

Effectiveness of an Educational Program on Employees Knowledge concerning Contributing Factors and Early Detection for Prostate Cancer in Baghdad University Colleges in Bab-Almudam

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ABSTRACT

Background: Prostate cancer is one of the most prevalent diseases among men and its one of the major health problems in developing countries. It has a large impact on the quality of patients' life and their caregivers and imposes heavy costs on them.

Aim: To evaluate effectiveness of an educational program on employees knowledge concerning contributing factors and early detection for prostate cancer.

Methodology: This is a quasi-experimental study carried out on 160 employees working in colleges of Baghdad University in bab-Almudam region, in Baghdad City, Iraq. This study starts from 5th, October 2019 to 10th March, 2021. Aged 18 to 63 years (the subjects 80 experimental and 80 control groups). Research tool (Structured knowledge questionnaire) was developed by researcher through review of literature and previous study restated topics and submitted to 16 experts from various specialists for validity. Reliability was calculated by Cronbach alpha method and it was 0.86 to assess knowledge of males regarding contributing factors and early detection for prostate cancer. Data collection was done in December 2019 to January 2020. The obtained data was analyzed and interpreted in terms of objectives and research hypotheses. Analysis was done by using descriptive and inferential statistics.

Results: The study findings indicated that, there were highly significant differences between study and control groups and also between pre and posttests in study group in overall main domains related to employees' knowledge concerning contributing factors and early detection for prostate cancer. However, no significant change was observed in the control group.

Conclusions: The results of the current study revealed effectiveness of the educational program in increasing the knowledge about prostate cancer and participation in early detection methods testing in men over 40 years of age.

Keywords: Effectiveness, Educational Program, Employees', Knowledge, Early Detection, Prostate Cancer

INTRODUCTION

Prostate cancer is one of the top diseases killing men world over and is the second common cancer that affects men and the second leading cause of cancer deaths about 1,276,106 new cases and causing 358,989 deaths (3.8% of all deaths caused by cancer in men) in 2018 ⁽¹⁾. Prostate cancer may be asymptomatic at the early stage and often has an indolent course, and may require minimal or even no treatment. However, the most frequent complaint is difficulty with urination, increased frequency, and nocturia, all symptoms that may also arise from prostatic hypertrophy. More advanced stage of the disease may present with urinary retention and back pain, as axis skeleton is the most common site of bony metastatic disease⁽²⁾. Our rationale for including males aged 18 to 65 years is to examine their Knowledge and attitudes and intention toward prostate cancer screening to advise education initiatives for males so that informed decisions can be made in regards to screening at later ages. The information gathered from this study will increase our understanding of the factors influencing men's intentions to screen for prostate cancer, This study is necessary because it will serve as a baseline for accurate planning to be embarked upon by concerned bodies. This study would also give an indication of what may be expected in the general populace, since men in an academic environment are expected to have more access to information.

METHODOLOGY

The effect of the prostate cancer educational program on the level of knowledge and early detection for prostate cancer among employees' men in Colleges of University of Baghdad, Iraq was examined using a quasi-experimental, with non-equivalent control group design. A Purposive sampling technique was used to recruit the participants, who working in colleges of university of Baghdad in Bab - Almudam, Region, Baghdad, Iraq. This study start from 5th, November 2019 to 10th March, 2021. The inclusion criteria for participation in the study included (a) men aged 18 years and above (who working in colleges of university of Baghdad; (b) able to read, hear, understand, and speak the Arabic language. Men with a previous diagnosis of PC are excluded from the study, because of possible confounding knowledge of the disease, thus, it is considered as the only exclusion criterion. The total study sample consists of 160 participants, 80 participants in each group. All study activities and educational program implementation were conducted in Colleges of university of Baghdad in Bab Almudam sector, Baghdad City. The study method and protocol were reviewed and approved by the ethical committee in the faculty of nursing at the University of Baghdad. A structured questionnaire was utilized for collecting the data to achieve the purpose of the study. The questionnaire started with a brief statement concerning the

