

ORIGINAL ARTICLE

Prostate Care Beyond Forty: A Quasi-Experimental Intervention to Enhance Awareness, Attitude and Practices regarding Prostate Cancer among Egyptian men

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Received: March 28, 2024

Accepted: July 16, 2024

DOI:

<https://doi.org/10.35516/jmj.v59i2.2520>

Abstract

Background: the prevalence of Benign Prostatic Hyperplasia (BPH) increases after the age of forty years. BPH is one of the most common causes of lower urinary tract symptoms that needs more attention. The study aimed to assess the effectiveness of an intervention designed to enhance awareness, attitude and preventive practices related to prostate cancer among the Egyptian men aged forty and above.

Methods: quasi experimental study was used and a convenient sample technique was adopted to involve 200 participants living in Damanhur city and Beni-Suef city, Egypt. Structured questionnaires composed of 5 parts collected data about socio-demographic characteristics, symptoms of prostate hyperplasia, awareness about prostate cancer, practices to prevent occurrence and a scale to assess attitudes regarding prostate cancer screening.

Results: Results highlighted the positive effects of the intervention on participants' knowledge, practices, and attitudes regarding prostatic hyperplasia. Significant improvements were observed post-intervention compared to pre-intervention levels, as indicated by the Chi-square test results ($X^2 = 57.6$, $p < .00001$ for knowledge; $X^2 = 23.04$, $p < .00001$ for practices; $X^2 = 42.4$, $p < .00001$ for attitudes).

Conclusion: The findings underscored the positive impact of the intervention on participants' knowledge, practices, and attitudes regarding prostatic hyperplasia. The study recommended regular screening and implements targeted health education programs to enhance awareness about prostatic hyperplasia, improve attitudes, and preventive measures.

Keywords: Prostate cancer, Egyptian Men, Quasi-Experimental Studies, Knowledge, Attitudes, Practice.

INTRODUCTION

An increasing proportion of young men suffer from BPH and enlarged prostate symptoms. A significant percentage of men, especially those over 40, are affected by prostate cancer, which is the most common malignancy among men in developing countries. An understanding of disease pathogenesis, screening techniques, treatment modalities, and survivorship issues specific to the male population is necessary to care for this population [1]. In men, prostatic hyperplasia remains a major global health problem. The need to understand and treat prostate cancer in adult men is underscored by the world's aging population and increasing life expectancy. The World Health Organization (WHO) recently released figures showing that prostate cancer is the second most common cancer in men worldwide, with higher incidence rates in developed countries [2].

Early detection of prostate cancer is the main goal of screening, as it allows for timely intervention and a better prognosis. Discussion has focused on the appropriateness and effectiveness of screening in male populations. Recent recommendations, including those from the U.S. Preventive Services Task Force (USPSTF) and the American Cancer Society (ACS), emphasize shared decision-making between health care professionals and men considering screening [3].

Lower urinary tract symptoms (LUTS) can be a result of one of the most common conditions in men: clinical benign prostatic hyperplasia (BPH). Because not all men with LUTS develop clinical BPH, and not all men with clinical BPH develop LUTS, the relationship between LUTS and clinical BPH is complicated. Therefore, understanding the epidemiology of the disease and potential

means of population management is a better way to prevent and delay the onset and progression of clinical BPH. Routine medical examination and screening are essential for early detection and treatment [4].

Regular physical activity has been shown to protect against prostate cancer and may also slow the spread of the disease. Moderate to vigorous exercise, such as aerobics or brisk walking, may reduce the risk of aggressive prostate cancer. Exercise is thought to affect the immune response and hormone levels, improving overall health and possibly influencing the course of prostate cancer. Maintaining a healthy weight is important for the management and prevention of prostate cancer. Obesity has been shown to be a risk factor for prostate cancer progression and recurrence. In addition to diet and exercise, lifestyle choices may include tobacco use and alcohol consumption. Since smoking has been associated with a higher risk of aggressive prostate cancer, quitting is recommended to improve overall health and reduce the risk of cancer [5].

While the exact relationship between chronic stress and prostate cancer is unknown, incorporating stress-reduction techniques into daily life may help prevent prostate cancer and slow its progression. Prolonged stress and the physiological responses it causes have been linked to a number of illnesses, including mental health problems, chronic diseases, and even cancer [6].

