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Evaluation Of Saudi Nursing Students' Perceptions And Awareness About Cancer Screening Programs

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Abstract
Background*: Cancer screening programs are crucial for early detection and improving treatment outcomes. As a form of secondary prevention, cancer screening plays an important role in identifying cancer at its early stages when it is more treatable. However, little is known about the perceptions and awareness about such programs among Saudi nursing students. The purpose of this study was to assess the perceptions and awareness about cancer screening programs among Saudi nursing students.*
Methods*: A descriptive, cross-sectional design was employed in this study. An online survey, including demographics and organ-specific screening methods items, was distributed through social media to collect data from a convenience sample of 393 nursing students. Descriptive statistics were conducted.*
Results*: Around 63% participants felt comfortable discussing cancer and its screening, while 37.2% did not. Also, 55.7% of participants understood the meaning of cancer screening and detection, compared to 44.3% who did not. Participants' ability to recognize different methods of cancer screening varied.*
Conclusion*: The study suggested the importance of raising awareness about cancer screening programs, specifically among Saudi nursing students. Nursing colleges should include more information about the availability and importance of cancer screenings and detection in the curricula to raise awareness about this important topic.*
Keywords: *awareness, cancer screening programs, perceptions, nursing students, Saudi Arabia*

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I. Introduction

Screening is a means of prevention of diseases and the screening tests can detect the presence of a specific cancer in persons who are not experiencing any symptoms (Gosadi, 2019). The purpose of screening tests is to allow early identification of cancer and prevent the progression of any existing cancer. According to the Saudi Ministry of Health (MOH, 2019), 75% of the Saudi population do not perform routine check-ups. Cancer is the second leading cause of death after ischemic heart disease globally. Cancer screening methods should be effective and reduce mortality by early detection of cancer. In addition, several cancer screening tests are considered effective and recommended such as breast cancer screening. Screening mammography has been shown to reduce deaths from breast cancer (BC) among women ages 40 to 74, especially those ages 50 to 69 (Braitmaier et al., 2022). Cervical cancer screening, Human papillomavirus (HPV) tests and Pap tests, are recommended cervical cancer screening tests (Liang et al., 2021). Colorectal cancer screening, including colonoscopy, sigmoidoscopy, and stool tests (high-sensitivity fecal occult blood tests and stool DNA tests) have also been shown to reduce the risk of dying from colorectal cancer (Chen et al., 2019). Lung cancer screening (Low-dose helical computed tomography), a type of CT scan, has been shown to reduce lung cancer deaths among heavy smokers (Hunger et al., 2021). In addition, CA-125 test the CA-125 blood test, which is often done together with a transvaginal ultrasound, may be used to try to detect ovarian cancer early (Gupta et al., 2019). Alpha-fetoprotein blood test is sometimes used along with ultrasound of the liver to detect liver cancer. Digital rectal exam (DRE) and prostate specific antigen (PSA) blood test to detect the prostate cancer (Gosadi, 2019). Three main screening methods are used Saudi Arabia: self-breast examination, clinical breast examination (CBE), and mammographic screening. Mammographic screening is considered the gold standard for BC screening, reducing mortality by 23% (Bakarman et al., 2023). However, the National Saudi Health Interview Survey (2015) reported a significantly lower breast cancer screening rate (8%), lower than the United Kingdom, the United States, France, and Sweden. Barriers to BC screening include lack of awareness and knowledge, lack of access to health services, infrastructure difficulties, incomplete information, ethnicity, socioeconomic status, and geographical conditions. Well- planned and proactive screening programs are more

efficient for early detection and cost-effective than opportunistic programs (AlSaleh, 2022).

