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Original Article

Determinants of Prostate Cancer Screening in Western Iran: Evidence from the Health Action Process Approach

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Abstract

Introduction: Prostate cancer (PCa) is the leading malignancy among Iranian men, with high morbidity often resulting from delayed diagnosis. Early detection through prostate-specific antigen (PSA) screening can significantly improve treatment outcomes. The present study aimed to identify the predictors of PSA screening using the Health Action Process Approach (HAPA).

Methods: This cross-sectional study was conducted among 600 men aged 50–69 years without a history of PCa, selected through multistage cluster sampling from health centers in Kermanshah, western Iran. Data were collected between March and May 2023 using a structured researcher-made questionnaire based on the HAPA. The questionnaire was reviewed by experts for content validity and pilot-tested for reliability. Crude and adjusted logistic regression analyses were performed to identify predictors of PSA screening.

Results: Based on the results, 7.7% of the participants (46 out of 600) had undergone PSA screening at least once. In the adjusted logistic regression model, academic education (AOR = 3.65, 95% CI: 1.09–12.15, $P = 0.035$), family history of PCa (AOR = 14.36, 95% CI: 5.83–35.32, $P < 0.001$), task self-efficacy (AOR = 1.20, 95% CI: 1.00–1.43, $P = 0.041$), and coping planning (AOR = 1.34, 95% CI: 1.06–1.69, $P = 0.014$) were identified as independent predictors of PSA screening uptake.

Conclusion: Academic education, family history of prostate cancer, task self-efficacy, and coping planning were key predictors of PSA screening. Brief theory-driven interventions should be developed to target high-risk and lower-education groups to improve screening and early detection.

Keywords: Prostatic neoplasms, Mass screening, Health behavior, Self-efficacy, Iran

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Introduction

Prostate cancer (PCa) is the second most common cancer among men worldwide, following lung cancer, and represents a major public health challenge. In 2022, there were 1467854 new cases and 397430 deaths attributed to PCa globally, making it the fifth leading cause of cancer mortality among men (1). Recent projections highlight a further surge in incidence and mortality in the coming decade (2), underscoring the importance of timely prevention and early detection. PCa is among the most prevalent cancers in Iranian men, with a steadily increasing incidence, especially in western provinces such as Kermanshah (3). Late diagnosis remains a critical challenge, often leading to poor outcomes and elevated mortality (4). Therefore, screening is essential for early detection, especially among high-risk groups such as men aged 50 and above, where timely intervention can significantly improve survival rates (5).

Prostate-specific antigen (PSA) testing and digital rectal examination are the most widely used screening methods. Although these methods are not entirely precise, they enable early identification of PCa and facilitate preventive action (6). However, recommendations regarding the optimal age for PSA screening vary across organizations.

Recent evidence suggests that initiating PSA testing at a younger age may be associated with greater reductions in the mortality rates of prostate cancer (7). In low- and middle-income countries (LMICs), including Iran, late-stage diagnosis of prostate cancer remains prevalent. This diagnostic delay contributes to substantially higher treatment costs, increased clinical complications, and poorer survival outcomes (8).

Evidence from long-term randomized trials has shown that PSA screening can reduce PCa mortality rate by up to 44% over 14 years and 29% over 22 years of follow-up (7). Despite these benefits, screening rates remain low in many regions. Recent literature on cancer control emphasizes that demonstrating efficacy alone is insufficient; in other words, the population-level impact of screening programs depends largely on effective implementation strategies, including health system preparedness, provider engagement, culturally appropriate education, and community-based outreach (9). Furthermore, consolidated behavioral and implementation models highlight that structured planning, identification of multilevel determinants, and context-specific adaptation are essential to translate screening evidence into routine practice (10). In resource-limited settings, inadequate implementation infrastructure and limited behavioral insight are major barriers to successful screening uptake (9, 10). This highlights the importance of theory-based planning to guide effective interventions, particularly in resource-limited settings where implementation challenges persist (9, 10). Previous studies have examined various aspects of PCa screening; however, few have applied comprehensive behavioral models to identify psychological and contextual predictors in Iranian populations (11, 12).