purpose of the study, informed consent, and followed by two parts. Part one is the demographic, which consists of five items related sociodemographic characteristics'. The second part consists of 28 items related knowledge concerning contributing factors and early detection methods of prostate cancer. A translated version of the knowledge of the PC screening questionnaire developed by Weinrich et al.,⁽³⁾, was used to measure participants' knowledge about PC and PCS. 12 items and other structured knowledge questionnaire containing (16) questions were developed by researcher based on the existing resources to assess knowledge of employee regarding anatomy and concept of prostate gland, risk factors, sign and symptoms of prostate cancer. Were used to measure knowledge about PCS limitations, PC symptoms, PC risk factors; side effect from treatment and screening age guidelines. Written informed consent was obtained from all participants who agreed to participate in the study. All participants were reviewed by the primary researcher to ensure the eligibility of the participants to participate in the study. After that, the written informed consent was obtained from each participant. Then, the primary researcher collected the data concerning the knowledge, and early detection methods at zero weeks, these data were collected from 160 employees' for both groups. After that, the primary researcher implemented the prostate cancer educational program for 80 participants. One month after the program application, the primary researcher collected the posttest data from 160 participants. An overall knowledge score was computed by totaling the number of correct responses, with a possible range from 28 to 56, and higher scores indicating greater knowledge. Items were tested for internal consistency reliability in the current study and the results revealed that Cronbach's α coefficient was 0.86, prior to PC educational program. The prostate cancer educational program took approximately 1-hour educational session consisting of a 30-minute lecture that was conducted by the researcher, a booklet and brochure, that summarized the material provided by an investigator and a 30-minute interactive group discussion. The SPSS version 21 was used to analyze the study data. Descriptive statistics were used to describe the sample characteristics. Independent sample t-test was used to assess whether or not there were statistically significant differences in the level of knowledge scores between study and control group after the implementation of the prostate cancer educational program.

RESULTS

This table reveals that the frequency counts for selected variables for two groups (study versus control) were equal in number. Ages of the participant are ranged from 18 to 63 years old (mean age of the case group was 42.59 ± 9.681 and the mean age of the control group was 38.59 ± 9.816), respectively at age group (38-47) for study

group and (28-37) for the control group. Regarding marital status (77.5%) in the study group were married and the (81.2%) the control group were also married. More than one third (46.2%) of study group's participants were graduated from doctorate education level also high percentage (37.5%) of the control group was graduated from college education level. Regarding of the family history of prostate cancer, the result shows the majority of the participant's don't have family history related cancer of prostate in the study group (87.5%) and the control group (91.2 %), (7.5%) of participants in study group father had prostate cancer and (5%) in control group also father also. The majority of them in both groups were lived in urban areas. Finally contingency coefficients test showed that there was no significant difference between the experimental and control groups in terms of age group ($P=0.272$), marital status ($P=0.160$), level of education ($P=0.429$), family history related to PCa ($P=0.154$), and residence ($P=0.712$) between two groups at ($p>0.05$).

This table illustrated descriptive assessment of specific areas of **PCa - Q** for both study and control groups before and after applying the educational program to assess studied samples' knowledge regarding contributed factors and early detection. The results demonstrated that all areas were poor levels of the study group and their means of score as follows (1.147, 1.25, 1.11, and 1.178) respectively. Regarding control group results showed that poor level and their means of score as follows (1.132, 1.221, 1.125, and 1.162) respectively as regard to before implementation of the program. Also this table showed results after applying program for study group illustrated good level for causes & risk factors of prostate cancer and signs and symptoms of prostate cancer, areas as follows (1.68 and 1.67) respectively, and the fair level for Anatomy, physiology & functions of prostate gland, and diagnosis and early detection methods areas (1.61 and 1.57) respectively. While control group showed poor level for all areas of knowledge follows respectively (1.145, 1.13, 1.156, and 1.175).