A study by Mohmoud et al. (2018) conducted about effect of Health Belief Model-Based educational intervention about breast cancer on nursing students' knowledge, health beliefs and breast self-examination practice, found that a statistically significant differences were observed between the study and control groups regarding knowledge about breast cancer screening after educational intervention based on health belief model (t test = 19.53, *p*=0.000). The mean scores of perceived susceptibilities, severity benefits, cues for action, self-efficacy and total heath belief model were significantly higher in the study group compared to control group (*p* = 0.000). Moreover, a statistically significant difference was observed between both groups regarding breast self-examination practice after educational intervention (t test = 31.266, *p* = 0.000). They concluded that the health belief model-based education is an effective and efficient manner in enhancing students' breast self - examination practice and improving their knowledge level and health beliefs about breast cancer. Another study, investigating Saudi nursing students' knowledge and perception about testicular cancer and its screening, found that about 49.2% of the participants received education about testicular cancer in their nursing schools (Saleh et al., 2023). The findings showed lack of enough knowledge about testicular cancer screening among Saudi nursing students. Despite the importance of nurses' roles in assessing and detect testicular cancer, nursing students in Saudi Arabia still did not have enough knowledge about it screening (Saleh et al., 2023). Jarb et al. (2020) also conducted a study assessing awareness and knowledge of prostate cancer (PC) and screening practices in Medina, Jeddah, and Makkah cities through an online survey. The results showed low overall knowledge and awareness of PC screening, with only 10.6% having good knowledge and high level of awareness. While 77.5% heard of PC, and their awareness about the screening tests was much lower at 52.5%. The study concluded that nursing educational programs and awareness campaigns imitated by healthcare providers are needed to increase knowledge and awareness of PC and its screening. Specifically, evidence has shown that awareness-raising educational interventions improve access to services, increase individuals' competence, and inspire future choices, which in turn enhance the efficiency of preventive healthcare services (Fathey et al., 2021).

II. Research Problem

Healthcare students in all specialties, especially nurses who are the "front line" of healthcare services, should be well-educated about the importance and availability of screening programs in their country to participate at all levels of disease prevention, such as cancer screening and prevention. In Saudi Arabia, there is a paucity of studies on nursing students' awareness and perceptions about cancer screening programs and preventive practices. The literature review revealed that no research has been conducted on nursing students' awareness and perceptions of cancer screening programs in Saudi Arabia. Therefore, assessing the perceptions and awareness of cancer screening among this population is crucial to raise their awareness about cancer screenings and provide a community with well-educated and trained nurses, who may help in reducing cancer mortality rate, and increasing early detection of cancer among Saudi population. Additionally, the study findings may shed a light about the importance of including more related cancer contents in the undergraduate nursing curricula in the Saudi nursing colleges.

Research Purpose

This purpose of this study was to evaluate nursing students' perceptions and awareness about cancer screening programs in Saudi Arabia.

Research Questions

The research questions answered in this study were:

1. What are Saudi nursing students' perceptions about cancer screening programs?
2. What is the Saudi nursing students' level of awareness about cancer screening programs among?

III. Methodology

Design

A descriptive, cross-sectional design was be used to answer the research questions. A cross-sectional study is a form of research designs in which data is collected from many people at one time (Polit & Beck 2020). Researchers conduct cross-sectional research by assessing or observing study variables without influencing them (Polit & Beck 2020). Therefore, this design is fit with the purpose of this study as assessing the perceptions and awareness about cancer screening programs through online survey at a single point of data collection.

Settings And Samplings

This study was conducted at King Abdulaziz University's Faculty of Nursing in Jeddah city, Saudi Arabia. The total number of nursing students at this college is roughly 576 from various nursing levels,

including male and female students. The data was gathered from a convenience sample of 393 nursing students using an online questionnaire and disseminated over social media. Using a confidence level of 95%, a margin of error of 5%, and power of 80% (Raosoft sample size calculator), this study's minimal sample size required was 383 nursing students. This study considered the following inclusion criteria: Male and female nursing students enrolled in the College of Nursing at King Abdulaziz University during their second, third, and fourth years. Students from other healthcare colleges who are not enrolled at King Abdulaziz University were excluded.

