Effect of Prostatic Cancer Educational Program on Patients' Health Outcomes

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ABSTRACT

Background: Prostate cancer (PC) remains the leading cause of cancer-related mortality among males globally, necessitating accessible and comprehensive health education to improve diagnostic awareness, preventive measures, and overall patient perception as health outcomes. **Aim:** To evaluate the effect of a prostatic cancer educational program on patients' health outcomes. **Method:** A quasi-experimental design was employed, involving a purposively selected one group of 60 patients, assigned through a simple random sampling technique. The study employed three tools to collect data; **Tools: I)** Structured interview questionnaire, capturing demographic and clinical profiles alongside Prostate Cancer Knowledge (PCK); **Tool: II):** Prostate Cancer Preventive Practices Questionnaire (PCPPQ) – evaluating adherence to preventive strategies. **Tool: III):** Prostate Cancer Perception Questionnaire – measuring attitudinal shifts and disease-related understanding. The study was conducted within the urology departments of Suez Canal and Ain Shams University Hospitals, Egypt. **Results:** A statistically significant improvement was observed in patients' knowledge base, adherence to preventive measures, and overall perception regarding prostate cancer management among pre (8.83±2.58, 18.53±2.40, 24.68±4.55) immediately post (19.20±2.16, 30.25±4.94, 37.38±4.58) and one month (14.06±2.15, 23.5±5.04, 32.64±3.08) following the educational program implementation respectively. **Conclusion:** The integration of structured educational interventions presents a transformative impact on the health outcomes of prostate cancer patients; with enhanced disease comprehension, strengthened commitment to preventive practices, and improved perception of management strategies emphasize the pivotal role of targeted health education. **Recommendations:** Development of accessible education frameworks tailored to diverse patient populations is imperative to fostering long-term positive health outcomes.

Keywords: Educational Program, Health Outcomes, Prostatic Cancer

Introduction:

Prostate cancer (PC) impacts the organ that controls sexual function. Due to the prostate gland's location and the delicate nature of therapy, men with prostate cancer frequently experience a variety of challenges that can impact psychological

states and heighten feelings of stress (**Abd-Almonaem et al., 2021**). In 2020, 1,800,000 new cases of prostate cancer were detected worldwide, making it the most common cancer and the sixth leading cause of cancer-related mortality among men (**Wang et al., 2022**). With an annual incidence of almost 200 cases per 100,000 people, PC is the second most common cancer in men in North Africa (**Rawla, 2019**). In Egypt, prostate cancer ranks the fifth in terms of incidence, accounting for 11% of male malignancies and the second leading cause of mortality, with an annual incidence of 25/100,000 (**WHO, 2022**).

The exact cause of prostate cancer is not easy to determine, but major risk factors for the disease include age, race, positive family history, diet, obesity, and smoking are related to the disease's pathogenesis (**American Cancer Society, 2020**). Early detection of prostate cancer can help lower death rate among asymptomatic men and offer a chance to develop cost-effective treatment for the public (**Centers for Disease Control and Prevention, 2020**).

Prostate cancer does not present with specific symptoms, but various screening methods aid in early detection. Two widely used techniques for identifying prostate cancer in its early stages are the Digital Rectal Exam (DRE) and the Prostate-Specific Antigen (PSA) laboratory test. Imaging tests like MRI and prostate biopsy are valuable tools for confirming and definitively diagnosing prostate cancer. A prostate biopsy involves the extraction of small tissue samples from the prostate, guided by transrectal ultrasound, for detailed microscopic examination (**El Mezayen et al., 2022**).

The serious consequences of PC underscore the significance of preventative measures, as 57% of all new cancer cases worldwide are caused by lack of knowledge, preventive measures, unfavorable attitudes, and an extended lifespan (**Lortet-Tieulent et al., 2020**). Financial difficulties, lack of health insurance, poor health-seeking behaviors, and lack of resources, expertise, or cultural familiarity are all identifiable obstacles to the early detection and screening of PC. The use of health and preventive services is severely hampered by these obstacles, as well as fear of cancer screening procedures and lack of knowledge about health prevention (**Persaud et al., 2021**). Prostate cancer risk can be decreased by making some lifestyle changes such as quitting smoking, exercising, and controlling weight. According to **Ferrlay et al. (2018)**, early prostate cancer screening and the use of additional indicators may help prevent over diagnosis.