This table 3 illustrates that there are highly significant mean differences between pre-test and post-test periods of study group regarding knowledge areas after applying the educational program at p value ≤ 0.01 . While there are no significant mean differences between pre-test and post-test periods of control group regarding knowledge areas after applying educational program at p value ≤ 0.05 .

Table 4 illustrates that there are no significant differences regarding specific knowledge areas between the study and control groups of the current study before applying educational program at p value ≤ 0.05 . While there are highly significant mean differences concerning specific knowledge areas between the study and control groups after applying the educational program in the post-test period at p value ≤ 0.01 .

Table 1: Distribution and Comparison of the Samples by Demographic Characteristics of the Study and Control groups

Demographic Variables	Study Group (n=80)			Control group (n= 80)		C.S. P. Value
	Groups	F.*	%	F.	%	
Age	18-27	2	2.5	10	12.5	C.C .272 NS
	28-37	24	30.0	30	37.5	
	38-47	27	33.8	23	28.8	
	48-57	22	27.5	13	16.2	
	≥ 58	5	6.2	4	5.0	
	Total	80	100.0	80	100.0	
	MS±SD = 42.59±9.681				MS±SD=38.59± 9.816	
Marital status	Single	15	18.8	12	15.0	C.C .160 NS
	Married	62	77.5	65	81.2	
	Divorced	2	2.5	3	3.8	
	Separated	1	1.2	0	0	
	Total	80	100.0	80	100.0	
Educational level	Primary	2	2.5	5	6.2	C.C .429 NS
	Intermediate	3	3.8	7	8.8	
	Secondary	18	22.5	17	21.2	
	Diploma	0	0	9	11.2	
	College	15	18.8	30	37.5	
	Master	5	6.2	4	5.0	
	Doctorate	37	46.2	8	10.0	
Total	80	100.0	80	100.0		
Family history relatedto PCa	Yes	10	12.5	7	8.8	C.C .011 NS
	No	70	87.5	73	91.2	
	Father	6	7.5	4	5.0	
	Brother	1	1.2	1	1.2	
	Uncle	3	3.8	2	2.5	
Residence	Urban	78	97.5	75	93.8	C.C .712 NS
	Rural	2	2.5	5	6.2	

Frequency, %= percentage, number, MS = mean score, SD= standard deviation, C.S. = comparison of significance, NS=non-significant, CC=contingency coefficients

Table 2: Descriptive Analysis of Employees' Specific Knowledge Areas of Prostate Cancer Screening Questionnaire toward Contributing Factors and Early Detection for Study and Control Groups Before and After Applying the Program

Specific knowledge areas of PCa S-Q	Max. Score	Pre-test period						Post- test period					
		Study Group (n=80)			Control Group (n=80)			Study Group(n=80)			Control Group(n=80)		
		M.S	SD	Ass	M.S	SD	Ass	M.S	SD	Ass	M.S	SD	Ass.
Anatomy, physiology & functions of prostate gland	16	1.147	.178	P	1.132	.0828	P	1.61	.166	F	1.145	.113	P
Causes & risk factors of prostate cancer	26	1.25	.124	P	1.221	.0950	P	1.68	.109	G	1.23	.103	P
Signs and symptoms of prostate cancer	4	1.11	.210	P	1.125	.218	P	1.67	.297	G	1.156	.233	P
Diagnosis and early detection methods	10	1.178	.188	P	1.162	.174	P	1.57	.205	F	1.175	.140	P

PCA-Q = (Prostate cancer questionnaire) *M.S= mean of score, SD=standard deviation, Ass. =level of assessment, P=Poor, F=Fair, G=Good

Table 3: Comparison of Areas of Knowledge toward Contributed Factors and Early Detection of Prostate Cancer between Pre-test and Post-test Period for The Study Group and The Control Group