The Health Action Process Approach (HAPA), which was developed by Schwarzer in 1992, provides a robust framework for understanding and influencing health behaviors, including cancer screening (13–16). HAPA integrates elements from multiple behavioral theories to explain how individuals initiate and maintain preventive actions. This model emphasizes constructs such as self-efficacy, intention, planning, and action control, which are critical in shaping screening behavior (15). Applying theory-driven frameworks such as HAPA can strengthen the implementation process by systematically identifying modifiable determinants of behavior and informing the design of structured evidence-based interventions in preventive oncology (10).

Given the rising incidence of PCa in Iran and the persistently low uptake of screening services, this study aims to identify the predictors of PSA screening among men aged 50–69 in Kermanshah, western Iran, using the HAPA model. By integrating behavioral determinants with evidence on screening effectiveness and implementation-oriented perspectives, the findings can inform targeted public health strategies to improve screening uptake. The novelty of this study lies in its application of a theory-driven and implementation-informed approach in a region with low screening rates, offering practical insights for health promotion, educational planning, and policy development.

Materials and Methods

Study Population

This cross-sectional study was conducted in Kermanshah city, located in western Iran. The participants consisted of 600 men aged 50–69 years who had no history of PCa. Inclusion criteria were being male, being 50-69 years, and being registered at comprehensive health service centers in Kermanshah. Exclusion criteria included unwillingness to participate, cognitive impairment, or incomplete questionnaire responses. The study population was restricted to men aged 50–69 years because PCa incidence and mortality increase substantially after the age of 50, making this group the primary target for early detection and preventive interventions. Previous evidence in Iran has also indicated that men over 50 are more vulnerable to PCa and simultaneously show lower participation in screening programs, underscoring the importance of focusing on this age group to identify determinants of screening behavior and to design effective educational and policy interventions (11).

Participants were selected using a multistage cluster sampling method. First, Kermanshah was stratified into its 8 municipal districts. From each district, 2 comprehensive health service centers were randomly chosen, resulting in a total of 16 centers. Within each selected center, a list of eligible men aged 50–69 years was prepared, and participants were recruited using simple random sampling. Approximately 37–38 individuals were selected from each center to reach the total sample size of 600. If an individual declined participation, another eligible person was randomly chosen as a replacement. This approach ensured a representative sample across different urban areas of the city. Before participating in the study, individuals were provided with detailed information about the study objectives and the confidentiality of their data, and written informed consent was obtained. Data collection took place between March and May 2023. The study was approved by the Ethics Committee of Kermanshah University of Medical Sciences (IR.KUMS.REC.1401.335).

Measurement Tools

Data were collected using a structured self-administered questionnaire consisting of 3 distinct sections: demographic characteristics, PCa screening history, and HAPA model constructs. Each section is described below in order, with references, scoring methods, and validation procedures clearly stated.

1. Demographic Characteristics: Participants provided information on age (in years), level of education (primary, secondary, high school, or university), marital status (single or married), employment status (unemployed, employed, or retired), number of family members (1–2, 3–4, 5–6, or more than 6),

perceived economic status (low, medium, or high), family history of PCa (yes/no), and health insurance status (yes/no). This section consisted of 8 items. No scoring was applied, and responses were used for descriptive and analytical purposes.

2. PCa Screening History: This section assessed participants' history of PCa screening using a single yes/no item: Have you ever done a PSA test? Responses were coded as binary variables (yes = 1, no = 0) for analysis.
3. HAPA Model Constructs: The third section of the questionnaire assessed determinants of PSA screening behavior based on the HAPA, originally developed by Schwarzer et al (15). Items were adapted from validated instruments used in recent studies on cancer screening behavior (13-18) and reviewed by a panel of experts including health educators, public health specialists, and a urologist to ensure cultural relevance and conceptual clarity. This section included 27 items covering 9 constructs, each rated on a 5-point Likert scale ranging from strongly disagree [1] to strongly agree [5]. Reliability was assessed using Cronbach's alpha coefficients, all of which exceeded the recommended threshold of 0.70 (19), indicating acceptable internal consistency. Content validity was evaluated using the Content Validity Ratio (CVR) and Content Validity Index (CVI), based on Lawshe's method and the updated recommendations by Polit and Beck (20). A total of 12 experts independently rated each item for relevance, clarity, and simplicity. Items with CVR values above 0.56 and CVI values above 0.80 were retained, confirming strong content validity (20). Face validity was further assessed using the Impact Score (21), calculated from pilot testing with 30 participants from the target population. Each item was rated for importance and clarity, and the impact score was computed. Items with an impact score greater than 1.5 were retained, confirming that the questionnaire items were understandable, culturally appropriate, and free of ambiguity. The obtained impact scores ranged from 2.61 to 3.74, indicating acceptable face validity across all constructs. A detailed overview of these constructs, sample items, reliability coefficients, and impact scores is presented in Table 1.