Measurment Tool And Procedure

Data were collected using a self-reported questionnaire developed by Al Shamsi et al. (2020) to assess the perceptions and awareness of cancer screening programs, including demographics and organ-specific screening methods items. The questionnaire consisted of 35 multiple-choice items, with high scores indicate a positive perception and a high level of awareness. Data were collected through an online Survey, a Planet platform questionnaire, and a Google form. The link was distributed via social media to nursing students at King Abdulaziz University after obtaining ethical approval. Informed consent was taken electronically before completing the questionnaire (implied consent). Participation was completely voluntary and anonymous. The researchers had protected the anonymized data and would not use it for any purposes other than the purpose of this study.

Data Analysis

To analyze the data, IBM SPSS version 28.0 software for Windows was used (IBM Corp., 2021). Descriptive statistics, such as percentage, frequency, and numerical indices, were performed to describe the participants' demographics and their perceptions and awareness about cancer screening programs. $P < 0.05$ was used as a criterion for statistical significance.

IV. Results

The overall number of participants was 393. 194 participants, or 49.4% of the entire sample, were under the age of 21. This age group had the highest representation. A total of 190 participants (48.3%) were under 25 years old. Only 9 (2.3% of participants) were under 34 years old. Following education, 121 participants (30.8%) were in their fourth year, 115 (29.3%) in their third year, 95 (24.2%) in their second year, and 62 (15.7%) as interns (Table 1).

Table 1: Demographic characteristics of the participants (N=393).

Variable	N	%
Age		
<21	194	49.4
<25	190	48.3
<34	9	2.3
Education		
Fourth year	121	30.8
Third year	115	29.3
Second year	95	24.2
Intern	62	15.7
Gender		
Female	276	70.2
Male	117	29.8
Nationality		
Saudi	379	96.4
Non-Saudi	14	3.6

Table 2 demonstrates the distribution of participants' perceptions and awareness about cancer and cancer screenings. In terms of smoking status, most participants (71.8%) reported never having smoked, while 79 (20.1%) participants were current smokers, and 32 (8.1%) were used to but they quit. When it came to discussing or mentioning cancer, 247 participants (62.8%) expressed comfort with the topic, whereas 146 (37.2%) indicated discomfort. Among those who felt uncomfortable mentioning cancer, 74 participants (18.8%) attributed it to unpleasant memories related to cancer, either personal experiences or those involving family members. Additionally, 102 participants (26%) reported anxiety associated with the word "cancer." On the other hand, the remaining 217 participants (55.2%) stated that they had no issue mentioning the word. Regarding familiarity with individuals diagnosed with cancer, 28 participants (7.1%) reported having a personal cancer diagnosis, while 120 participants (30.5%) mentioned having a relative with a cancer diagnosis. Furthermore, 131 participants (33.3%) reported knowing someone who had cancer but was unrelated to them, whereas 114 participants (29%) stated that they did not know anyone with cancer. In terms of knowledge about the most common types of cancer, most participants (n = 285, 72%) correctly identified breast cancer as the most

prevalent. However, 178 individuals (45.3%) believed lung cancer to be the most common, 157 (39.9%) thought colon cancer was the most prevalent, and 88 (22.4%) associated leukemia with being the most common. Lastly, 46 participants (11.7%) identified lymphoma as the most common cancer in Saudi Arabia.

Table 2: Distribution of participations' perceptions and awareness items (N=393).