Prostate cancer treatment involves various approaches, including active surveillance, surgery, radiation therapy, hormone therapy, chemotherapy, and immunotherapy. The choice of treatment depends on the stage of the disease, patient health, and preferences. Nurses play a crucial role in monitoring disease progression, managing treatment side effects, and providing emotional support. Nursing care includes: Assessing symptoms, monitoring diagnostic tests and treatment responses, providing education on managing side effects and preventing

complications, and supporting health by addressing anxiety and depression related to diagnosis and treatment (**Cherry, 2024**).

A health outcome refers to the result of medical care, interventions, or health-related behaviors on an individual's or population's well-being. It encompasses various factors, including changes in health status, disease progression, recovery, and overall quality of life as evidenced by increased knowledge level about the disease, enhanced adherence to preventive practices to control the disease and prevent complications, and improved perception toward disease management. Health outcomes can be measured through indicators such as effectiveness of treatments or intervention, increase knowledge level or perception, and improvements in physical or mental health (**Definitive Healthcare, 2025).** Perception can be described as the ability to see, hear, or become aware of something through the senses as well as the process by which something is seen, comprehended, or explained. Everywhere, perception takes place (**Kamberi & Jaho, 2020**).

Educational programs help patients understand their condition, treatment options, and self-care strategies. These programs focus on: Increasing awareness about prostate cancer and its risk factors, improving adherence to treatment plans and preventive measures, and enhancing coping mechanisms to reduce anxiety and improve quality of life. The impact of treatment and education on patient outcomes includes: Better symptom management and reduced complications, Improved quality of life through effective coping

strategies, Higher treatment adherence, leading to better prognosis, and Enhanced psychological well-being (**Bhattad & Pacifico, 2022**).

Significance of the study:

Prostate cancer accounts for 15% of all male malignancies and is the most frequent cancer in men in 112 countries (**James et al., 2024**). The number of new cases of prostate cancer would grow from 1.4 million in 2020 to 2.9 million by 2040 (**James et al., 2024**). Despite the fact that prostate cancer has a favorable survival rate in comparison to other cancers, psychological distress, suicide, and despair are widespread and can persist for a long period following diagnosis. This highlights the necessity of effective therapies that reduce the psychosocial impact of prostate cancer from the moment of diagnosis till long-term survival (**Crump et al., 2023**).

Egypt has an age-standardized incidence rate of 13.9 per 100,000, with an expected 10,532 prevalent cases (over the previous 5 years) and 2,227 fatalities across all ages, according to the Global Cancer Observatory (**GLOBOCAN**, **2020**). The anticipated number of prostate cancer incident cases and fatalities in Egypt is predicted to increase to 9607 cases and 4978 deaths by 2040. Additionally, due to population expansion and aging, the global burden of prostate cancer is predicted to increase to about 2,426,825 new cases and 739,861 deaths by 2040 (**Culp et al., 2020**).

Programs for education can greatly improve patients' knowledge of prostate cancer, including its symptoms, risk factors, and the need of early identification. This enhanced awareness may result

in more effective health-seeking practices and prompt physician consultations. Educational Programs can promote lifestyle modifications and routine screenings by teaching patients about preventative measures, which are essential for the early identification and prevention of prostate cancer complications. Accordingly, patients who are knowledgeable about their illness are more likely to follow their treatment regimens and medical recommendations which might result in better health outcomes, increased survival rates, and total cost savings for the healthcare system.

It is possible to customize the educational programs to target underprivileged groups who might not have easy access to health care information. In addition to ensuring that every patient has the chance to gain from early identification and treatment, this can help lessen health inequities. By concentrating on these areas, the study can offer important insights into how educational interventions might be tailored to enhance patient outcomes and support the broader effort to combat prostate cancer complications.