Data Analysis

Data analysis was performed using SPSS version 16. Descriptive statistics including frequency, percentage, mean, and standard deviation (SD) were used to summarize the data. The relationships between HAPA constructs were examined using Pearson correlation coefficients. Logistic regression analysis was conducted to identify predictors of PSA screening behavior. In the unadjusted model, all relevant variables were initially included. Variables with a *P*-value greater than 0.25 were excluded from the adjusted model, while those with a *P*-value less than or equal to 0.25 were retained. This threshold was selected based on recommendations by Bursac et al (22), who suggest using a liberal *P*-value cut-off at the initial stage to avoid excluding potentially important predictors in multivariable modeling. In the logistic regression analysis, the dependent variable was whether participants had undergone PSA screening (yes/no). Independent variables included sociodemographic characteristics: age (≤ 59 [reference] vs. ≥ 60), marital status (single [reference] vs. married), education level (primary school [reference], secondary school, high school, academic), job status (retired [reference] vs. employed), family size (1–2 [reference], 3–4, 5–6, > 6), economic status (low [reference], medium, high), family history of prostate cancer (no [reference] vs. yes), and health insurance coverage (no [reference] vs. yes). In addition, psychological determinants derived from the HAPA model were included as continuous predictors: task self-efficacy, outcome expectancies, risk perception, intention, maintenance self-efficacy, action planning, coping planning, recovery self-efficacy, and monitoring.

Results

The average age of the participants was 58.01 years [95% CI: 57.57, 58.43], with ages ranging from 50 to 69 years. The demographic variables presented in Table 2 summarize the characteristics of the study population. Most participants were younger than 59 years (62.5%), while 37.5% were 60 years or older. Regarding marital status, the majority were married (84.8%), with singles comprising 15.2%. The high school level was the most common educational level (46.5%), followed by secondary school (22.5%), primary school (17.7%), and academic degrees (13.3%). Employment status indicated

Table 1. Psychological Constructs Related to PSA Screening, Sample Items, Internal Consistency Coefficients (Cronbach's α), and Impact Score

Construct	Items	Sample item	Cronbach's α	Impact score
Risk perception	3	It is possible that I will develop prostate cancer in the future.	0.84	3.15
Outcome expectancies	4	If I undergo PSA screening, my quality of life will improve.	0.91	2.88
Task self-efficacy	3	I am confident that I can make time for PSA screening.	0.85	3.11
Intention	2	I intend to undergo PSA screening in the next 6 months.	0.72	2.83
Action planning	3	I already have concrete plans to undergo PSA screening periodically.	0.83	3.20
Coping planning	3	If I miss a screening appointment, I will reschedule it as soon as possible.	0.86	2.79
Maintenance self-efficacy	3	If my test result is inconclusive, I will repeat the screening.	0.85	2.61
Recovery self-efficacy	3	I am confident I can resume PSA screening even if I postpone it several times.	0.82	2.91
Self-monitoring	3	I follow expert recommendations when performing PSA screening.	0.80	3.74

Table 2. Crude and Adjusted Logistic Regression Analyses Predicting PSA Screening Uptake

