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Awareness and Knowledge of Prostate Cancer and Screening Methods Among Male University Populations in Palestine: A Cross-Sectional Study

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KEYWORDS

Prostate cancer; Awareness; Digital rectal examination; PSA screening; Health education; Palestine

ABSTRACT:

Objective: The purpose of this study was to determine the awareness level and knowledge on the issues of prostate cancer (PC), digital rectal examination (DRE) and prostate cancer screening procedures among male students and academic staff in Palestine.

Methodology: The study employed a descriptive cross-sectional methodology with male students and staff at Palestinian universities in the West Bank, conducted from February to April 2020. The questionnaire, intended to assess sociodemographic characteristics, knowledge of prostate anatomy and functions, awareness of prostate cancer, and familiarity with screening and diagnostic measures, was employed to gather data. SPSS version 23 was utilized to conduct descriptive statistics and inferential analyses, including t-tests and ANOVA.

Results: Out of 400 distributed surveys, 370 valid replies were obtained. 52% of the individuals reported awareness of prostate cancer. The awareness of risk factors related to prostate cancer, as well as detection and screening methods, was minimal; 74% of participants were unfamiliar with DRE or PSA testing, and none had undergone prostate screening. The predominant obstacles mentioned were insufficient awareness and inadequate health education. The amount of knowledge was significantly associated with residency, as urban respondents had a higher level of knowledge compared to those living in villages or refugee camps ($p = 0.001$).

Conclusion: The awareness and information of prostate cancer and its screening methods among male university populations in Palestine remain insufficient. Targeted public health education initiatives are urgently needed to improve knowledge of early detection and prevent the necessity for informed screening habits.

1. Introduction

Prostate cancer (PC) is a prevalent malignancy affecting males worldwide and poses a significant burden on global health [1]. It is the second most prevalent cancer diagnosed in men globally and a significant contributor to cancer-related mortality [2]. In addition to increasing rate of diagnosis patients by PC, mortality numbers by daily in the world [3]. The mortality rate in the PC classified as a fifth cause leading to death between men in the world [4]. Epidemiological research indicates substantial geographic heterogeneity in incidence and death, with higher incidence in affluent nations and greater mortality in low- and middle-income countries, mostly attributable to disparities in early identification and healthcare availability [4].

The screening of PC with prostate-specific antigen (PSA) and digital rectal examination (DRE) has been associated with earlier diagnosis stages and improved survival rates. Nonetheless, PC screening continues to be a contentious topic due to concerns around overdiagnosis and overtreatment. Consequently, most international standards emphasize informed decision-making and adequate patient understanding rather than universal screening [5].

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Knowledge and awareness are crucial in shaping health-seeking behaviors. Numerous studies indicate that educational attainment, cultural views, access to health information, and interactions with medical professionals significantly influence men's awareness of PC, its symptoms, and available screening options. PC awareness in many developing and Arab nations is suboptimal, leading to delayed detection and poorer prognosis.

There are studies indicate the category which suffered from the highest percentage was between 50 to 74 years [6]. The awareness level in the advanced countries has been play an important role in the decreasing of infected PC by doing PSA exam each year to discovering in the early stages [7], where the survival rate reached 98% in the USA [1]. The early detection of PC has a high impact to reduce a mortality rate [8], so increasing the awareness of early detection for disease between the general community can changed the effect on the patients to better.

The main symptoms of PC, difficulty urinating, urinating intermittently, that urine flow is poor, and the appearance of blood in the urine or in the semen, but in advance cases, the symptoms are developed to swelling of the legs or pain in the bones and spine [9]. Multiple methods can diagnose the prostate lesions and it is chosen according to the patient's condition. The finger of the gland through the rectum, urine analysis, and PSA are considered the predictive methods to discover the primary symptoms for PC such as inflammation of the urinary tract. Medical imaging plays an important role in the diagnosis of PC through US, CT, and MRI modalities to detect prostate congestion, prostatomegaly, PC, and bone erosion in the advanced stages, also considered guidance methods to detect a location taking a biopsy [10].