Items	N	%
Do you smoke currently via cigarettes or hookah or medwakh or vape?		
Yes	79	20.1
No	282	71.8
I used to, but I quit.	32	8.1
Do you like talking about or mentioning the word "cancer"?		
I don't mind talking about or mention the word "cancer"	247	62.8
I don't like to mention the word at all	146	37.2
I don't like mentioning the word cancer because…		
I don't mind mentioning	217	55.2
Because I am too anxious to mention it	102	26
It brings back bad memories for me or about people I know	74	18.8
Do you know anyone who has had cancer in the past?		
I was diagnosed with cancer	28	7.1
My relative was diagnosed with cancer	120	30.5
Someone I know was diagnosed with cancer	131	33.3
I don't know anyone who was diagnosed with cancer	114	29
Most common cancer in Saudi Arabia?		
Lung	178	45.3
Breast	285	72
Colon	157	39.9
Lymphoma	46	11.7
Leukemia	88	22.4
Cancer only affects people that have family history with cancer.		
Yes	92	23.4
No	301	76.6
When I hear sentence "early detection of cancer " I know what means…		
Yes	318	80.9
No	75	19.1
Early detection of cancer is done only when I have family history of cancer?		
Yes	136	34.6
No	257	65.4
When should a person, whether male or female, start early detection of cancer if		
there is no family history of cancer?		
Any age	112	28.5
From the age of 20	64	16.3
From the age of 30	37	9.4
From the age of 40	107	27.2
From the age of 50	24	6.1
I don't know	49	12.5
The early detection of cancer is only if there are sings.		
Yes	219	55.7
No	174	44.3
Is there any breast cancer detection screening?		
Yes, there is.	324	82.4
No, there is not	69	17.6
Is there any early stomach\gastric cancer detection screening?		
Yes, there is.	280	71.2
No, there is not	113	28.8
Is there any lung cancer detection screening?		
Yes, there is.	292	74.3
No, there is not	101	25.7
Is there any colon cancer detection screening?		
Yes, there is.	301	76.6
No, there is not	92	23.4
Is there early pancreatic cancer detection screening?		
Yes, there is. No, there is not	259 134	65.9 34.1
Has your family doctor you go to regularly offered you an early detection? Yes No	 138 255	 35.1 64.9
Do you think that your doctor should raise more awareness of the importance of early detection of cancer? Yes No	329 64	83.7 16.3
Have you ever seen any advertisements on TV, in newspapers, or on social media about the importance of early cancer detection\screening?	297	75.6

Yes No	96	24.4
If you have seen an advertisement previously, where was it from?		
Primary or public health center	99	25.1
The ministry of health	171	43.8
Private hospital	31	7.8
Another source I remember	92	23.3
Should we change our mindset in Saudi Arabia when it comes to cancer?		
Yes	335	85.2
No	58	14.8
I want continuous media coverage to raise awareness about cancer?		
Yes	333	84.7
No	60	15.3
What is the most common cancer raised in awareness in the media?		
Colon	38	9.7
Breast	273	69.5
Lung	36	9.2
Prostate	11	2.7
I don't know	35	8.9
Any free programs for citizens for the early detection of cancer?		
Yes, there is	282	71.8
There is none according to my knowledge	111	28.2
Are there any free programs resident for the early detection of cancer?		
Yes, there is	242	61.6
There is none according to my knowledge		48.4
	151	
Early diagnosis via the early detection of cancer increases the chances of		
obtaining better results and chances of recovery?		
Yes	308	78.4
No	37	9.4
Not sure	48	
		12.2
I don't commit to the early detection of cancer because...		
Incorrect, I am committed to the early detection	109	27.7
I don't know what it is or where to go	81	20.6
I know what is and where to go but I don't have time	89	22.6
I know what it is and where to go, but I am afraid the way examinations	48	12.2
I know what it is and where to go, but I am afraid of the results	66	16.8
If there is a simple blood test that does not require any fasting or special		
preparations without endoscopy or X-rays, then I don't mind if I do.		
Yes, I agree totally	292	74.3
I don't agree	48	12.2
Not sure	53	13.5
I did previous tests for the early detection of cancer		
Mammogram for the early detection of Brest cancer	75	19.1
Endoscopy or occult stool examination for the early detection of colon	49	12.5
Pap smear for the early cervical cancer	48	12.2
Blood test via *PCR* for prostate cancer in men	28	7.1
CT scan for smokers for lungs cancer I have not done any of them before	27 266	6.9 67.7
The last question, Saudi Arabia society needs more cancer awareness Yes, I agree No, I don't agree	 379 14	 96.4 3.6

