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Article

Exploring Cancer Screening Practices Among Health Care Providers in Saudi Arabia: A Cross-sectional Multicenter Study

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Abstract: Background: Cancer screening is a preventive measure for asymptomatic individuals, whereas diagnosis is for symptomatic ones. With their professional advantage, Health care providers (HCPs) can positively influence cancer screening practices. The aim of this study was to assess the attitudes and perceptions of HCPs in the Eastern Province of Saudi Arabia towards cancer screening.
Design: The study design involved a cross-sectional multicenter survey that distributed a validated questionnaire to HCPs in three tertiary hospitals in the Eastern Province.
Results: Of the 900 HCPs who received the questionnaire, 372 responded. The majority were nurses (66.4%), with physicians comprising the rest. Regardless of age, gender, or profession, 91.4% of participants acknowledged the importance of regular cancer screening. However, the number of HCPs who did not undergo colonoscopy screening was higher than those who did. Among females aged 45-54 years, those who underwent mammography screening were significantly higher than those who did not. Similarly, male HCPs over 54 years who underwent Prostate-Specific Antigen (PSA) screening were significantly higher than those who did not.
Conclusions: This study suggests a need for increased awareness among HCPs regarding their role in motivating themselves, their families, and their patients to undergo various cancer screening programs, which is supported by existing evidence for the Saudi community.

Keywords: Cancer; Screening; Knowledge; Attitudes; Practices; Prevention; Health care provider

1. Introduction

In 2020, a report stated that approximately 19.3 million new cancer cases and almost 10.0 million cancer-related deaths occurred worldwide [1]. The most common cancers were female breast cancer, followed by lung cancer, and then colon and rectum cancer [2]. In Saudi Arabia, an estimated 23,782.8 to 66,899.8 new cancer cases occurred in 2020, with colorectal, lung, and breast cancer being the leading causes of cancer-related deaths, estimated to be around 13,069 [3]. Cancer is caused by the transformation of normal cells into tumor cells, typically progressing from a precancerous lesion to a malignant tumor. Risk factors for cancer include tobacco and alcohol use, unhealthy diets, physical inactivity, viral and bacterial infections, urban air pollution, and exposure to ionizing radiation [2], and chronic infections contributed to 13% of the cancers diagnosed globally in 2018 [4].

By 2030, it is projected that the number of cancer cases worldwide will increase to 21.4 million due to changes in population demographics [5]. Improved survival rates can be achieved through cancer prevention and early detection strategies, which may lead to lower cancer rates in future generations [6,7]. Achieving this goal requires a more interdisciplinary and multifaceted approach, with many public and clinical health efforts necessary to establish a sustainable infrastructure to disseminate preventive measures for cancer control [3,5,6].

Screening is an essential cancer prevention measure for asymptomatic groups, while diagnosis is necessary for symptomatic groups [2,6]. When cancer symptoms appear, the cancer may have advanced, which makes treatment more challenging and less effective [8–11]. Therefore, early screening is crucial for effective treatment, reducing the cancer burden, and is cost-effective. Many countries recommend cancer screening [12]. The American Cancer Society (ACS)

and the US Preventive Services Task Force (USPSTF) provide effective screening recommendations for six cancer types, including breast, cervix, colon, rectum, lung, and prostate [13], which vary based on age and risk factors.

Cancer incidence among individuals aged 65 and above has decreased by 3.3% annually in the US since the 2000s, while the incidence of cancer has increased annually by 1% and 2% for those aged 50-64 and younger than 50 years, respectively. Additionally, the mortality rate caused by colorectal cancer (CRC) has decreased by 3% annually among individuals aged 65 years and older from 2008 to 2017 [14].

In 2015, 62.2% of US adults underwent colonoscopy for CRC screening, while only 50.2% of eligible women underwent mammography for breast cancer screening [15]. On the other hand, only 6.7% of men aged 50 years or older underwent PSA testing for prostate cancer screening. The available data on cancer screening rates in Saudi Arabia are limited. One study found that only around 15% of the population underwent CRC screening [16], while another study reported that only 18% of the participants underwent mammography despite having knowledge of breast cancer screening [17].

Acknowledging the crucial role of healthcare providers (HCPs) as a valuable resource for maintaining public health is crucial. However, to properly care for patients, HCPs must also prioritize their own physical and mental well-being [8]. The medical field often glorifies the idea of clinicians who are willing to sacrifice everything for their work, despite the negative impact on their long-term health. Despite being exposed to various health and safety hazards, HCPs are not immune to non-communicable diseases such as cancer [9].

Although research is ongoing regarding cancer incidence and prevalence in Saudi Arabia, little data exists on HCPs' attitudes and perceptions towards cancer screening. Therefore, this study aims to assess HCPs' personal attitudes and perceptions towards cancer screening in the Eastern Province of Saudi Arabia.