According to the statistics of the Palestinian Ministry of Health until 2024 (https://site.moh.ps/index/Books/BookType/2/Language/ar), breast cancer has the biggest percentage among other diseases, and increase the number of infected PC patient's year by year, so social responsibility drives us to increase awareness among male's category, where the PC infection increasing when there is a family history of breast cancer [11,12]. The lack of studies on this subject in the Arab world and the absence of any study in Palestine calls to raise awareness among men about PC, RE, and methods of diagnosis, so this study interested to assess the level of knowledge of RE and PC among the respondents in the universities community.

2. Material and Methods

The research was a descriptive cross-sectional survey conducted from 8 February to 18 April 2020 at many Palestinian universities in the West Bank. The participants consisted of male students and university staff aged 19 and older. The eligibility criteria encompassed enrollment or employment at a Palestinian university and a desire to participate. Individuals with a prior history of PC or prostate surgery were excluded.

370 participants were collected from multiple universities, and from different programs and levels. The inclusion criteria were included: (1) all male students who are studying in Palestine universities; (2) the category of males from 19 to 40 years from students, and who more than 25 years from workers or postgraduate students; (3) the single and married students; (4) urban, village, and camps students. The fact that the subject is sensitive and some of the students refused to answer clearly, which led to the exclusion of some questionnaires because of incomplete or conflict answers, and the participants have surgical history of prostate tumor was excluded.

The questionnaire contained three parts, the first part has eight questions about socio- demographic data and related factors, the second part consists of 22 questions which assess level of knowledge about the prostate gland, and the third part consists of 5 questions about diagnosis of PC and RE.

Data analysis was conducted using SPSS version 23. The participants' characteristics and their knowledge levels were summarized by descriptive statistics. The relationships between knowledge scores and sociodemographic variables were examined using inferential statistics (independent t-test and ANOVA). The threshold for statistical significance was set at $p < 0.05$.

3. Results

A total of 370 male participants completed the questionnaire. The majority were single (81%). 47%

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resided in urban areas, while the remainder lived in villages or refugee camps.

Table 1:

Questions and answers	% (n)
Have you heard about prostate gland? Yes No	100% (370) 52% (193) 48% (177)
Where is the prostate gland? The bottom of the bladder. Down pharynx Inside the brain	100% (193) 83.3% (161) 12.5% (24) 4.2% (8)
What it is function? Secretion of sperm plasma. Parathormone secretion. Secretion of sweat. Do not Know.	100% (370) 40% (149) 19% (70) 5% (19) 35% (132)
Who have heard about PC? Yes No	100% (370) 52% (193) 48% (177)

Although all the participants were from the universities community, but the percentage of awareness was not high. Where, the 52% (193) have heard about prostate gland and PC, 83.3% (161) known the location of prostate gland and said the bottom of the bladder, and just 40% (149) knowing the function of prostate gland and answered secretion of sperm plasma. Table 1

Table 2:

Questions and answers	% (n)
How did you hear about PC? Media Health professional Other	100% (193) 42.7% (82) 20.7% (40) 36.6% (71)
Who are most at risk? Men only Do not Know. Women only men and women	100% (370) 34% (126) 42% (155) 16% (59) 8% (30)
What is the most susceptible age? Greater than 40 lesser than 40 Do not know	100% (370) 37% (137) 12% (44) 51% (189)
Does the risk of PC increase when a family member has (Breast Cancer) BRCA? No Do not know. Yes.	100% (370) 33% (122) 48% (178) 19% (70)
The answer of male students about the possibility of early detection of PC? Yes Do not know. No	100% (370) 49.2% (182) 40.9% (151) 9.9% (37)
Who have heard about RE and PSA? Yes No	100% (370) 26% (96) 74% (274)
How did you hear about RE and PSA?	100% (96)

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Media Health professional Family members	51% (49) 43% (41) 6% (6)
At what age should the examination be performed? Greater than 40. Lesser than 40. There is no age limit. Do not know.	100% (370) 16.3% (60) 42.9% (159) 32.7% (121) 8.1% (30)
Why did not you check? There is no need to do this examination. No one has known me. I do not know where and how this examination.	100% (370) 24% (89) 52% (192) 24% (89)

During the answers to the questionnaire discovered that 42.7% (82) heard about the PC from the media, but 42% (155) of participants do not know who gets infected a men's or women for this disease, and 51% (189) do not know the most susceptible age for infection, and the genetic relationship in the case of a member family has a tumor which is not clear for 48% (178) participants. In addition, 49.2% (182) supporting the answer, it is possible to the early detection of disease, but a high percentage of participants 74% (274) do not have information about the examinations being performed for that purpose such as RE. The error that was discovered through this study is that 83.7% (310) of respondents does not know the most common prostate cancer age, and 52% (192) do not know how and where to do the exams of PC. Table 2.