Study aim:

The current research study's aim is to evaluate the effect of the prostatic cancer educational program on patients' health outcomes through the following:

1. Assess knowledge, behavioral change practices, and perception levels for patients with prostate cancer as an output for patients' outcomes

2. Develop and implement a prostate cancer educational program.

3. Evaluate the effect of a prostate cancer educational program on the patients' health outcomes

Research hypothesis:

The implementation of an educational program for patients with prostate cancer will lead to significant improvement in their health outcomes.

Design:

The current study used a quasi-experimental approach (pre-test/post-test) to achieve its aim. An approach to study that enables the development of a cause-and-effect link between dependent and independent variables is known as a quasi-experimental design **(Thomas, 2022).**

Setting:

The urology departments of Ain Shams University Hospitals and Suez-Canal University Hospitals served as the study's destinations. These are two of the biggest educational hospitals, and they have the staff and cutting-edge equipment needed to provide patient treatment.

Subjects:

A purposive sample of adult men aged 30-60 with prostate cancer, who were free from cognitive and mental disabilities, able to communicate, and willing to participate in the study are included. The sample size was determined using the Steven and Thompson equation and SPSS software version 32, with a significance level of 0.05 and 95% power **(Thompson, 2012).**

$$n = \frac{N \times p\,(1-p)}{[(N-1) \times (d^2 \div Z^2) + (p\,(1-p))]}$$

n=Sample size=71

N= Total society size = (546).

D= Error percentage= (0.05).

P= percentage of availability of the character and objectivity (Probability) = (50%).

Z= the corresponding standard class of significance (Confidence level) 95%= (1.96).

$$n = \frac{71 \times 0.5\,(1-0.5)}{[(71-1) \times (0.05^2 \div 1.96^2) + (0.5\,(1-0.5))]} =$$

60.01 $\simeq$ 60 patients

Data collecting tools:

The tools used to gather the data required for this study are three:

Tool (I): Structured Interview Questionnaire that was developed by researchers after reviewing relevant current literature and divided into three parts:

1st Part: Personal data, including data about age, gender, marital status, education level, occupation, place of residence, and family history of PC **(Yeboah-Asiamah et al., 2017; Jocham & Miller, 2019)**.

2nd Part: Clinical data: It was adapted from **(Jack, 2017; Yeboah-Asiamah et al., 2017; Jocham& Miller, 2019)** and includes items about comorbid diseases (hypertension, diabetes, respiratory diseases, and kidney diseases), date of disease onset, stages of the disease, age at the onset of illness, and type of treatment the patient received.

3rd Part: Prostatic Cancer Knowledge (PCK): It was adapted from **(Abd-Almonaem et al., 2021; Cowman et al., 2021; & El Mezayen et**

al., 2022) and comprises 10 closed-ended questions about the definition, cause, symptoms, indicators, risk factors, treatment of prostate cancer, and nursing management. This tool needed from 15 to 20 minutes to complete.

Scoring system:

A three-point Likert scale with the options "agree," "don't know," and "don't agree" were used to grade the questions. The positive statements were rated as agree receiving one point, don't know and don't agree receiving zero, whereas the negative statements were scored as "don't agree" receiving one point, "don't know," and "agree" receiving zero. Ten points is the highest possible score. Total score was categorized as follows:

- **High level of knowledge:** Patients with scores of six points or higher from the total score (≥60%)

- **Low level of knowledge:** Patients with scores below six points from the total score (< 60%). **(Abd-Almonaem et al., 2021)**.

Tool (II): Prostatic Cancer Preventive Practices Questionnaire (PCPPQ): The researchers constructed it by check in pertinent literatures **(Brookman-May et al., 2019; Vasconcelos et al., 2019 & Rock et al., 2020)** to evaluate the prostate cancer and its complications prevention methods used by respondents. This 12-item survey evaluated the frequency with which respondents engaged in specific preventive behaviors in their daily lives, such as diet, seeking medical professional assistance, and lifestyle changes like quitting smoking, exercising, getting

enough sleep, managing stress, and losing weight. The tool needed from 15 to 20 minutes to be completed.

