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Evaluation of knowledge, attitude and practice regarding prostate cancer and its screening among men: A hospital centered study

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Abstract
Background: Prostate cancer is one of the leading causes of cancer-related morbidity and mortality among men worldwide. Early detection through screening significantly improves outcomes. Lack of awareness, negative attitudes and poor screening practices contribute to delayed diagnosis, particularly in developing countries. Limited data exist on the awareness levels of prostate cancer among Indian men.
Objectives: To assess the knowledge, attitude, and practice related to prostate cancer and its screening among men aged 40 years and above attending a tertiary care teaching hospital.
Methods: A cross-sectional, questionnaire-based study was conducted among 130 male participants aged ≥ 40 years at a tertiary teaching hospital for a period of three months. A validated KAP questionnaire was used to collect data. Chi-square test was used to assess associations between socio-demographic variables and knowledge levels, with $p < 0.05$ considered significant.
Results: Only 25.3% of participants had ever heard of prostate cancer, with family/friends (12.3%) being the most common information sources. Knowledge of major risk factors was poor, older age (32.3%), obesity (25.3%), smoking (36.1%), and family history (29.2%). Attitudinal barriers were common, 70.7% of the participants considered digital rectal examination embarrassing, 66.9% found it physically uncomfortable, and 63.8% feared a positive diagnosis. Screening practices were extremely low, with only 3% having ever undergone prostate-specific antigen test or digital rectal examination. Knowledge was significantly associated with increasing age (P=0.047) and higher education levels (P=0.002), while marital status showed no significant association (P=0.469).
Conclusion: Our study identified a markedly low awareness, widespread misconceptions, and minimal screening uptake for prostate cancer among men. Psychological, cultural, and informational barriers strongly influence screening behaviour. Targeted educational interventions and counselling strategies are urgently required to improve knowledge, reduce stigma and promote early detection practices among men at risk.

Keywords: Prostate cancer, knowledge, attitude, practice, screening, awareness

Introduction
Prostate cancer (PCa) is a common cancer in men and a major health issue that causes many deaths among adult males worldwide [1-3]. An estimated 3,75,304 people die from prostate cancer, accounting for 3.8% of all cancer-related deaths worldwide. Prostate cancer is considered to be the second leading cause of cancer-related mortality among men in the United States. Approximately one in every 41 men will lose his life to prostate cancer [2].
Prostate cancer usually does not cause symptoms in its early phases, making it difficult to detect without regular screening. The disease begins in the prostate gland; a component of the male reproductive system found only in men. As men grow older, the prostate commonly enlarges due to a non-cancerous condition called benign prostatic hyperplasia (BPH), which can lead to symptoms that resemble those of prostate cancer [1]. The median age of PCa presentation is 68 years and while PCa is rare in men under 50. For this reason, men are encouraged to begin screening as early as age 40. However, due to changing lifestyle patterns, incidence among young men has risen notably in the past years [1, 2].

Globally, optional screening tools such as non-confirmatory prostate-specific antigen (PSA) blood tests and digital rectal examinations (DRE) are available for the early detection of prostate cancer. However, the uptake of these screening services is still very low [3]. A delay in the diagnosis and treatment of prostate cancer can allow the disease to progress to a more advanced stage, ultimately leading to poorer clinical outcomes [4]. Barriers to screening could be financial barriers, lack of health insurance, and/or poor health-seeking behaviour. Additionally, cultural and social factors may discourage men from seeking medical help [2, 4]. The increased mortality rate is mainly associated to delayed presentation of the disease [5].

India ranks among the top ten countries with the highest incidence of PCa, with an Age-Standardized Incidence Rate (ASIR) of 5.6 per 100,000. Diet and physical activity and increasing age are key in the development and progression of PCa. In India, the trends and burden of PCa have been understudied compared to Western countries but with the rapid socio-economic development and adoption of Western lifestyles, there has been an observed increase in the incidence of PCa [6]. India's diverse racial subpopulations are affected differently by PCa burden which could be due to the inherent stigma associated with these populations [7].

Due to the aging population and population growth, the expected PCa cases will increase in forthcoming years. Thus, prevention and early detection are of critical importance to public health [8]. Despite its prevalence, there is a lack of awareness of the disease, its risk factors, and available screening methods among many men. This lack of knowledge often results in late diagnosis, delayed treatment, and unfavourable outcomes. Enhancing awareness and understanding of prostate cancer within this population is crucial. Educational programs serve as an effective way to increase knowledge and awareness [4].

In this backdrop, the study was planned with the objective to assess the knowledge, attitude and practice (KAP) regarding prostate cancer and its screening among men aged 40 years and above in the study hospital.

Materials and Methods

Study design

The study employed a cross-sectional design and collected data between, June to September 2025. Structured self-administered questionnaires were used to gather information on participants' knowledge, attitudes, and practices related to prostate cancer (PCa) screening.

Study site and setting

This study was conducted at Navodaya Medical College hospital & Research Centre, Raichur, Karnataka. The hospital is a 1000 bedded multispecialty tertiary care teaching hospital and is well known for its service to all sections of the society. The study was approved by Institutional Ethics Committee of the study hospital.