In order to tailor interventions and educational programs, it is essential to understand prostate cancer screening and prevention among adult men. Previous research has identified gaps in awareness and misconceptions about screening, leading to underutilization of available options. Addressing these gaps is critical to making

informed health decisions. Cultural and socioeconomic factors influence attitudes toward screening, with disparities based on race, ethnicity, and socioeconomic status. Studying these disparities is critical to developing interventions that ensure equitable access to screening and follow-up care [7].

The high-risk male population needs accessible and appropriate health education about these preventive and diagnostic strategies. Studies of patient education to increase knowledge and adherence to healthy lifestyles among men have shown that brief and print-based interventions increase knowledge of symptoms and risk factors and increase screening rates [8].

This study aimed to assess the effectiveness of an intervention designed to increase awareness, attitudes and practices related to prostate cancer among Egyptian men aged forty and above. Hypothesis 1, the knowledge level of participants regarding prostate cancer post- intervention is higher than their knowledge level pre- intervention. Hypothesis 2, the level of attitude of participants regarding prostate cancer screening post intervention is higher than their attitude level pre- intervention. Hypothesis 3, the level of practice of preventive measures among the participants significantly improves post- intervention.

METHODS

Design of the study

Quasi experimental study design was utilized to achieve the aim of the current study.

Setting

The study was conducted in Beni-Suef city & Damanhur city, Egypt

Study subjects

All men who consented to participate and

fulfilled the following criteria:

Inclusion criteria

- Males aged 40 years and above.
- Individuals willing to actively engage in the intervention program, including attending educational sessions, workshops, and participating in awareness campaigns.
- Living in Beni-Suef city at Beni-Suef governorate, Damanhur city, Beheira governorate Egypt
- Individuals without a personal history of diagnosed prostate cancer

Sample size and sample technique

Version 2002 of the Epi-Info statistical program, developed by the World Health Organization and the Centers for Disease Control and Prevention in Atlanta, Georgia, USA, was used to compute the sample size and power analysis. The following criteria were applied for calculating the sample size: the design of the study was quasi-experimental, 95% confidence interval, power (percentage probability of detecting) = 80; Hypothetical proportion of exposed controls = 40; Hypothetical proportion of exposed cases = 60. The sample size was 200 from Beni-Suef city and Damanhur city, Egypt, based on the previously mentioned criteria. The convenience sampling technique was used to include the participants.

Tool of data collection

Part1: **Socio-demographic and history of the participants** which gather information about age, educational level, marital status, personal history for chronic diseases and family history to prostatic cancer of the participants.

Part2: **The International Prostate Symptom Score (IPSS)**

The questionnaire was adopted from [9]; it included 7 symptoms graded from 0 (not at all) to 5 (almost always). *Total score: 0-7 mild symptoms; 8-19 moderate symptoms;*

20-35 severe symptoms

Part 3: Knowledge/awareness of prostate cancer.

This section of the questionnaire was adapted from [10]; each of the 12 awareness and knowledge questions was given a score of 1 for a correct answer and 0 for an incorrect answer or don't know. There was a maximum score of 12 and a minimum score of 0. Based on the total score for all questions, which is reported as 100%, three categories were created: unsatisfactory (less than 50%), average (50-74%), and acceptable ($\geq 75\%$). For the knowledge questionnaire, Cronbach's α value was 0.89.

Part 4: practices to prevent occurrence

The researcher reviewed the following literature before designing this section [11, 12]. Fifteen items covered the following areas: vitamin supplements, chemoprophylaxis with finasteride or dutasteride, exercise, smoking, diet, and antioxidant supplements. It also included regular screening for prostate cancer. Items were scored as follows: 3 for always practicing, 2 for some of the time, or 1 for not or rarely practicing. According to the previous scoring, 15 was the lowest score, and 45 was the maximum. All questions had a total score of 100 percent, which was divided into two categories: inadequate (less than 60 percent) and adequate (more than 60 percent). The Cronbach's α value for the stated practice questionnaire was 0.72.

Part 5: scale to assess attitude of participants regarding prostate cancer screening

This section was adapted from [13]. Eleven items were used to assess the perceived impact of screening. Of these, four items (Cronbach's α : 0.7) included the negative effects of screening, while seven items focused on the positive effects of

screening. Two items were used to assess men's moral obligation to participate in prostate cancer screening (Cronbach's α : 0.80). Two questions were used to measure expected regret about not participating in prostate cancer screening (Cronbach's α : 0.73).