Scoring system:

Participants were asked to rate their answers on a 4-point Likert scale that went from never (1) to always (4). Scores totaled per respondent; the maximum score is 48 points; the minimum score is four points. Better preventative behaviors are reflected in a higher overall score. It was categorized as follows:

- **Good preventive practice:** Patients with scores of 29 points or higher from the total score (≥60%)

- **Poor preventive practice:** Patients with scores below 29 points from the total score (<60%) (**Rock et al., 2020).**

Tool (III): Prostatic Cancer Perception Questionnaire: It was adapted from **Yeboah-Asiamah et al., 2017)**. Thirteen items covering causes, risk factors, severity, and therapy were used to gauge survey respondents' perceptions of PC. Three-point Likert scales were used to rate the items: "agree," "don't know," and "disagree." The tool needed from 15 to 20 minutes to be completed.

Scoring system:

The scale was scored based on positive statements, with "agree" receiving one point, "don't know" and "don't agree" receiving zero. For negative statements, the scores were "disagree" received one point, "don't know" and "agree"

received zero. Each respondent's score was added up, and the highest possible score is 13 points. Perception was categorized as follows:

- **Good perception:** Patients with scores of seven points or higher from the total score

- **Poor perception:** Patients with scores below seven points from the total score (**Yeboah-Asiamah et al., 2017)**.

Tools validity:

All of the research tools were translated by the researchers and a language expert into Arabic before being presented to a bilingual group of experts in the field of medical-surgical nursing (two professors & three assistant professors) at Helwan University and the Suez Canal University, Faculty of Nursing for testing face and content validity. Minor adjustments were made, and the tools were deemed valid from their perspective.

Tool's reliability:

The Cronbach's alpha coefficient reliability test showed good internal consistency of the tool, Prostatic Cancer Knowledge Questionnaire (PCKQ) with a score of 0.90; Prostatic Cancer Preventive Practices Questionnaire (PCPPQ) scored 0.79; and Prostatic Cancer Perception Questionnaire scored 0.86.

Pilot study:

Prior to data collection, a pilot study was conducted on six patients, or 10% of the patients under research (6 patients), to assess the instruments' applicability, clarity, and practicality and to gauge how long it would take to complete

them. Because the data gathering techniques were altered, the pilot was not included in the research. It implemented in April 2024.

Ethical considerations:

The Scientific Research Ethics Committee of Helwan University's Faculty of Nursing officially authorized the intended research's conduct on March 18, 2024, study number 60 received ethical approval. Patients were given information about the research aim, and their involvement before completing the informed consent form, and participation in the study was entirely voluntary. Ethical considerations were covered, including the study's nature and goal, the participants' right to withdraw at any time, and the confidentiality of the data, which was kept private and accessible only with their consent. Participants' ethics, morals, culture, and beliefs were all honored.

Fieldwork:

The assessment, planning, implementation, and evaluation phases comprised the four stages of the current study field work. The following phases were implemented between April 2024 and December 2024.

A. Phase of assessment

Individual interviews were conducted with the study participants before the program implementation in order to establish positive rapport. The data was gathered using the pre-mentioned instruments during individually structured interviews in order to get baseline information at the pre-intervention phase. The researchers were available at the morning, and afternoon shifts in the previous setting two days a week, started by provided a brief overview of the program's purpose and activities.

B. Phase of planning:

The educational program was designed with the requirements of the patients under the study. The educational program, which took the kind of printed Arabic booklet, included a variety of subjects to improve the patients' knowledge, practice, and perception regarding prostate cancer prevention and management; using several teaching techniques, media, and evaluation techniques. This phase needed one month to complete (April, 2024).

C. Phase of implementation:

This phase was initiated in April 2024, as all of the patients under study participated in sessions where an educational program was presented, by dividing the patients into smaller groups composed of two to four patients in each subgroup. The same materials and instructional techniques were given to all groups: PowerPoint presentation, lecture, handout (booklet), brochure, discussion, images, and videos. The four sessions of the instructional program lasted from thirty to forty-five minutes each.