Study population, inclusion and exclusion criteria

All men aged 40 years and older were included in the study. Individuals from both inpatient and outpatient settings of the study hospital who were willing to participate were included in the study. Males who were undergoing treatment for prostate cancer, unwilling participants and females were excluded from the study.

Sample size and sampling method

Formula for sample size calculation.

$$n = \frac{Z^2 p(1-p)}{d^2}$$

So, $n = \frac{(1.96)^2 X 0.01(1-0.01)}{(0.0171)^2}$

So, n=130.06(≈ 130)

Where,

- n=Required sample size
- Z=Value for 95% Confidence Interval (1.96)
- p=Estimated proportion
- d=Margin of error

Study tool

The data collection tool used in this study was a structured and validated Knowledge, Attitude, and Practice (KAP) questionnaire. The questionnaire was adapted from the study conducted by *Tapera et al.* [1] titled "Prostate cancer screening: Knowledge, attitudes and practices in a sample of men in Ramotswa, Botswana". The original questionnaire demonstrated acceptable reliability with Cronbach's alpha scores of 0.79 (practice), 0.87 (attitude) and 0.89 (knowledge).

Data analysis

The descriptive statistics for categorical variables were expressed in numbers and percentages. The association between socio-demographic factors and knowledge of prostate cancer was tested using the Chi-square test, with a p-value of < 5% considered statistically significant.

Results

Table 1: Socio-demographic characteristics of study participants (N=130)

S. No	Variables (N=130)	Frequency (N)	Percentage (%)
1	**Age (In years)**		
	40-49	84	64.6
	50-59	40	30.7
	60 and above	6	4.6
	Marital Status		
	Single	9	6.9
	Married	121	93.07
3	**Educational Status**		
	Primary and below	8	6.1
	Secondary	40	30.7
	Senior Secondary	47	36.1
	University	35	26.9

A total of 130 men participated in the study. The majority of the participants (64.6%) were between 40-49 years and mean age was 45 years. Majority of the study participants (93%) were married. Education levels ranged from primary to university, with 36.1% having senior secondary education. Socio-demographic characteristics of study participants are shown in Table 1. As shown in Table 2, only 25.3% had heard about prostate cancer, with family/friends and internet being the main information sources. Knowledge of risk factors was generally low, 32.3% knew older age is a risk factor, 25.3% identified obesity, 36.1% recognized smoking, and 29.2% knew family history increases risk. Awareness of sexually transmitted infections as a risk factor was slightly higher (40%).

Table 2: Distribution of respondents with knowledge of prostate cancer (N=130)

S. No	Variables (N=130)	Frequency (N)	Percentage (%)
1	**Have you heard about Prostate Cancer (PCa)?**		
	Yes	33	25.3
	No	97	74.6
2	**Source of Information**		
	TV	1	0.7
	Internet	12	9.2
	Radio	00	00
	Doctor	4	3.07
	Family/Friend	16	12.3
3	**Older age is a risk factor for PCa**		
	Yes	42	32.3
	No	88	67.6
4	**Obesity is a risk factor for PCa**		
	Yes	33	25.3
	No	97	74.6
5	**Smoking is a risk factor for PCa**		
	Yes	47	36.1
	No	83	63.8
6	**Family history is a risk factor for PCa**		
	Yes	38	29.2
	No	92	70.7
7	**Sexually transmitted infections is a risk factor for PCa**		
	Yes	52	40
	No	78	60

Negative attitudes pose significant barriers in the participants. Almost 66.9% found DRE (Digital Rectal Examination) physically uncomfortable and 70.7% found it embarrassing. Furthermore, 63.8% were afraid of a cancer diagnosis, 60% cited being too busy for screening and 55.3% of the participants considered it important to have the screening test. The details are depicted in Table 3.

Table 3: Attitude of participants towards prostate cancer screening (N=130)

S. No	Variables (N=130)	Frequency (N)	Percentage (%)
1	**I am bothered by the possibility that DRE (Digital Rectal Exam) might be physically uncomfortable**		
	Agree	87	66.9
	Disagree	43	33.07
2	**I am too busy to go for prostate cancer screening.**		
	Agree	78	60
	Disagree	52	40
3	**I think going through a digital rectal exam would be embarrassing.**		
	Agree	92	70.7
	Disagree	38	29.2
4	**I am afraid the test result will show I have prostate cancer.**		
	Agree	83	63.8
	Disagree	47	36.1
5	**It is important to me to have a prostate cancer screening test.**		
	Agree	72	55.3
	Disagree	58	44.6

Table 4 demonstrates extremely low screening rates. Only 3% of participants reported having ever been tested for prostate cancer. The same participants reported that they had undergone a Prostate-Specific Antigen (PSA) test and a Digital Rectal Examination (DRE). Furthermore, the intention for future screening was also low, with only 40% of participants indicating a "Yes" to being screened in the future.