Variables	Category	Total N (%)	Crude regression model		Adjusted regression model	
			unadjusted OR (95% CI)	*P*	adjusted OR (95% CI)	*P*
Age	59≥(Ref.)	375 (62.5 %)			-	-
	60≤	225 (37.5 %)	1.07 (0.58, 1.99)	0.812		
Marital status	Single (Ref.)	91 (15.2 %)			-	-
	Married	509 (84.8 %)	1.50 (0.57, 3.92)	0.401		
Education level	Primary school (Ref.)	106 (17.7 %)				
	Secondary school	135 (22.5 %)	0.77 (0.21, 2.75)	0.696	0.87 (0.22, 3.48)	0.849
	High school	279 (46.5 %)	1.56 (0.57, 4.26)	0.378	1.34 (0.43, 4.15)	0.605
	Academic	80 (13.3 %)	5.05 (1.76, 14.4)	0.003	3.65 (1.09, 12.15)	0.035
Job	Retired (Ref.)	97 (16.2 %)			-	-
	Employed	503 (83.8 %)	1.63 (0.62, 4.24)	0.314		
Family size	1-2 number (Ref.)	33 (5.5 %)			-	-
	3-4 number	258 (43 %)	0.88 (0.24, 3.14)	0.852		
	5-6 number	200 (33.3 %)	0.91 (0.25, 3.36)	0.911		
	More than 6	109 (18.2 %)	0.48 (0.10, 2.12)	0.335		
Economic status	Low (Ref.)	166 (27.7 %)				
	Medium	401 (66.8 %)	5.52 (1.67, 18.17)	0.005	3.45 (0.93, 12.79)	0.063
	High	33 (5.5 %)	12.07 (2.84, 51.19)	0.001	3.21 (0.57, 18.14)	0.186
Family history of PCa	No (Ref.)	566 (94.3 %)				
	Yes	34 (5.7 %)	13.62 (6.32, 29.35)	<0.001	14.36 (5.83, 35.32)	<0.001
Health insurance	No (Ref.)	73 (12.2 %)			-	-
	Yes	527 (87.8 %)	1.49 (0.52, 4.29)	0.456		
Task self-efficacy			1.24 (1.09, 1.41)	0.001	1.20 (1.00, 1.43)	0.041
Outcome expectancies			1.13 (1.01, 1.28)	0.033	1.02 (0.86, 1.20)	0.800
Risk perception			1.06 (0.93, 1.20)	0.360	-	-
Intention			1.14 (0.93, 1.41)	0.200	0.784(0.55, 1.10)	0.167
Maintenance self-efficacy			1.252(1.07, 1.45)	0.003	1.10 (0.88, 1.39)	0.383
Action planning			1.14 (1.01, 1.29)	0.023	1.07 (0.88, 1.29)	0.489
Coping planning			1.29 (1.11, 1.50)	0.001	1.34 (1.06, 1.69)	0.014
Recovery self-efficacy			1.18 (1.04, 1.34)	0.010	0.90 (0.75, 1.07)	0.253
Monitoring			1.09 (0.95, 1.25)	0.209	0.94 (0.76, 1.16)	0.608

that 83.8% of the participants were employed, whereas 16.2% were retired. Regarding family size, nearly half of the respondents lived in families with 3-4 members (43%), followed by 5-6 members (33.3%). Additionally, smaller households of 1-2 members (5.5%) and larger households exceeding 6 members (18.2%) were reported less frequently. Economic status was predominantly moderate (66.8%), compared to low (27.7%) and high (5.5%). A family history of PCa was reported in 5.7% of participants. The vast majority of individuals had health insurance coverage (87.8%), while 12.2% did not.

Table 2 also presents the crude and adjusted logistic regression analyses predicting PSA screening uptake. In the crude model, academic education (OR = 5.05, 95% CI: 1.76–14.4, $P = 0.003$), medium economic status (OR = 5.52, 95% CI: 1.67–18.17, $P = 0.005$), high economic status (OR = 12.07, 95% CI: 2.84–51.19, $P = 0.001$), family history of prostate cancer (OR = 13.62, 95% CI: 6.32–29.35, $P < 0.001$), task self-efficacy (OR = 1.24, 95% CI: 1.09–1.41, $P = 0.001$), outcome expectancies (OR = 1.13, 95% CI: 1.01–1.28, $P = 0.033$), maintenance self-efficacy (OR = 1.25, 95% CI: 1.07–1.45, $P = 0.003$), action planning (OR = 1.14, 95% CI: 1.01–1.29, $P = 0.023$), coping planning (OR = 1.29, 95% CI: 1.11–1.50, $P = 0.001$), and recovery self-efficacy (OR = 1.18, 95% CI: 1.04–1.34, $P = 0.010$) were significantly associated with screening. In the adjusted model, academic education (AOR = 3.65, 95% CI: 1.09–12.15, $P = 0.035$), family history of prostate cancer (AOR = 14.36, 95% CI: 5.83–35.32, $P < 0.001$), task self-efficacy (AOR = 1.20, 95% CI: 1.00–1.43, $P = 0.041$), and coping planning (AOR = 1.34, 95% CI: 1.06–1.69, $P = 0.014$) remained significant predictors of PSA screening uptake, while other variables lost statistical significance after adjustment.