The participants have been asked about has the family member contracted the disease. Where 94% (348) replied that no member of the family was hurt, while 6% (22) they replied that a member of the family had been injured.

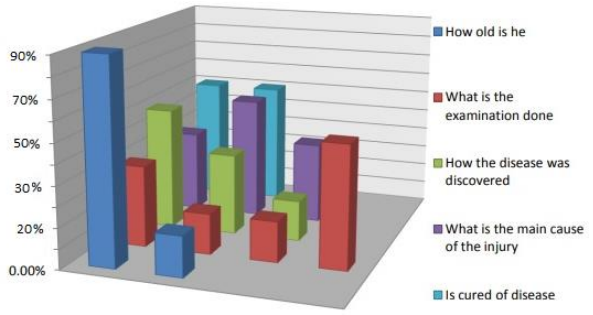

Figure 1: graph shows if any member of the family has PC.

Wherefore considered 22 infected persons in this study equal to 100% and based on that, noted from figure 1 that in the question of about the age 86.4% (19) answered more than 40 and 18.2% (4) answered less than 40. In question what is the examination done by 31.8% (7) answered the RE, 50% (11) do not know, 18.2% (4) PSA, 18.2% (4) Ultrasound. In the question of how the disease was discovered 50% (11) answered the symptoms, 31.8% (7) was discovered by chance, 18.2% (4) I do not know. In the question of what is the main cause of the disease 31.8% (7) answered genetics, 50% (11) answered age, 31.8% (7) answered I do not know. In the question is cured of a disease the answer to yes and no is equal, where it was 50% (11).

3.1 Hypothesis Analysis

According to the eight hypotheses which are studied in this research, there is no significant difference between a seven of them. The knowledge of prostate cancer is relatively high and a rectal examination is little (Mean:3.2888, and Standard Deviation:1.98706). There is no significant correlation between male knowledge PC and RE according to age, the social status, the number of family members, the nature of the university and its policy, the college year, and the university specialization.

There is no significant correlation between male's knowledge and PC according to the age ($P \leq 0.037$, Pearson Correlation: 0.155). There is no significant differences on male's knowledge PC and RE according to the religion ($P \leq 0.461$), where the muslim participants obtain (Mean:3.3072 , and Standard Deviation:1.95298), and the christian participants obtain (Mean:3.6667 , and Standard Deviation:2.02920).

While the relation between male's knowledge PC and RE according to the address obtained significant

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differences (P≤ 0.001), where the civilian participants (Mean:3.6842, and Standard Deviation:1.83502) had some knowledge more than who lives in camps and villages (Mean:2.6552, and Standard Deviation:2.02265), and (Mean:3.1333, and Standard Deviation:2.02917) respectively.

There is no significant differences on male's knowledge PC and RE according to the social status (P= 0.106), where are the single obtaine (Mean:3.352, and Standard Deviation:1.95573), and married obtain (Mean:1.600, and Standard Deviation:2.50998). There is no significant differences on male's knowledge PC and RE according to the number of family members (P≤ 0.37, Pearson Correlation: 0.075).

There is no significant differences on male's knowledge PC and RE according to the nature of university and its policy (P= 0.370). The first university students obtain (Mean:3.5385, and Standard Deviation:2.05285), the second university students obtain (Mean:3.3548, and Standard Deviation:1.97606), and the third university students obtain (Mean:3.1618, and Standard Deviation:1.89745).

There is no significant differences at (P≤ 0.158) on male's knowledge PC and RE according to the college year. The first batch students obtain (Mean:2.7895, and Standard Deviation:2.10736), the second batch students obtain (Mean:3.1875, and Standard Deviation:2.01754), the third batch students obtain (Mean:3.7407, and Standard Deviation:1.85208), and the fourth batch students obtain (Mean:3.4928, and Standard Deviation:1.85997).

