technology can be quite effective in promoting people's awareness; however, these strategies depend on how people use such technologies (25). Lupa's research showed that weekly consumption of grilled food increases the risk of the incidence of prostate cancer by 1.85; this rate is 1.87 for vegetables, and 1.96 for night shifts; with a ratio of 0.56 and a 95% confidence level, green tea decreases the risk of the incidence of prostate cancer (26). Cognby et al. study showed that employees with higher education levels were covered by supplementary insurance. Familiarizing staff with cancer screening tests by holding workshops for training health promotion programs can be effective in improving people's health literacy (27). In a clinical trial study, Zarea et al showed that the mean score of the elements of the health belief model increased significantly after providing necessary training; this group experienced increase from 8% to 24% and 41.3% one and three months after participating in prostate cancer screening test training program (28). Hossein Izadi Rad et al., study showed that the mean health literacy score was 68.1% in the subjects, so that 68% of individuals had inadequate and borderline health literacy and only 32% had sufficient health literacy. 34.7% reported their general health status at a moderate or lower level, 44.25% of the participants did not have preventive programs during the past year. The level of inadequate health literacy was more common in older people, less educated, lower income, and women. There turned out to be a significant relationship between the level of health literacy and admissions to the hospital, preventive behaviors and general health status in the present study. Individuals with a better level of health literacy evaluated their general health status better than others as they implemented required preventive behaviors (29).

Several risk factors have been identified for prostate cancer, including aging, race, positive family history, and low age of prostate cancer in family members; high-fat diets, and contact with cadmium through smoking can function as relative risk factors. It is very clear that increasing the level of health literacy and self-care in the community, as well as screening makes the prevention of this common and fatal illness possible for every individual member of the society. We no longer witness high the number of deaths due to this disease. Implementing social support organizations with self-care education and empowerment approach to prevent prostate cancer and health promotion programs will improve the quality of life of men though influencing individual and social factors.

CONCLUSION

The results of the present study showed that health literacy and self-care are at an inappropriate level, and this is a concern because a considerable portion of population is getting older and older and they will need appropriate training programs in the coming years. Thus, we should be thinking of interventions to promote health literacy and self-care for empowerment to prevent or provide early diagnosis and timely treatments to reduce the incidence and death rate of prostate cancer.

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Article Keywords
Health Literacy, Self-Care, Men's Health, Prostate Cancer, Cancer Prevention

Ethical code
ir.iums.fmd.rec1396.9513107001

Acknowledgment
This article was adopted from the MSPH thesis that was written by Mohammad Ali Joorsaraei Alashti which was approved as thesis research project financial support by Vice Chancellor for Research and Technology of Iran University of Medical Sciences under grant NO.96-03-27-31832 and received financial support. Hereby, the cooperation of all the employees of the municipality of Tehran who participated in this study is wholeheartedly appreciated.

Conflict of Interest
There is no conflict of interest to be declared.

Article History
Received: 02 August 2018
Accepted: 15 September 2018
Published: November-December 2018

Citation
Mohammad Hossein Taghdisi, Mahnaz Solhi, Mohammad Ali Joorsaraei Alashti, Aghafatemeh Hosseini. Investigating the effect of health literacy and self-care on preventing prostate cancer in Tehran male municipality staff in 2017. *Medical Science*, 2018, 22(94), 525-528

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