Among the 600 participants, 7.7% (n = 46) had undergone PSA screening, indicating the overall uptake within the study population.

Table 3 presents the descriptive statistics and bivariate correlations among the HAPA determinants. The variable Intention demonstrated significant correlations with

several constructs. The strongest correlation was observed with action planning (r = 0.664), highlighting a robust association between behavioral intention and practical planning. Intention also showed notable correlations with maintenance self-efficacy (r = 0.464), coping planning (r = 0.508), recovery self-efficacy (r = 0.432), and monitoring (r = 0.536). In addition, significant positive correlations were found with outcome expectancies (r = 0.342), risk perception (r = 0.396), and task self-efficacy (r = 0.261).

From a descriptive perspective, the mean scores of the HAPA determinants (Table 3) fell within the upper range of their respective scales, indicating generally moderate to high levels across constructs. Specifically, the mean score of task self-efficacy was 11.26 ± 3.23 out of a possible range of 3–15, while outcome expectancies had the highest mean score of 16.50 ± 2.99 out of a range of 4–20. The mean score of risk perception was reported to be 12.15 ± 2.49 out of 3–15, and the mean score of intention was 7.98 ± 1.51 out of a range of 2–10. Similarly, the mean scores of maintenance self-efficacy (11.85 ± 2.67), action planning (11.22 ± 2.85), coping planning (11.77 ± 2.74), recovery self-efficacy (11.31 ± 2.82), and monitoring (12.20 ± 2.37) all clustered toward the higher end of their 3–15 ranges.

Discussion

Our results indicated that only 7.7% of the participants had undergone PSA screening at least once, which is considerably lower than rates reported in other regions. In a study conducted by Mirzaei-Alavijeh et al in western Iran, 16.9% of elderly men had undergone PSA screening (12). One reason for the higher rate in their study may be the older age of participants, their average age was 65.55, while in our study it was 58.01. Older age is associated with increased risk of prostate cancer, which may prompt individuals and healthcare providers to prioritize screening (23, 24). This age-related trend has been observed in multiple studies and supports the notion that perceived vulnerability increases with age. Our findings are consistent with those of previous studies conducted in developing countries. For instance, Jarb et al reported a PSA screening rate of 3.9% in Saudi Arabia (25), while Ko et al found a rate of 7.27% among Korean men (26). In African countries, screening rates remain low: only 5% in Kenya (27), 7.1% in north-central Nigeria (28), and 4.4% in another Nigerian cohort (29). In contrast, screening rates are significantly higher in European countries. O'Donovan and Fitzpatrick reported a rate of 68% in Ireland (30), and Ulyte et al found that 31.3% of Swiss men had undergone PSA screening (31). While these comparisons highlight disparities, it is important to acknowledge contextual differences such as national screening guidelines, insurance coverage, and cultural attitudes toward preventive care. Further research is needed to explore specific barriers to PSA screening in Iran, including stigma, access, and health literacy.