The following scores were assigned to the scale range items: 1 - disagree, 2 - agree, 3 - strongly disagree, and 0 - strongly disagree. A subscale score was obtained by adding the individual item scores within each subscale after recoding the scores for negatively worded items. All questions had a total score of 100 percent, which was divided into three categories: less than 60 percent for negative attitudes, 60-74 percent for average attitudes, and more than 75 percent for positive attitudes. A higher score indicated a more optimistic (favorable) attitude, a greater sense of moral responsibility, or a higher level of expected regret regarding prostate cancer screening.

Validity

A group of five experts from the departments of medical surgical nursing and community health nursing examined the earlier instruments.

Ethical considerations

Throughout the study, great effort was taken to uphold participant rights and research ethics. Every male participant was asked for verbal consent, during which they were assured that their privacy would be protected and that information gathered would only be utilized for the study. They were assured that the study would remain anonymous and that they might leave at any time. This study was approved by the Institutional Review Board of the Faculty of Nursing at XX University. The research ethics committee of the Faculty of Nursing approved the research on 20/1/2022 with the

code of (52-e).

Pilot Study

To evaluate the questionnaire's content and determine how long it would take to gather the data, a pilot study with twenty male participants was carried out. The examined sample does not include pilot study participants.

Field of work

This was done in three stages;

A- Assessment phase:

1. Researchers meet participants in selected health centers and in general places as mosques. The researchers explained the aim of the study to the participants, ensuring confidentiality and assuring them that the collected information would be used solely for research purposes.

2. Socio-demographic data, baseline knowledge, attitudes, and practices related to prostate health and cancer prevention were assessed. A health education program was designed based on the participants' needs and written in a language appropriate to their educational levels. Information booklets containing relevant details were created and distributed to participants.

3. The data collection period ranged from 15 to 20 minutes per participant.

4. Strengths and weaknesses among the participants were evaluated to tailor the educational program.

B. Implementation phase:

1. The intervention consisted of two sessions conducted with eligible male participants.

2. The first session focused on improving knowledge about prostate health, risk factors for prostate cancer, and the importance of prostate cancer screening.

3. The second session concentrated on promoting preventive measures, such as regular screenings, lifestyle modifications,

and the importance of seeking medical advice.

4. The researchers allowed ten minutes for discussion and feedback, encouraging participants to share their thoughts and ask questions.

C. Evaluation phase:

1. Post-tests were administered immediately after the intervention to assess the participants' knowledge about prostate health and their attitudes.

2. Follow-up post-tests regarding participants' practices related to prostate health were conducted three months after the intervention. Data was collected during scheduled follow-up visits or through telephone calls.

Statistical analysis:

The gathered information was sorted, updated, archived, tabulated, and examined through statistical analysis, percentage distributions, means, and standard deviations. Using the statistical package for the social sciences program (SPSS) version 20, the appropriate statistical tests (chi-square and Spearman correlation) were employed to ascertain significant differences. Statistical significance was deemed to have occurred at $p\text{-value} < 0.05$.

RESULTS

Table 1 shows the frequency distribution of the studied sample in terms of socio-demographic data. The table shows that in terms of age distribution, approximately half of the participants (45%) fell within the 40-50 age range. The next largest group consisted of age 51-60, which represented 37% of participants. In terms of educational level, the table shows that more than half of the participants (55%) received primary education. A significant portion of the sample received secondary education, accounting for

33% of participants. In terms of marital status, two-thirds of the participants were married, representing 65% of the sample. The remaining 35% were either widowed or divorced.

Table 2 shows that a significant portion of the sample studied (40%), reported a positive family history of prostate cancer. Diabetes Mellitus (DM) was prevalent in 55% of the participants, indicating a significant portion of the sample with this chronic condition. Hypertension was reported by 38% of participants, highlighting the prevalence of hypertension in the population studied. Asthma was reported by 22.5% of the sample.

The results presented in Table 3 outline the classification of the sample studied based on their total American Urological Association (AUA) Symptom Score for Benign Prostatic Hyperplasia (BPH). The table shows that approximately half of the sample falls into the "mild" category, representing 55% of participants. A significant proportion of participants have a "Moderate" AUA Symptom Score, representing 24% of the sample. The "Severe" category includes 21% of participants.