When asked if cancer exclusively affects individuals with a positive family history of the disease, 301 participants (76.6%) correctly disagreed, while 92 (23.4%) agreed with this statement. Inquiring about comprehension of the term "early detection of cancer," 318 individuals (80.9%) answered yes, indicating their understanding, while 75 (19.1%) responded negatively. Out of the participants, 257 (65.4%) properly disagreed with the assertion that cancer screening

should only be done if there is a family history. When asked what age they thought was the best to begin cancer screening, 112 (28.5%) participants said, "any age," while 107 (27.2%) participants chose "from age 40." These responses tied for the second-highest number of votes. "From age 20 years" was the solution that received the third- most votes, from 64 (16.3%) participants. Of those surveyed, 49 (12.5%) stated they had no idea, 37 (9.4%) suggested starting at around age 30, and 24 (6.1%) suggested starting at around age 50. Out of all participants, 219 (55.7%) agreed with the statement that early detection of cancer is only carried out if there are signs and symptoms of the disease, whereas 174 (44.3%) disagreed (see Table 2).

Of the participants, 324 (82.4%) agreed that screening is done for early diagnosis of breast cancer, while 69 (17.6%) disagreed. There is no early stomach/gastric cancer detection screening procedure; 280

participants (71.2%) answered this question incorrectly, while 113 participants (28.8%) answered it correctly. Of the participants, 292 (74.3%) correctly identified the existence of early lung cancer detection screening, while 101 (25.7%) stated that it does not exist. Of the participants, 301 (76.7%) agreed and 92 (23.5%) disagreed that screening for colon cancer should begin at an early age. Out of the total participants, 259 (65.9%) stated that there is screening for early pancreatic cancer detection, while the remaining 134 (34.1%) accurately answered that there is none (see Table 2).

When asked if they had ever been told about or invited to have an early cancer screening, 255 (64.9%) participants said they had never received that information from their family doctor or the doctor they saw frequently, while 138 (35.1%) participants said they had. When asked if they thought their doctor ought to educate people more about the value of early cancer detection, 329 (83.7%) participants said "yes," while 64 (16.3%) disagreed. When asked if they had ever seen any TV, newspaper, or social media ads highlighting the value of early cancer detection or screening, 297 (75.6%) people said "yes," while 96 (24.4%) said "no," indicating they had never seen these ads. When we asked if you have seen an advertisement previously and where it was from, the majority 171(43.8%) was the ministry of health, while participants 99(25.1%) said primary or public health center, while participants 31(7.8 %) said private hospital, and the remaining 92(23.3%) participants said "another source I remember". Out of the total participants, 335(85.2%) participants answered "yes "we should change our mindset in Saudi Arabia when it comes to publicly addressing and considering the early detection of cancer, while the remaining 58 (14.8%) said "No" we shouldn't change. 333 participants (84.7%) correctly answered "yes" when asked if they wanted ongoing media coverage to increase awareness about cancer and the early identification of cancer in the nation, whereas 60 participants (15.3%) properly answered "no" (see Table 2).