Table 4: Prostate cancer screening practice among participants (N=130)

S. No	Variables (N=130)	Frequency (N)	Percentage (%)
1	**Have you ever tested for prostate cancer?**		
	Yes	4	3
	No	126	97
2	**Have you undergone A Prostate-Specific Antigen (PSA) test?**		
	Yes	4	3
	No	126	97
3	**Have you undergone Digital Rectal Examination (DRE)?**		
	Yes	4	3
	No	126	97
4	**Do you have any intention to be screened in future?**		
	Yes	51	40
	No	79	60

A significant association was observed between demographic factors and knowledge of prostate cancer screening. Awareness rose with age, from 14.3% in men aged 40-49 years to 37.5% in 50-59 years and 66.7% in those aged 60 years and above (χ^2=6.12, P=0.047). Education also had a strong significant association (χ^2=14.82, P=0.002), with university-educated men showing the highest awareness (34.3%) compared to only 12.5% among those with primary or secondary schooling Marital status showed no significant association (χ^2=0.52, P=0.469), as both married and single men had similarly low awareness levels. Overall, age and education were the key predictors of prostate cancer awareness in this study. Details are shown in Table 5.

Table 5: Demographic factors and the knowledge of prostate cancer (N=130)

Independent Variables	Knowledge of prostate cancer screening					
	Yes		No		Chi² value	P-Value
	N	%	N	%		
Age group						
40-49 (N=84)	12	14.3	72	85.7	6.12	0.047
50-59 (N=40)	15	37.5	25	62.5		
60 and above (N=6)	4	66.7	2	33.3		
Educational Status						
Primary and below (N=8)	1	12.5	7	87.5	14.82	0.002
Secondary (N=40)	5	12.5	35	87.5		
Senior Secondary (N=47)	13	27.7	34	72.3		
University (N=35)	12	34.3	23	65.7		
Marital Status						
Single (N=9)	3	33.3	6	66.7	0.52	0.469
Married (N=121)	28	23.1	93	76.9		

Discussion

The present hospital-based study assessed the knowledge, attitude, and practice (KAP) towards prostate cancer (PCa) and its screening among men aged 40 years and above. The findings revealed substantial gaps in awareness, risk-factor recognition and screening practices, similar to trends reported globally.

In this study, only 25.3% of participants had ever heard of prostate cancer, showing a significant lack of disease awareness. This is consistent with findings from *Tapera, et al.* [1], who also reported poor awareness of PCa among men in Botswana, indicating that low knowledge is a common public health challenge in developing regions. In our study, we found that men primarily learnt about prostate cancer from sources like friends/family and internet. Only 3% of participants reported information on PCa from medical doctors, this gap highlights the need for healthcare professionals to proactively educate patients about prostate cancer and the importance of screening. Awareness of major risk factors such as older age, obesity, smoking, and family history was also poor.

Attitudes toward prostate cancer screening showed a mixture of concern and willingness. Majority of the participants reported fear, embarrassment, and misconceptions regarding digital rectal examination. Such attitudinal barriers have been consistently reported in *Ojewola et al.* [10] and *Nakandi et al.* [11], where emotional and cultural discomfort remain major deterrents to screening. Despite these barriers, 55.3% of the participants opined that it is important to them to have a prostate cancer screening test.

Screening practices were extremely low in this study, with only 3% reporting ever undergoing PSA or DRE testing. Poor screening uptake has been linked to lack of awareness, absence of physician recommendation, and stigma. This suggests that awareness alone is insufficient without addressing psychological, cultural and system-level barriers.

Our study demonstrates that both age and education significantly influence men's awareness of prostate cancer and its screening, highlighting important sociodemographic predictors of knowledge levels. Awareness increased progressively with advancing age, suggesting that older men may perceive themselves at higher risk and thus engage more with health information. Similarly, men with higher education, particularly those with university-level qualifications, exhibited the greatest awareness, reinforcing the role of education in shaping health literacy and proactive health-seeking behavior. In contrast, men with only primary or secondary schooling showed markedly lower awareness, indicating a gap that warrants targeted educational

interventions. Marital status, however, was not associated with awareness, implying that personal or family responsibilities may not directly influence knowledge of prostate cancer screening. These findings emphasize the need for age-specific and education-specific awareness programs to improve early detection practices and reduce the burden of prostate cancer in the community.

Given the rising incidence of PCa in India, especially among aging males, early detection through PSA and DRE screening can drastically reduce mortality. The present study contributes to existing literature by highlighting the urgent need for strengthening patient education. The study also highlights the need for targeted educational interventions in Indian settings.

Conclusion

We found that awareness of prostate cancer among men was very low, and most participants could not identify its major risk factors. Attitudinal barriers such as embarrassment, fear, and lack of time further contributed to extremely poor screening practices, with only a few men ever undergoing PSA or DRE tests. These findings highlight the need for focused educational programs to improve knowledge and encourage early screening, which is essential for timely detection and better health outcomes.

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Conflict of Interest

The authors declare that no conflict-of-interest exists.

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