Table 4 shows total knowledge about prostatic hyperplasia before and after the intervention. The table highlights the positive impact of the intervention in improving participants' knowledge. The results of the chi-squared test indicated a statistically significant difference in knowledge levels between pre- and post-intervention phases ($X^2 = 57.6$, $p < .00001$).

Table 5 shows the total practices to prevent the occurrence or prognosis of prostatic hyperplasia before and after the intervention. The table highlights the positive impact of the intervention on improving the practices of the participants. The results of

the chi-squared test indicate a statistically significant difference in practice levels between the pre- and post-intervention phases ($X^2 = 23.04$, $p < .00001$).

Table 6 shows the overall attitude towards screening for prostate hyperplasia before and after the intervention. The table highlights the positive impact of the intervention in improving the attitudes of the participants. The results of the chi-squared test indicated a statistically significant difference in attitude levels between pre- and post-intervention phases ($X^2 = 42.4$, $p < .00001$).

Table 7: There was a significant negative correlation ($r = -0.42$, $p = 0.0001$) between total knowledge score and total AUA symptom score for BPH. This negative correlation suggested that as total knowledge of prostatic hyperplasia increases, the total symptom score tends to decrease. A stronger negative correlation is observed between the total practice score and the total AUA Symptom Score for BPH ($r = -0.61$, $p = 0.00001$). This indicates that as the total practice score (reflecting preventive practices) increases, the total symptom score for BPH tends to decrease even more significantly.

Table 8 shows that there is a statistically significant association between age and the mean score of the total American Urological Association (AUA) Symptom Score for Benign Prostatic Hyperplasia (BPH). Specifically, participants aged 40-50 years had a lower mean score compared to those aged 51-60 and >60 years ($P < 0.0001^{***}$). While there appears to be a trend of higher mean scores among participants with lower educational levels (primary and secondary education) compared to those with university education, the association was not statistically significant ($p = 0.08$). This could indicate that educational attainment may not

directly influence the severity of BPH symptoms. The results indicated a statistically significant association between marital status and the mean AUA Symptom

Score for BPH ($P=0.0001$). Specifically, married participants had a lower mean score compared to widowed/divorced individuals.

Table 1: frequency distribution of the studied men regarding their socio-demographic characteristics

Items	N	%
Age		
40-50	90	45.0
51-60	74	37.0
>60	36	18.0
Educational level		
Primary	110	55.0
Secondary	66	33.0
university education	24	12.0
Marital status		
Married	130	65.0
Widowed/ divorced	70	35.0

Table 2: frequency distribution of the studied sample according to their medical history

Items	N	%
Family history to prostate cancer		
Yes	80	40.0
No	120	60.0
Personal history to chronic diseases		
DM	110	55.0
Hypertension	76	38.0
Asthma	45	22.5

Table 3: Classification of the studied sample regarding their total American Urological Association (AUA) Symptom Score for Benign prostatic hyperplasia

Levels	N	%
Mild	110	55.0
Moderate	48	24.0
Severe	42	21.0

Table 4: Comparison of studied sample regarding their knowledge about prostatic hyperplasia pre-post intervention

Items	Pre		Post		X ²	P
	N	%	N	%		
Total knowledge						
Satisfactory	64	32.0	138	69.0	57.6	<.001**
Average	95	47.5	35	17.5		
Unsatisfactory	41	20.5	27	13.5		

Table 5: Comparison of studied sample regarding their practices to prevent the occurrence or prognosis of prostatic hyperplasia pre-post intervention

Items	Pre		Post		X ²	P
	N	%	N	%		
Levels of practice						
Adequate	78	39.0	126	63.0	23.04	<.001**
Inadequate	122	61.0	74	37.0		

Table 6: Comparison of the studied sample regarding their total attitude about screening for prostatic hyperplasia pre-post intervention

Items	Pre		Post		X ²	P
	N	%	N	%		
Levels of attitude						
Positive	43	21.5	106	53.0	42.4	<.001**
Average	72	36.0	44	22.0		
Negative	85	42.5	50	25.0		