2. Methods

2.1. Design

A multicenter cross-sectional study was carried out in 2020 at three tertiary hospitals located in the Eastern Province of Saudi Arabia, namely Almoosa Specialist Hospital, a private tertiary hospital, and National Guard Hospital, a governmental hospital located in Al-Ahsa and Dammam, respectively. The study was conducted in accordance with the Declaration of Helsinki after obtaining approval from the Institutional Review Board (IRB) of all three hospitals, and informed consent was obtained from all participants before data collection. A non-probability convenience sampling technique was used, and all healthcare providers (HCPs) in the three hospitals were included consecutively if they met the eligibility criteria.

2.2. Sample Size

The required sample size for the study was calculated using G*Power3, with a confidence level of 95%, margin rate of error at 5%, power of 80%, and a medium effect size of 0.40. A 10% increase was added to account for non-response rate. The final minimum required sample size for the study was 310 subjects. The study used multiple linear regression and the independent two-tailed t-test for data analysis.

2.3. Data Collection Tool and Validation

In this study, the authors used a self-administered questionnaire to collect data on the attitudes and perceptions of HCPs towards cancer screening. The questionnaire included questions on demographics, awareness, and the perceived importance of various cancer screening tests, such as colonoscopy, PSA, and mammogram. A pilot study was conducted with 21 HCPs to validate the survey, and the internal consistency was assessed using Cronbach's alpha, which showed a value of 84%. There was no baseline comparison applied for the two main groups of HCPs (nurses and physicians). The study was conducted at three tertiary hospitals in the Eastern Province of Saudi Arabia, and all participants provided informed consent after obtaining Institutional Review Board approval.

2.4. Statistical Analysis

Prior to statistical analysis, the collected data were reviewed for accuracy and completeness. Statistical Package for Social Sciences (SPSS version 25) was utilized to conduct both descriptive and inferential statistical analyses. Descriptive analysis involved examining socio-demographic variables, which were presented as frequencies and means (M) ± standard

deviation (SD). Inferential statistics were analyzed using the Chi-square test, with statistical significance being considered if the two-tailed p value was = 0.05.

3. Results

A total of 372 out of 900 HCPs who received the questionnaire participated in the study. The mean age of the participants was 34.1 ± 7.1 years, with around 40% from a private tertiary hospital and the remainder from two governmental hospitals. Most participants were nurses (approximately two-thirds), female (67.5%), and non-Saudi citizens (75.5%) (Table 1).

Table 1. Baseline socio-demographic characteristics (n = 372)

Characteristics	N (%)
Hospital site	
Private tertiary hospital Al-Ahsa city	142 (38.2)
Governmental tertiary hospital Al-Ahsa city	160 (43.0)
Governmental tertiary hospital Dammam city	70 (18.8)
Gender	
Male	121 (32.5%)
Female	251 (67.5%)
Nationality	
Saudi	91 (24.5%)
Non-Saudi	281 (75.5%)
Marital status	
Single	130 (34.9%)
Married	226 (60.8%)
Divorced or widowed	16 (4.3%)
Have kids	
Yes	214 (57.5)
No	158 (42.5)
Monthly income	
<5000	109 (28.0)
5000-10,000	124 (33.3)
>10,000	134 (38.7)
Professional group	
Physician	125 (33.6%)
Nurse	247 (66.4%)
Educational background	
Bachelor	267 (71.8%)
Master and PhD	47 (12.6%)
Diploma	35 (9.4%)
Fellowship	23 (6.2%)
Age categories	
Lower than 40 years	302 (81.2)
40-44 years	34 (9.1)
45-54 years	31 (8.3)
55 years and above	5 (1.3)
Mean ± SD	34.1 ± 7.1 years

Table 2. Perception of health care providers on cancer screening (n = 372)

Characteristics	N (%)
Do you believe in the importance of cancer screening?	
Yes	340 (91.4)
No	32 (8.6)
Have you done colonoscopy for yourself?	
Yes	13 (3.5)
No	359 (96.5)
Have you done mammography yourself?	
Yes	40 (15.9%) of female
Have you done PSA yourself?	
Yes	15 (12.4) of male

Overall, 91.4% of participants believed in the protective value of regular cancer screening, regardless of gender, profession, or age. However, only 3.5% of participants had undergone colonoscopy for themselves, with only 15.9% of females having undergone mammography screening and 12.4% of males having undergone PSA screening (Table 2). Univariate analysis of cancer screening for each group category revealed that no study participants above the age of 54 had undergone colonoscopy, while 19.4% of participants aged 45-54 had been screened. Among females, both participants over 54 had not undergone mammography, while 68.4% of those aged 45-54 had been screened for breast cancer. For PSA, the majority of males over 54 had undergone screening, while 99% of participants below the age of 45 had not undergone PSA testing for prostate cancer (Table 3).

When asked about factors affecting their screening perception, 29% of participants stated that HCPs did not often recommend screening to their patients. Anxiety about the test and fear of the results was the second most common factor, cited by 26.9% of participants (Fig. 1). Perceptions toward the effectiveness of screening revealed that HCPs considered mammography to be the most effective screening method (96.80%), followed by colonoscopy and PSA (Fig. **??**).