Regarding awareness of the most prevalent cancer brought up in the media, most participants 273 (69.5%) correctly recognized breast cancer. On the other hand, 38 (9.7%) said that colon cancer was the most common, 36 (9.2%) said that lung cancer was the most common, 11 (2.7%) said that prostate cancer was the most common, and I'm not sure 35 (8.9%). Most participants, 282 (71.8%) when asked if there were any free programs available for citizens to detection cancer early, replied, "Yes, there is ", while the remaining 111 (28.2 %) answered "there is none according to my knowledge. Of the participants, 242(61.6%) when asked if there were any free programs available for resident to detection cancer early, replied "Yes, there is ", while the remaining 151(38.4 %) answered "there is none according to my knowledge. When asked if better results and chances of recovery possibilities are increased by early diagnosis through cancer detection, most participants 308 (78.4%) replied "Yes", 37 (9.4%) said "No", 48 (12.2%) said "Not sure". When asked about statement I don't commit to the early detection of cancer because i. most of the participants 109 (27.7%) said "Incorrect, I am committed to the early detection", while 81(20.6%) participants said "I don't know what it is or where to go", while 89(22.6%) participants said "I know what is and where to go but I don't have time" , while 48(12.2%) participants said " I know what it is and where to go, but I am afraid of the way examinations will be", while participants said " I know what it is and where to go, but I am afraid of the results" from 66 (16.8%). Among the participants, 292 (74.3%) totally agreed to have a simple blood test for early cancer detection and 48 (12.2%) disagreed, while 53 (13.5%) answered "not sure". Inquiring about if you did previous tests for the early detection of cancer, 75 individuals (19.1%) answered " Mammogram for the early detection of Brest cancer " while 49(12.5%) participants answered "Endoscopy or occult stool examination for the early detection of colon and rectal cancer ", while 48(12.2 %) participants answered "Pap smear for the early cervical cancer", while 28(7.1%) participants answered "Blood test via

PC for prostate cancer in men", while 27(6.9%) participants answered " CT scan for smokers for lungs cancer" , and most participants 266(67.7%) answered "I have not done any of them before". Out of all participants, 379(96.4%) agreed with the statement "Saudi Arabia society needs more awareness about cancer, its causes, way to prevent it, and early detection methods", and while the remaining 14(3.6%) disagree (see Table 2).

V. Discussion

Cancer is a leading cause of death worldwide, and early detection through screening programs plays a crucial role in improving treatment outcomes and saving lives. In Saudi Arabia, there is a need to assess the perceptions and awareness about cancer screening programs among healthcare students, particularly nursing students, who are at the forefront of healthcare services. This study aimed to evaluate nursing students' perceptions and awareness about cancer screening programs in Saudi Arabia.

The total number of participants in this study was 393 nursing students from King Abdulaziz University's Faculty of Nursing in Jeddah, Saudi Arabia. The sample size exceeded the minimum required sample size of 383 participants, calculated using a confidence level of 95%, a margin of error of 5%, and a power of 80%. The inclusion of nursing students from various levels, including second, third, and fourth years, as well as interns, provided a diverse representation of nursing education stages. This diverse sample is essential

for obtaining a comprehensive understanding of the perceptions and awareness about cancer screening programs among nursing students at different stages of their education.

The study found that a majority of participants (62.8%) expressed comfort in discussing or mentioning the word "cancer." This finding suggests a relatively open and comfortable environment when it comes to discussing cancer-related topics among this group of nursing students. It aligns with the study's purpose of assessing perceptions about cancer screening programs, as an open and comfortable environment can facilitate discussions and promote awareness about these programs.

The study by Suhail (2021) also explored perceptions and attitudes towards breast cancer among female undergraduate students in Saudi Arabia. While the current study focused on a broader range of cancers and screening programs, both studies highlight the importance of understanding students' perceptions and comfort levels when discussing cancer- related topics.

The finding that a majority of participants felt comfortable discussing cancer is encouraging, as it suggests a willingness to engage with cancer-related topics and potentially learn about screening programs. This openness can be leveraged to increase awareness and promote participation in cancer screening initiatives among nursing students.

However, a significant portion (37.2%) reported discomfort with mentioning cancer, with 18.8% attributing their discomfort to unpleasant memories related to cancer experiences, either personal or involving family members. This finding highlights the importance of addressing and acknowledging the emotional impact of cancer, as it can influence individuals' willingness to engage in discussions and potentially affect their perceptions and attitudes towards cancer screening programs.