The theoretical sections consisted of two sessions**: session one** "Basic information about prostate cancer." A summary of the prostate gland, definition, risk factors, causes, screening, symptoms, diagnosis, grading system for prostate cancer, potential treatment options and their side effects, follow-up care, and preventive measures were all covered in the first session. **Session two,** "Preventive health practices for prostate cancer, and its complications" The advantages, significance of prostate cancer screening, and components of prostate cancer prevention health practices.

The two practical sections were carried out using actual items, re-demonstration, and demonstration. The **first session** included skills to avoid getting sick and decreasing risk as: The significance of physical exercise and mobility in preventing prostate cancer and its complications, strategies for preserving physical vitality, crucial advice for exercising, carrying out everyday tasks, and dedication to self-care.

Commitment to good health practices: quitting smoking, understanding the value of vitamin D and sun exposure, having sex, resting, and sleeping, seeking advice, acting appropriately when symptoms are out of the ordinary, and raising awareness and education to dispel false negative health concepts. Prostate cancer screening options; introduction to early detection of prostate cancer; factors for choosing screening for early detection of prostate cancer; and the impact of early detection.

The second session covered the following topics: the components of healthy diet, dedication to a healthy diet, and the significance of appropriate nutrition in preventing prostate cancer. Social communication with family and friends, tying healthy habits to personal objectives, gaining new skills that make people feel good, and avoiding certain things to prevent prostate cancer are examples of lifestyle behaviors.

Psychological well-being includes understanding the connection between prostate cancer and anxiety, nervous tension, stress, and psychological state; taking a positive outlook on life; trying to maintain self-control in the face of psychological issues and pressures; practicing relaxation techniques to lessen anxiety and stress;

and finding strategies to cope with everyday stressors. The implementation phase began in May 2024 and finished in September 2024, taking four months to complete.

D. Phase of evaluation:

This final stage sought to evaluate how the prostate cancer education program affected the health outcomes of the patients. The evaluation was carried out twice as follows: First time was immediate post-test after the educational program is implemented utilizing tools I (3rd part), II, and III. And the second time, using the same instruments, one month after the program was implemented. Data gathering took place between October 2024 and December 2024.

Statistical analysis:

The data was verified for correctness and completeness at first, then analysis and tabulation of the data were done using the Statistical Package for Social Sciences (SPSS version 32.0), which was created by IBM in Chicago, Illinois, USA. Categorical variables are summed up using descriptive statistics, which include percentages and numerical values. For numerical values, mean scores with standard deviation (SD) were also computed, and significant value of $p \leq 0.001$ was established, with a significance threshold of $p < 0.05$. The link between variables is ascertained by correlation analysis, while means are compared using the ANOVA test (F). Variable correlations are examined using Spearman rank correlation coefficients (r) and related p-values.

Result:

Table 1: indicates that 50.4 ± 6.2 representing 50% of the patients under study are between the ages of 50 and 60. It was evident that 63.33% of

the patients are married. It was shown that 55% of the patients in the study had educational backgrounds below the secondary level. 70% of the patients in the study are unemployed. 61.67% of the patients are from rural regions, and 81.67% had no family history of prostate cancer.

Table 2: illustrates that 75% of the patients in the study have both DM and HTN as comorbid diseases. Furthermore, 50% of the patients in the study experienced the start of their disease between the age of 50 and 60, and 71.67% of the patients said that the condition was detected within one year. Additionally, 50% of the patients in the study were in Stage (II) of the illness, and 60% of the patients had surgical treatment.

Table 3: Shows that, throughout all the study stages, there were statistically significant variations in the patients' levels of knowledge preventative practices about prostate cancer, and

perception with (P < 0.001), with the immediate-post phase had the greatest mean levels of all the study variables.

Table 4: reveals the presence of a strong positive statistically significant correlation between preventative practice, perception, and level of knowledge, with a P value of 0.000**.

Table 5: shows a statistically significant relation between the level of knowledge of the patients under study and marital status and education level. Also, there is a statistically significant relation between the patient's adherence to preventive practice measures and the patients' educational level, place of residence, family history of PC, and age. Furthermore, there is a statistically significant relation between the studied patients' perception and level of education.