4. Discussion

In this study, the aim was to evaluate the perceptions and attitudes of healthcare professionals (HCPs) towards cancer screening in the Eastern Province of Saudi Arabia. The majority of respondents recognized the importance of cancer screening, regardless of their profession, age, or gender. However, this belief did not translate into their behavior towards screening, as only 3.5% of the 372 HCPs who participated in the study had undergone colonoscopy, which is consistent with a previous study in Saudi Arabia found that HCPs in Saudi Arabia had poor knowledge of screening guidelines and did not adhere to screening tests, especially for breast, cervical, and colon cancers in older age groups or with a positive family history of cancer [18,19].

Table 3. Univariate analysis for cancer screening per age categories (n = 372)

T ype of the screening test	Screened (N%)	Not screened (N%)	p Value
Mammography for 251 females			0.0001
Below 45 years	27 (11.7)	203 (88.3)	
45-54 years	13 (68.4)	6 (31.6)	
Above 54 years	0 (0.0)	2 (100.0)	
Colonoscopy for total 372			0.0001
Below 45 years	7 (2.1)	329 (97.9)	
45-54 years	6 (19.4)	25 (80.6)	
Above 54 years	0 (0.0)	5 (100.0)	
PSA for 121 males			0.0001
Below 45 years	1 (1.0)	95 (99.0)	
45-54 years	6 (35.3)	11 (64.7)	
Above 54 years	5 (62.5)	3 (37.5)	

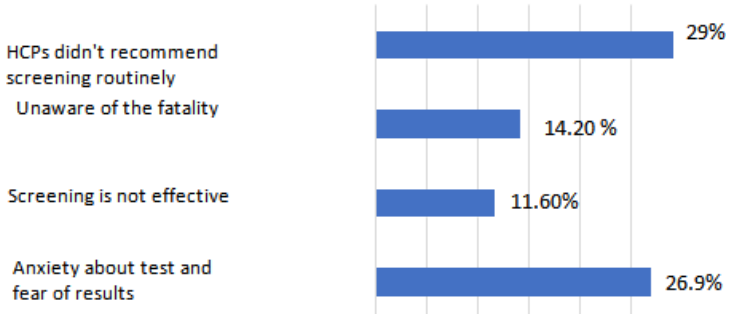

Figure 1. Factors influencing can-cer screening choice of HCPs

The American Cancer Society recommends that women between the ages of 45 and 54 should have mammograms every year, while regular screening for colorectal cancer should begin at the age of 45 for individuals at average risk. Men aged 50 should be screened for prostate cancer through PSA testing. In [20] it is reported that 92% of women aged 50 and older in Saudi Arabia had never had a mammogram. In this study, 84% of all female participants had never undergone mammogram screening, but 68.4% of females aged 45 to 54 had undergone mammograms, indicating better awareness. This finding may be due to the nature of the participants' profession, as HCPs may have better knowledge of health issues.

The most common reason given by respondents for not getting screened for cancer was that HCPs did not educate them about screening. This finding is consistent with studies [21]. In [22] found that the lack of screening recommendations from HCPs may be a barrier to women's participation in screening programs, while in [23] reported that a significant proportion of primary care providers did not adhere to screening guidelines for colorectal cancer. Healthcare professionals have a responsibility to effectively communicate with their patients, even if the patients are HCPs. They should provide guidance to adults about the benefits, limitations, and potential burdens associated with screening test options and assist them in making a choice and completing screening. A randomized trial showed higher colorectal cancer screening among patients receiving a decision aid and navigation support compared to those receiving usual care.

The main aim of this study was to evaluate the perceptions and personal attitudes of healthcare providers (HCPs) in the Eastern Province of Saudi Arabia towards cancer screening, and the study found that only 3.5% of the 372 HCPs who participated in the study had undergone colonoscopy. This finding is consistent with a previous study, which reported that HCPs in Saudi Arabia had poor knowledge of screening guidelines and did not adhere to screening tests for breast, cervical, and colon cancers. The study also found that 84% of female participants had never undergone mammograms, and the lack of education by HCPs regarding screening was perceived as one of the main reasons for not undergoing cancer screening. To increase participation and adherence, it is recommended that HCPs should further educate their patients about cancer risk factors and the importance of cancer screening. Additionally, educational programs are recommended for HCPs to improve their knowledge about cancer screening.

However, the study has some limitations. It used an observational design, which may contain biases, and it only covered the Eastern Province of Saudi Arabia. Therefore, further research is needed to gain a broader picture of the issue and develop training programs for HCPs across all regions of Saudi Arabia.

5. Conclusion

Based on the current study and available literature, it is crucial to increase awareness and highlight the importance of HCPs in encouraging cancer screening among themselves, their families, and their patients in Saudi Arabia. This could be achieved by conducting further research on the specific education and training required to positively impact HCPs' attitudes toward cancer screening, making it a routine part of their medical practice.

Abbreviations

PSA Prostate-specific antigen
HCP Healthcare providers
HPV Human papilloma virus
HIV Human immunodeficiency virus
NCD Non-communicable diseases

SPSS Statistical Package for Social Sciences
CRC Colorectal cancer

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