Area of knowledge	Group	Pre-test (n=30)		Post-test (n=30)		Paired t Test statistics		
		M.S	SD	M.S	SD	T value	Df	Sig.
Anatomy, physiology & functions of prostate gland	St	9.18	1.430	12.89	1.331	18.290	79	0.000 HS
	Co	9.06	.663	9.16	.906	.970	79	0.335 NS
Causes & risk factors of prostate cancer	St	16.34	1.622	21.90	1.428	23.784	79	0.000 HS
	Co	15.88	1.236	16.025	1.340	1.022	79	
Signs and symptoms of prostate cancer	St	2.22	.420	3.34	.594	13.335	79	0.000 HS
	Co	2.25	.436	2.31	.466	2.295	79	.024 NS
Diagnosis and early detection methods	St	5.89	.941	7.85	1.020	11.537	79	0.000 HS
	Co	5.81	.872	5.875	.700	962	79	0.339 NS

St= study group, Co= control group, *M.S. = Mean of score, SD=Standard deviation, DF=degree of freedom, sig. =level of significance, HS= highly significant, NS = non-significant

Table 4: Comparison of Employees' Knowledge toward Contributed Factors and Early Detection of Prostate Cancer for Study and Control Groups Pre and Post Applying the Program

Knowledge areas of PCa S-Q	Test period	Study Group (n=80)		Control Group (n=80)		Independent t Test statistics		
		M.S	SD	M.S	SD	t test value	df	Sig
Anatomy, physiology &	Pre	9.18	1.430	9.06	.663	.638	158	0.524 NS

functions of prostate gland	Post	12.89	1.331	9.16	.906	20.689	158	0.000 HS
Causes & risk factors of prostate cancer	Pre	16.34	1.622	15.88	1.236	2.028	158	0.044 NS
	Post	21.90	1.428	16.02	1.340	26.825	158	0.000 HS
Signs and symptoms of prostate cancer	Pre	2.22	.420	2.25	.436	.369	158	0.712 NS
	Post	3.34	.594	2.31	.466	12.137	158	0.000 HS
Diagnosis and early detection methods	Pre	5.89	.941	5.81	.873	.523	158	0.602 NS
	Post	7.85	1.020	5.875	.700	14.277	158	0.000 HS

M.S= mean of score, SD=standard deviation, DF=degree of freedom, sig= significance levels, NS= non-significant, HS= highly significant

DISCUSSION

Regarding socio-demographic characteristics which are presented in table (1) showed the eligible sample for this study consisted of (80) adult men, the frequency counts for selected variables for two groups (study versus control) were equal in number. The current outcome can be supported by research conducted by researcher who stated that the results of the study in both groups were based on demographic characteristics such as age, marital status, level of education, and prostate cancer family history. There was no significant difference at ($p > 0.05$) between the two groups related to the variables mentioned⁴. Our age findings are similar to the results of the pre-test/post-test design study conducted by Capanna, et al. to evaluate the effectiveness of a prostate cancer educational intervention in a population of men living in any of the four parishes in the western region of Jamaica. The males ranged from 40-93 years of age, with a mean age of 56.8. Sixty percent of males were between the ages of 40-59, with approximately the same number of participants between the ages of 40-49 and 50-59⁵.