Table 7: Correlation between total knowledge score and total practice score before the intervention with the total American Urological Association (AUA) Symptom Score for Benign prostatic hyperplasia

Items	Total symptom score	
	R	P
Total knowledge score	-.41	<.001**
Total practice score	-0.59	<.001**

Table 8: Association of socio-demographic profile with the mean score of total American Urological Association (AUA) Symptom Score for Benign prostatic hyperplasia

Items	M±	T/F	P
Age			
40-50	11.6531±3.7	12.8061	<0.0001***
51-60	13.6122±2.7		
>60	18.346±4.1		
Educational level			
Primary	17.31±2.61	3.902	0.08
Secondary	14.24±3.23		
university education	16.35±2.11		
Marital status			
Married	12.64±	11.67	0.0001**
Widowed/ divorced	18.42±		

DISCUSSION

The present study aimed to assess the effectiveness of an intervention designed to increase awareness, screening attitudes and promote preventive measures related to prostate cancer among Egyptian men aged forty and above. The current study found that a significant proportion of male participants have a moderate AUA symptom score, representing 24% of the sample. In addition, the "severe" category included 21% of participants. One of the most common conditions affecting men is benign prostatic hyperplasia, or BPH [14]. In the urology department of Prince Mutaib Hospital in Sakaka, Aljouf, the prevalence of benign prostatic hyperplasia was investigated by [15]; the results of the current study were in line with their findings. According to their findings, about 25% of the examined group had severe BPH. Our findings are in line with the research of [16], which stated that the overall prevalence of BPH in the Gulf cluster varied from (21.2-26.3%). However, [17] stated that the total prevalence of LUTS/BPH in their Chinese sample was 10.66%. The prevalence in this city of Najran, Saudi Arabia, was significantly lower than the national prevalence.

According to the results of the current study, almost one-third of the participants (32%) have a "satisfactory" level of knowledge about prostatic hyperplasia. In support of the current study, [11] found a lack of understanding of prostate cancer among respondents. In contrast, [18] found that 70% of the study population knew about BPH, indicating a moderate level of awareness of the disease. The majority of participants in the current study have only completed primary school and live in a border area with few health education resources, which may explain these discrepancies.

In addition, the current study showed that more than one-third of the participants had an adequate level of exercise to prevent the occurrence of prostatic hyperplasia. However, the majority of the studied population (61%) had inadequate level. The current study was consistent with [19] which found that only one third had higher level regarding self-care evaluation. In the same line, [20] revealed that the male persons had lower levels of practice regarding prostatic hyperplasia and needed a comprehensive health education program about proper lifestyle and preventive measures.

Regarding the effect of the effectiveness of the educational program on the participants' practices to prevent the occurrence or prognosis of prostate hyperplasia, the results showed that preventive practices improved significantly after the application of the educational program. This finding was consistent with the results of [21, 8].

The results showed that the intervention had a significant positive effect on participants' attitudes toward screening for prostate hyperplasia, in terms of the overall effectiveness of the educational program. According to [22] & [23], this result was consistent with their findings. Many factors, such as tailoring the program to the needs of the participants with simple content appropriate to their educational level and cultural background, can be attributed to its significant impact on knowledge, practice, and attitude regarding prostate cancer screening.

The results of the present study showed a statistically significant negative association between the total knowledge score and the total BPH AUA symptom score. This negative association suggests that as overall knowledge of prostatic hyperplasia increases,

the overall symptom score tends to decrease. The overall practice score and the overall AUA Symptom Score for BPH showed a higher negative association. This suggests that the overall symptom score for BPH tended to decrease even more dramatically as the overall practice score (reflecting preventive behaviors) increases. The results of the current study are consistent with research by [24], which found that people with better health literacy are more likely to seek medical care and engage in health-promoting practices. This also supports research by [25], which showed that those who adopted preventive behaviors - such as regular exercise and a balanced diet - saw a gradual improvement in their BPH symptoms.

Strengths of the study:

The study addresses a prevalent health concern, Benign Prostatic Hyperplasia (BPH), the structured questionnaires cover a range of aspects, including socio-demographic characteristics, family and personal history, international prostate symptom assessment, and knowledge and practices related to BPH. While a convenient sampling method was used, the inclusion of 200 male participants was noteworthy. The results were presented in a clear and concise manner, accessible to both academic and non-academic audiences

Limitation of the study:

The study employed a convenient sampling method, which might introduce selection bias and limit the generalizability of the findings. Participants might provide responses they perceive as socially acceptable rather than accurate, impacting the reliability of the collected information.