Our study revealed that higher levels of education were significantly associated with PSA screening uptake. Specifically, men with academic education were more than three times as likely to undergo screening compared to those with primary education (AOR = 3.65, 95% CI: 1.09–12.15, $P = 0.035$). This finding is consistent with studies conducted in Denmark (32) and Iran (12), all of which demonstrated that individuals with higher education are more likely to engage in cancer screening. However, inconsistencies were observed for intermediate education levels. Neither secondary school (AOR = 0.87, 95% CI: 0.22–3.48, $P = 0.849$) nor high school education (AOR = 1.34, 95% CI: 0.43–4.15, $P = 0.605$) showed significant associations in the adjusted model, despite crude odds ratios suggesting a possible positive trend. Previous studies have also reported mixed findings regarding intermediate education levels. In Sweden, lower education was associated with reduced participation in organized screening programs, but not in opportunistic screening (33). In the United States, a study among African American men found that only academic education predicted PSA screening, while intermediate education showed no significant effect; this was partly explained by cancer fatalism beliefs (34). These findings suggest that the impact of education on PCa screening is context dependent, influenced by cultural norms, access to health services, and the extent to which education translates into health literacy and proactive health behavior. Therefore, educational disparities in healthcare utilization may contribute to unequal cancer outcomes. Targeted interventions should be designed not only for men with low education but also for those with intermediate

Table 3. Descriptive Statistics and Bivariate Correlations among HAPA Determinants

HAPA determinants	X1	X2	X3	X4	X5	X6	X7	X8	Mean (SD)	Score range
X1. Task self-efficacy	1								11.26 (3.23)	3-15
X2. Outcome expectancies	0.333**	1							16.50 (2.99)	4-20
X3. Risk perception	0.246**	0.332**	1						12.15 (2.49)	3-15
X4. Intention	0.261**	0.342**	0.396**	1					7.98 (1.51)	2-10
X5. Maintenance self-efficacy	0.220**	0.364**	0.221**	0.464**	1				11.85 (2.67)	3-15
X6. Action planning	0.199**	0.273**	0.320**	0.664**	0.494**	1			11.22 (2.85)	3-15
X7. Coping planning	0.227**	0.372**	0.212**	0.508**	0.715**	0.542**	1		11.77 (2.74)	3-15
X8. Recovery self-efficacy	0.347**	0.323**	0.242**	0.432**	0.643**	0.425**	0.575**	1	11.31 (2.82)	3-15
X9. Monitoring	0.167**	0.280**	0.263**	0.536**	0.561**	0.556**	0.560**	0.525**	12.20 (2.37)	3-15

**Correlation is significant at the 0.01 level (2-tailed)

education, who may not benefit equally from existing health promotion programs. Incorporating health literacy training and culturally tailored communication strategies could help bridge these gaps and promote more equitable screening uptake.

In the present study, a positive family history of PCa emerged as the strongest predictor of PSA screening uptake. Men with a family history were nearly 15 times more likely to undergo screening compared to those without such history (AOR = 14.36, 95% CI: 5.83–35.32, $P < 0.001$). This finding is consistent with prior research indicating that individuals with a family history of cancer often perceive themselves at elevated risk and are more inclined to engage in preventive health behaviors (12, 35). Familial awareness may heighten perceived susceptibility to prostate cancer, thereby reinforcing psychological readiness and increasing the likelihood of engaging in early detection and screening behaviors. Nevertheless, some inconsistencies should be acknowledged. Although the effect size was very strong, the confidence interval was wide, reflecting the relatively small number of participants with a family history (n = 34, 5.7%). This limited subgroup size may have increased the odds ratio and reduced the precision of the estimate. Similar patterns have been reported elsewhere. For example, studies conducted in the United States among African American men found family history to be a significant motivator for PSA testing, but the strength of association varied across socioeconomic strata (34, 36). European evidence also supports the role of family history in increasing screening uptake, though the effect is moderated by health system organization and accessibility of preventive services (24). Another explanation for inconsistencies across studies may be cultural differences in how family health information is communicated. In some contexts, family history is openly discussed which strongly influences perceived risk, while in others, stigma or lack of awareness may weaken its impact (37). Moreover, family history may interact with psychological constructs such as risk perception and coping planning, amplifying or attenuating its effect depending on individual readiness for preventive action. Taken together, these findings highlight the critical role of family history in shaping screening behavior, while also underscoring the need for cautious interpretation due to subgroup size and contextual variability. Public health interventions should leverage familial awareness as a motivator for screening, while ensuring that men without a family history are not overlooked. Educational campaigns should emphasize that prostate cancer can occur even in the absence of family history, thereby broadening the reach of preventive strategies.