Table 1: Frequency and percentage distribution of the studied patients according to their personal data (N=60)

Personal data	N	%
Age category:		
- 30-39	10	16.67
- 40-49	20	33.33
- 50-60	30	50
Mean ± SD	50.4±6.2	
Marital status:		
- Married	38	63.33
- Single	9	15
- Divorced	13	21.67
Education:		
- Below secondary level	33	55
- Secondary level or higher	27	45
Occupation:		
- Work	42	70
- Don't work	18	30
Place of residence:		
- Rural	37	61.67
- Urban	23	38.33
Family history of PC:		
- No	49	81.67
- Yes	11	18.33

Table 2: Clinical data of the studied patients (N=60)

Clinical data	N	%
Chronic illness:		
- HTN	45	75
- DM	45	75
- Respiratory disease	20	33.33
- Kidney disease	3	5
Date of disease onset:		
- Less than one year	43	71.67
- More than one year	17	28.33
Age at onset of illness:		
- 30-39	10	16.67
- 40-49	20	33.33
- 50-60	30	50
Present treatment used		
- Chemotherapy	11	18.33
- Radiotherapy	13	21.67
- Surgical	36	60
Disease stage:		
- Stage I	12	20
- Stage II	30	50
- Stage III	18	30

Table 3: Total knowledge, preventive practices, and perception levels of the studied patients about prostatic cancer (N=60)

Variables	Pretest	Immediate post	Post one month	F	p
	mean± SD	mean±SD	mean±SD		
Knowledge					
- High	8.83±2.58	19.20±2.16	14.06±2.15	1046.98	0.000*
- Low	15.17±2.87	5.84±2.59	9.88±2.54	540.24	0.000*
Preventive Practice					
- Good	18.53±2.40	30.25±4.94	23.5±5.04	621.84	0.000*
- Poor	19.72±3.43	15.34±3.64	12.24±2.09	460.97	0.000*
Perception					
- Good	24.68±4.55	37.38±4.58	32.64±3.08	739.75	0.000*
- Poor	30.25±4.94	18.53±2.50	23.50±5.04	621.48	0.000*

Table 4: Correlation between the studied patients' total levels knowledge, preventive practice, and perception (N=60)

Variables	Level of knowledge	
	R	P
Perception	0.340	0.000*
Preventive Practice	0.289	0.000*

Table 5: Average scores of the studied patients regarding knowledge, preventive practice, and perception at post-test in relation to personal data (N= 60)

Personal data	Level of knowledge		F	p- value	Preventive practice		F	p- value	Perception		F	p- value
	Mean ± SD				Mean ± SD				Mean ± SD			
Age category:												
- 30-39	16.58	2.44	0.586	0.618	165.14	8.23	6.444	0.001*	31.29	6.18	2.239	0.077
- 40-49	15.86	2.23			152.92	13.05			28.71	6.11		
- 50-60	15.82	2.72			156.00	14.07			28.66	5.87		
Marital status:												
- Married	13.72	2.48	3.004	0.033*	159.77	11.90	0.878	0.448	31.20	6.44	1.066	0.372
- Single	13.75	2.18			152.71	11.28			28.57	1.98		
- Divorced	15.43	1.83			161.26	11.51			31.86	4.21		
Education:												
- Below secondary level	13.21	2.17	26.702	0.001*	148.86	6.76	210.811	0.001*	28.45	3.12	72.717	0.000*
- Secondary level or higher	15.48	2.26			168.34	6.80			34.71	4.61		
Occupation:												
- Work	16.21	2.47	0.733	0.440	159.80	12.64	0.377	0.525	31.04	4.82	1.556	0.216
- Don't work	16.59	2.34			157.61	14.05			32.85	5.87		
Place of residence:												
- Rural	16.37	2.53	0.355	0.568	161.71	12.94	9.088	0.004*	31.83	5.19	3.694	0.058
- Urban	15.95	2.36			154.53	11.22			29.87	4.08		
Family history of PC:												
- No	14.23	2.47	0.422	0.543	158.50	10.86	9.106	0.004*	28.95	4.96	3.644	0.058
- Yes	14.53	2.34			168.90	9.064			31.91	4.19		

(*) Statistically significant at p < 0.05

Discussion:

Prostate cancer is one of the leading causes of morbidity and death among men (**Pernar et al., 2018**). Egypt's efforts to combat cancer have advanced significantly, which is a very admirable accomplishment. Reducing premature death rates by 15% is the main goal of the Egypt National Multisectoral Action Plan for Prevention and Control of Noncommunicable Diseases, which has been in effect since 2018. Effective treatment, improving early diagnosis, and reducing risk factors are the main goals of this strategy. With a focus on the Sustainable Development Goals, which aim to lower premature mortality from non-communicable diseases, the National Cancer Committee was formed to implement a comprehensive national plan and guidelines for cancer control and early detection in order to accomplish these goals (**Egyptian Ministry of Health and Population, 2021**).

Nurses should help patients cope with the adverse effects of therapy, changes in body image, and any other changes in appearance or functional life. Nurses should assist patients to manage therapy side effects and deal with body image changes or any other changes in functional living and appearance. Also, non-invasive therapies, such counseling and educational programs, can significantly improve patients' health outcomes (**Maria Lavdaniti, 2015**).

According to the current study's findings, half of the patients were in the 50–60 age group. Also, ccording to **Hassan, Belal, & Mohammed, (2021)** study titled "Effect of nursing care bundle on

patients undergoing prostatic surgery outcomes," around two-thirds of the patients were older than thirty. The average age of the patients hospitalized for prostate surgery in a study by **Cal, Zengin, & Avci, (2018)** on "Needs of patients with prostate cancer for home care after surgery" was 55.22±8.13. These results also align with their findings. According to the researchers' point of view, this could indicate that older men are more likely to get prostate cancer.

The results of the current study made it clear that over two-thirds of the patients were married. The research's findings were corroborated by **Gomaa et al. (2022)**, who found that less than three-quarters of patients were married in their study "Effect of mobile-based mindfulness intervention on stress, pain, and quality of life among patients with prostate cancer" study in Egypt. Additionally, this study is consistent with **Metwaly & Hamad, (2019)**, who investigated how a palliative care program affected nurses' performance in relation to prostate cancer and patient outcomes and found that the majority of patients were married.

Regarding educational level, the current study's findings revealed that over half of the patients had less than a secondary education. Also, **Metwaly & Hamad, (2019)**, stated that half of the patients had an intermediate level of education. This finding is also consistent with that of **Cal, Zengin, & Avci, (2018)**, who reported that about half of the patients in their study had an intermediate level of education. The results of this study are in conflict with **Hassan, Belal, &**

Mohammed, (2021) study, which found that each examined patient had a high degree of education.

The results of the current study showed that about three-quarters of the patients were employed. This result is consistent with that of **Hassan, Belal, & Mohammed, (2021)**, who reported that every patient under the study was employed. This finding contradicts with **Huen et al. (2019)**, who showed that the majority of the patients in their study titled "Outcomes of an integrated urology care clinic for patients with advanced urological cancers: maintenance of quality of life and satisfaction and high rate of hospice utilization through end of life", as they stated that majority of patients were unemployed.

Regarding residency, the current study found that over half of the studied patients were from rural regions. In line with our findings, **Gomaa et al. (2022)** discovered that less than three-quarters of the participants lived in rural areas.

In terms of family history, the current study discovered that over one-quarter of the patients had no family history of prostate cancer. This result was in line with **Atia & Soliman, (2018)** study, titled "Effectiveness of psycho-educational program on quality of life and body image of prostatic cancer patients," which found that almost three-quarters of the participants in the study had no family history of the disease.

On the other hand, **Sharma et al. (2016)**, in their study "Prostate, farming, and other risk factors: A mini review," claimed that a family history of prostate cancer was clearly linked to an elevated chance of getting the illness. So, the short sample size, exposure to stressful conditions, increased economic and societal burden of sickness, and higher care costs might all be contributing factors, according to the researchers' point of view.