Study's conclusion

The current study revealed that according to the American Urological Association (AUA) Symptom Score for BPH approximately half of participants had "Mild" symptoms, followed by a significant proportion with "Moderate" symptoms and a smaller percentage with "Severe" symptoms. In conclusion; the findings underscore the positive impact of the intervention on participants' knowledge, practices, and screening 'attitudes regarding prostatic hyperplasia. The statistically significant improvements in knowledge levels, practices, and attitudes between pre and post-intervention phases demonstrated the effectiveness of the educational intervention. Additionally, the current study emphasized the relationship between knowledge and practices, with symptom severity, highlighting the importance of informed decision-making and proactive health behaviors in mitigating the impact of prostatic hyperplasia.

RECOMMENDATIONS

1. Implement targeted health education programs to enhance awareness about prostatic hyperplasia, its symptoms, and preventive measures.
2. Promote regular screening, especially for individuals with a family history of prostatic cancer or comorbidities like diabetes mellitus and hypertension, to facilitate early detection and appropriate management of BPH symptoms.
3. Engage community resources and support groups to disseminate information and encourage healthy practices for the prevention of prostatic hyperplasia among men.

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رعاية البروستاتا بعد الأربعين: تدخل شبه تجريبي لتعزيز الوعي والمواقف والممارسات فيما يتعلق بسرطان البروستاتا بين الرجال المصريين

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الملخص

الخلفية والأهداف: يزداد انتشار تضخم البروستاتا الحميد (BPH) بعد سن الأربعين، ويعد تضخم البروستاتا الحميد أحد الأسباب الأكثر شيوعاً لأعراض المسالك البولية السفلية التي تحتاج إلى مزيد من الاهتمام. هدفت الدراسة إلى تقييم مدى فعالية التدخل المصمم لتعزيز الوعي والموقف والممارسات الوقائية المتعلقة بسرطان البروستاتا بين الرجال المصريين الذين تتراوح أعمارهم بين الأربعين وما فوق.

منهجية الدراسة: تم استخدام الدراسة شبه التجريبية وتم اعتماد تقنية العينة الملائمة لتحقيق الهدف وإشراك 200 مشارك يعيشون في مدينة دمنهور ومدينة بني سويف بمصر. تم استخدام استبيان مكون من 5 أجزاء لجمع بيانات حول الخصائص الاجتماعية والديموغرافية، وأعراض تضخم البروستاتا، والوعي بسرطان البروستاتا، والممارسات لمنع حدوثه و لتقييم موقف المشاركين فيما يتعلق بفحص سرطان البروستاتا.

النتائج: بخصوص شدة أعراض البروستاتا؛ 55% كانت خفيفة، 24% متوسطة، 21% شديدة. سلطت النتائج الضوء على الآثار الإيجابية للتدخل على معرفة المشاركين وممارساتهم ومواقفهم فيما يتعلق بتضخم البروستاتا. وقد لوحظت تحسينات كبيرة بعد التدخل مقارنة بمستويات ما قبل التدخل، كما هو مبين في نتائج اختبار مربع كاي ($X^2 = 57.6$, $p < 0.00001$ ، للمعرفة؛ $X^2 = 23.04$, $p < 0.00001$ ، للممارسات؛ $X^2 = 42.4$, $p < 0.00001$ للمواقف).

الاستنتاجات: ما يقرب من نصف المشاركين لديهم أعراض "خفيفة". وأكدت النتائج التأثير الإيجابي للتدخل على معرفة المشاركين وممارساتهم ومواقفهم فيما يتعلق بتضخم البروستاتا. وأوصت الدراسة بإجراء فحص منتظم وتنفيذ برامج التثقيف الصحي المستهدفة لتعزيز الوعي حول تضخم البروستاتا، وتحسين الموقف، والتدابير الوقائية.

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Received: March 28, 2024
Accepted: July 16, 2024

DOI:
<https://doi.org/10.35516/jmj.v59i2.2520>

الكلمات الدالة: سرطان البروستاتا، الرجال المصريون، دراسات شبه تجريبية، المعرفة، المواقف، الممارسة.