Our study demonstrated that task self-efficacy was a significant predictor of PSA screening behavior (AOR = 1.20, 95% CI: 1.00–1.43, $P = 0.041$). This finding aligns with prior research among African American men (18), U.S. populations (38), and European cohorts (39, 40), consistently highlighting the role of confidence in managing health tasks as a key determinant of preventive health behaviors. Men with higher task self-efficacy appear better equipped to overcome stigma, logistical challenges, and limited access to services, underscoring the importance of psychological readiness in facilitating screening uptake. Nevertheless, some inconsistencies should be acknowledged. While task self-efficacy remained significant in the adjusted model, other related constructs such as maintenance self-efficacy and recovery self-efficacy lost significance after adjustment, despite showing crude associations. This discrepancy may be explained by overlapping variance among different self-efficacy dimensions, sample size limitations, or contextual factors such as cultural differences in how confidence is expressed and translated into action. From an educational policy perspective, health educators should prioritize strategies that specifically strengthen task self-efficacy. Recommended approaches include designing skill-based training programs that provide men with practical experience in managing screening procedures, thereby enhancing confidence, organizing peer-led support groups to reduce stigma and model successful screening behaviors, and implementing culturally tailored communication campaigns to ensure that expressions of confidence are effectively translated into preventive action across diverse communities. Embedding these strategies into both clinical and community-based interventions can foster resilience, promote long-term adherence to screening behaviors, and reduce disparities in prostate cancer prevention.

Furthermore, coping planning, defined as the ability to anticipate and manage barriers, also played a critical role. According to Schwarzer, coping planning helps individuals maintain engagement in health behaviors despite disruptions (41). Our findings confirm that coping planning is essential not only for initiating PSA screening but also for sustaining participation over time. This supports the emphasis of HAPA model on volitional factors (42). Therefore, interventions should include components that help individuals plan for setbacks and maintain motivation. For instance, in clinical practice, men who express concern about missing appointments due to work obligations or transportation issues can be guided to develop contingency plans, such as scheduling screenings during off-hours or arranging shared transport with family members. Similarly, individuals who feel anxious about potential test results may benefit from pre-screening counseling that includes emotional coping strategies and clear information about follow-up procedures. In community-based settings, health educators can incorporate coping planning into group sessions by encouraging participants to identify personal barriers and collaboratively brainstorm solutions. For example, a man who postponed screening due to fear of discomfort might be reassured through peer testimonials and offered practical tips to manage anxiety during the procedure. By embedding coping planning into both individual and group-level interventions, healthcare providers can foster resilience and long-term adherence

to screening behaviors, particularly in populations with limited access or heightened psychosocial vulnerability.

Limitations

This study has several limitations that should be acknowledged. First, its cross-sectional design prevents causal inferences between HAPA constructs and PSA screening behavior. Second, the reliance on self-reported data may introduce recall bias or social desirability bias, especially regarding sensitive health behaviors. Third, the sample was limited to men registered at comprehensive health centers in Kermanshah, which may restrict the generalizability of findings to other regions or rural populations. Future research employing longitudinal designs and broader sampling frameworks is recommended to validate and expand upon these findings.

Conclusion

This study demonstrated a low rate of PSA screening among Iranian men aged 50–69 and identified education level, family history of prostate cancer, task self-efficacy, and coping planning as key predictors of screening behavior. These findings highlight the importance of both sociodemographic and theory-based psychological determinants in shaping screening uptake. From an applied perspective, interventions should prioritize men with lower educational attainment and those at higher risk, and they should be grounded in behavioral frameworks such as HAPA. Programs focusing on strengthening self-efficacy and coping planning, through structured education and skill-oriented strategies, may enhance participation in screening. Integrating these evidence-based theory-driven approaches into local and national cancer prevention strategies could help improve early detection and promote more equitable access to PSA screening services.

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Authors' Contribution

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Competing Interests

The authors declare no competing interests.

Ethical Approval

The study protocol (IR.KUMS.REC.1401.335) was approved by the research ethics committee of Kermanshah University of Medical Sciences. All procedures followed the ethical standards of the institution and national research committee, as well as the 1964 Helsinki Declaration and its subsequent amendments. Before participating, participants were provided with detailed information about the study, including its procedures, the confidentiality of their information, and its purpose. They were given a participant information statement and signed a consent form.

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