Regarding chronic illness, the current research study discovered that three-quarters of the patients had conditions like D.M. and HTN. The results of this study were consistent with those of **Atia & Soliman, (2018)**, who found that one- third of the patients in their study had diabetes mellitus, hypertension, and other health issues. Furthermore, a systematic review and meta-analysis study titled "Hypertension and risk of prostate cancer" by **Liang et al. (2016)** supported this finding by suggesting that hypertension may be linked to an increased risk of prostate cancer.

In terms of total level of knowledge, the present study discovered a statistically significant difference between the patients' knowledge levels immediately and one-month after the educational program was implemented. In line with their findings, **El Mezayen et al. (2022)** study, "The effect of educational program on knowledge and commitment of male employees at Tanta university regarding prostate cancer screening," and discovered that the employees' overall knowledge score improved significantly over the course of the study.

These findings are in line with several research results, such **as Keane, (2015) and Ivlev et al. (2018)**, who revealed that the educational program considerably increased knowledge of

cancer, as patients' understanding was enhanced by the methodical instruction, which combined vocal instruction with pamphlets and brochures. In terms of gender, age, culture, and other socioeconomic considerations, the language and substance of the educational program are suitable for the person. The aforementioned elements significantly affect people's capacity for learning. The success of the intervention may also have been influenced by the use of tailored discussion following the implementation of the educational program and the distribution of written material.

The findings of the current study were corroborated by **Cowman et al. (2021)**, who carried out a study titled "Knowledge and attitudes of men toward prostate cancer in Bahrain" and noted that the majority of the patients under study knew very little about the disease. They suggested conducting an educational program to increase their understanding.

Furthermore, the results corroborated **Micaux, (2021)** study, "Web-based support for young adults with reproductive concerns following cancer," which found a statistically significant improvement in the total knowledge score following the intervention program. According to the researchers' perspective, this outcome may be the consequence of most patients learning about the risks of the condition and how to manage it in order to prolong their lives.

Additionally, the current study discovered a statistically significant difference between the immediate post and post-one month of the educational program's deployment in terms of

preventative practice levels and perceptions about PC management. This outcome was in line with the findings of **Khalil et al. (2024)**, whose study "Effect of health belief model-based educational intervention on prostate cancer prevention; knowledge, practices, and intentions" discovered that the patients' overall score for preventive practice improved significantly over the course of the study.

Furthermore, **Mazloomi et al. (2017)** provided support for these findings in their study "Effect of education on preventive treatment of prostate cancer in men over 40 years on the health belief model," which found significant differences in knowledge and practices mean scores between study participants before and after the intervention implementation. This study suggested that educating men over 40 years about the health belief model (HBM) can predispose them to more effective preventive practices.

Additionally, **Fouad & Gomaa, (2018)**, who conducted a study titled "Prostate Cancer Program for Elderly Men Perception," demonstrated that, in contrast to the pre-program implementation period, there was a notable rise in susceptibility perception during the post-program implementation phase.

This study demonstrated a statistically significant correlation between the patients' educational level, marital status, and knowledge levels. Furthermore, there is a statistically significant correlation between the patient's age, place of residence, educational level, and family history of PC and their adherence to preventative practice measures. Furthermore, there is a

statistically significant correlation between the perception and educational level of the patients under study.

The findings of the current investigation align with those of **Khalil et al. (2024)**. According to the researchers' opinions, these findings could be the consequence of how patients' knowledge, preventive practices, and perceptions are influenced by their personal lives and educational backgrounds.

In contrast, **Tyson et al. (2013)** in their research "Marital status and prostate cancer outcomes," indicating that unmarried men are more likely to die from prostate cancer than married men of the same age, race, stage, and tumor grade. According to the experts' point of view, this may be because of the stressful events in their lives, which could increase their chance of developing cancer.

Conclusion:

The educational program has a significant effect on improving the outcomes of patients with prostatic cancer, as evidenced by increased knowledge level about the disease, enhanced adherence to preventive practices to control the disease and prevent complications, and improved perception toward disease management.

Recommendations:

In light of the current study's findings, it is advised that:

- Develop educational programs based on the Health Belief Model to enhance knowledge, attitudes, and preventative measures for PC patients.

- Utilize online platforms, including videos and interactive modules, to deliver educational content, making it more accessible to patients who may have difficulty attending in-person sessions.

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