There is no significant differences at (P ≤ 0.031) on female's knowledge PC and RE according the university specialization.

The mean score for medical specialty is 4.6667, and the mean score for non- medical specialty is 4.4216.

4. Discussion

The diagnosis of PC in the late stages makes the side effect harder and reaching to anxiety and creates distrust from the patients toward the physicians because of did not get the optimal therapy [13]. Moreover, the response of patients to the therapy plan is slow and leaves side effects on them [14]. PC must be described as a clear, chronic complication, and its long impact on the patients, in addition, exposure to the toxicities because of the accumulated treatments, so enhances the need for survivorship instructions [15]. According to this study, the survival rate was 3% from 6%, which means 50% of infected patients lost their lives.

In this study, the level of RE and PSA knowledge for participants lower than in Arab countries, where reached 26% and more than 50% of participants did not hear about the early detection of PC. The RE and PSA are two methods to exam the prostate gland which has a big role to detect PC in the early stages and improve the survival rate by reducing the mortality rate [16]. The diagnosis of PC in the final stage may need a more accurate method such as biopsy, but this method has side effects that most patients may refuse to undergo for this exam [17]. In Arab nearby countries such as Jordan, Egypt, and Saudi Arabia, the level of knowledge was not less than 48% and not exceeded 58% about the examination of PSA [18].

The findings of this study indicate a low to moderate level of awareness and knowledge regarding prostate cancer and its screening methods among male university populations in Palestine. Despite relatively high educational status, participants demonstrated substantial knowledge gaps, particularly concerning early detection and screening modalities.

Moreover, the media has become an important element to transfer knowledge, where in this study the percent of participants who obtained the information about the PC, and RE and PSA by the media were 42.7% and 51% respectively. The significant association between residence and knowledge level highlights the impact of health information accessibility and socioeconomic factors. Men residing in villages and refugee camps may face compounded barriers, including limited healthcare infrastructure and reduced exposure to health education initiatives.

According to the Mustafa Sungura and Selahattin Caliskan study, the level of education have a role to the level of knowledge, where 66.03% of participants had a PC knowledge, and the explanation about the low percentage was that most participants doesn't arrived the university education level[20], but in this study all of participants from the universities and most of them didn't graduate yet, the percent of knowledge was higher for students who are in the final

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stages of university education, but at negligible proportions. Should be noted the nature of community spends many times to watch the television and listen to the radio, so these methods proved its efficiency to give them information in the easiest way [19].

This study proved 86% of the prostate cancer-affected persons in this study were over 40 years old, and the probability of infection increase with age [20]. In contrast, 50% of the prostate cancer-affected persons were genetic reasons [21,22]. Therefore, the two main risk factors of PC according to this study were age and genetic factors, where these results agree with the previous studies. In Palestine, prostate cancer ranks third among cancers affecting males (https://healthclusteropt.org/). Palestinian men are still facing and increasing threat to it year by year, and the optimal survival from prostate cancer in men can be achieved by RE which is a simple, quick, and cost-free procedure for early detection. This study is a flowchart must be followed to change the methodology towards men and improving awareness through a clear procedure to be using by a general population. Where this study has a huge evidence to acute decrease of a knowledge PC and its complication on the human among the general population.

This study has several limitations. The cross-sectional design precludes causal inference. Convenience sampling limits generalizability beyond university populations. Additionally, the use of a self-administered questionnaire may introduce response bias. Future studies should employ validated knowledge scales and include broader population samples.

5. Conclusion

Awareness and knowledge of prostate cancer and its screening methods among male university populations in Palestine remain inadequate. Significant gaps exist in understanding risk factors, early detection, and screening procedures. Comprehensive health education programs and coordinated public health strategies are urgently needed to improve prostate cancer awareness and promote early detection behaviors.

The awareness will contribute to know the symptoms and how to check the integrity of bladder and prostate, additionally to check the prostate when the male feel an uncomfortable in this area, which leads to reduce the prostate cancer between males in Palestine. Most prostate cancer patients are affected because they lack knowledge about how to manage the disease.

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