According to current findings of study which showed a descriptive assessment of specific areas of prostate cancer knowledge questionnaire for both study and control groups before applying the educational program to assess studied samples' knowledge regarding prostate cancer table (2). Results of the study found that specific areas of knowledge before applying program demonstrated that all areas (anatomy, physiology & functions of prostate gland, causes & risk factors of prostate cancer, signs and symptoms of prostate cancer, and diagnosis and early detection methods) were poor levels of the study and control group and their means of score as follows (1.147, 1.256, 1.11, and 1.178) (1.132, 1.221, 1.125, and 1.162) respectively as regard to before implementation of the program. Saleh, and colleagues carried out a quasi-experimental design study in Jordan to deliver educational interventions for (76) adult men about PCa. They before giving intervention, they assessed samples knowledge concerning prostate cancer and intention to screen. The results indicated that most study participants were confirmed to have poor knowledge of prostate cancer. So that these results come in total agreement with the current results of the study⁶. Results were similar to those reported by Jeihooni, who applied an educational teaching program for 300 patients with prostate cancer and evaluated the effect of the program on knowledge and attitude screening behaviors. Scores of knowledge and attitude about the prostate gland were at a lower level before the teaching intervention, and hereditary risk factors, environmental and lifestyle risk factors, early symptoms of prostate cancer and screening tests were not sufficient enough. Inadequate knowledge and attitude regarding health can be attributed to a lack of adequate

educational programs released by mass media, meetings not being held by health authorities, underestimating the preventive measures, and a focus on treatment⁷. The findings of the present study can be supported by researchers used the quasi-experimental one group pre-test, post-test design study design to evaluate the effectiveness of community-based education program in increasing the knowledge of males regarding prostate cancer. The outcome found out, none of the male had the very best knowledge regarding prostate cancer, and (92 %) had bad knowledge before the community based education program⁸. These findings are verified by the study findings carried out by Ernest, which explored men's knowledge, beliefs and practices in Cameroon with regards to late-stage diagnosis of PCa, and which identified factors affecting the screening decision. Data review reveals that PCa information differences have been shown in different ways, such as not understanding the male anatomy affected by this disease and unclear as to its symptoms and signs. There were also some myths about the condition, which were related to untreated vein diseases by some of the participants⁹.

Effectiveness of the educational program is clearly observed through the results of Table (3). This table illustrates that there are significant mean differences concerning specific knowledge areas between the study and control groups after applying the educational program in the post-test period at p value ≤ 0.01 . These findings are agreement with outcomes obtained from interventional study conducted by Jeihooni, et al., in Iran. The results of the study showed that based on independent t test, there was indeed a significant difference 6 months after the intervention ($P < 0.05$)⁸.

Effectiveness of the educational program is clearly observed through the results of Table 4. This table illustrates that there are highly significant mean differences between pre -test and post-test periods of the study group at p value ≤ 0.01 related to specific knowledge areas which are (Anatomy, physiology & functions of prostate gland, Causes & risk factors of prostate cancer, signs and symptoms of prostate cancer and diagnosis and early detection methods). The results of current study supported the effectiveness of educational program in gaining knowledge among employees' in Colleges of University of Baghdad, in Baghdad City, Iraq at one month after the implementation of the educational program. This finding is consistent with the findings obtained of many studies^{4,10,11,12}. Saleh, et al., carried out a quasi-experimental, with nonequivalent control group design to evaluate the effect of the prostate cancer educational program on the level of knowledge and intention to screen among Ammanian men in Jordan. The results of the current study showed that the change in the mean knowledge scores 8.7, $p < 0.0001$ was statistically

significant at 1 month after the application of the program in the experimental group compared to the control group¹⁰. Molazem, et al., carried out clinical trial study in Iran among old men, study samples were randomly divided into an case (n=48) and a control (n=45) group, to explore 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 city. The results showed that most of the participants in the case group had moderate and good levels after educational intervention, but there was not seen any significant difference in the control group⁴. These results can be supported by the results obtained from another study done by Ashorobi, et al., who stated that using a pre/post video test format demonstrated that knowledge about prostate cancer increased following the educational video among study participants as the percentage of men that correctly answered 8 of 10 questions correctly¹³.

CONCLUSIONS

In conclusion, the results of the current study show that the study group participants have significant improvement in post-test knowledge scores about contributing factors and early detection prostate cancer screening and intention to screening. The study recommended encourage of male employees' in University of Baghdad to performing prostate cancer screening. They should make screening for prostate cancer as part of their routine medical check-up.

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