The study by Aga et al. (2022) conducted in Saudi Arabia also found that some participants expressed discomfort or anxiety when discussing cancer, attributed to personal experiences or fear of the disease. This aligns with the current study's findings, highlighting the emotional impact of cancer as a potential barrier to open discussions and awareness.

The discomfort expressed by some participants regarding discussing cancer may stem from personal experiences or emotional connections to the disease. It is crucial for healthcare professionals and educators to be sensitive to these emotional aspects and create a supportive environment that acknowledges and addresses these concerns. By providing counseling, emotional support, and opportunities for open dialogue, nursing students can potentially overcome these barriers and engage more actively in discussions about cancer screening programs.

The study revealed varying levels of awareness regarding the most common types of cancer in Saudi Arabia. While a majority (72%) correctly identified breast cancer as the most prevalent, there were misconceptions about other cancer types. Notably, 45.3% believed lung cancer to be the most common, 39.9% thought colon cancer was the most prevalent, and 22.4% associated leukemia with being the most common. This finding suggests a need for further education and awareness-raising efforts to ensure nursing students have accurate knowledge about the prevalence of different cancer types in Saudi Arabia.

The study by AlSaleh (2022) highlighted breast cancer as the most common cancer among Saudi women, aligning with the findings of the current study. However, the misconceptions about the prevalence of other cancer types observed in this study underscore the need for comprehensive education on various cancers, as emphasized in the literature.

While the majority of participants correctly identified breast cancer as the most prevalent, the misconceptions about other cancer types suggest gaps in knowledge and awareness. These gaps could potentially hinder nursing students' ability to effectively communicate with patients, provide accurate information, and promote appropriate screening programs for different types of cancer. Targeted educational efforts to address these misconceptions are crucial to ensure that future nurses have a comprehensive understanding of cancer prevalence and can effectively contribute to cancer prevention and early detection efforts.

Regarding awareness of cancer screening methods, participants demonstrated varying levels of recognition. While most participants were aware of screening methods for breast cancer (82.4%), lung cancer (74.3%), and colon cancer (76.6%), there was less awareness about screening for other types of cancer, such as stomach/gastric cancer (28.8% aware) and pancreatic cancer (34.1% aware).

The study by Jarb et al. (2020) found low overall knowledge and awareness about prostate cancer screening among participants in Saudi Arabia, with only 52.5% aware of screening tests. This aligns with the current study's findings, which also revealed lower awareness levels for certain cancer screening methods.

The varying levels of awareness about cancer screening methods observed in this study highlight the need for comprehensive education on available screening options for different types of cancer. While awareness levels were higher for common cancers like breast, lung, and colon, the lower awareness for less common or site-specific cancers suggests potential knowledge gaps. Nursing students, as future healthcare professionals, need to be well-informed about the range of screening methods available to effectively educate patients,

promote early detection, and contribute to reducing cancer mortality rates.

Educational interventions that provide comprehensive information on cancer screening methods, their importance, and their application for different cancer types are essential to improve nursing students' awareness and preparedness to address cancer screening needs in their future practice.

The results of this study suggest a need for enhanced educational efforts to improve nursing students' awareness and perceptions about cancer screening programs in Saudi Arabia. While a majority of participants expressed comfort discussing cancer, a significant portion reported discomfort, indicating the need to address the emotional aspects of cancer and its impact on individuals.

The study by Mahmoud et al. (2018) implemented a health belief model-based educational intervention to enhance nursing students' knowledge, beliefs, and practices related to breast cancer screening. The intervention significantly improved students' knowledge, perceived susceptibility, severity, benefits, cues for action, self-efficacy, and breast self- examination practices. This highlights the potential effectiveness of targeted educational interventions in addressing gaps in knowledge and perceptions, aligning with the current study's findings.

The discomfort expressed by some participants regarding discussing cancer may stem from personal experiences or emotional connections to the disease. Educational interventions that incorporate emotional support, counseling, and opportunities for open dialogue can help address these concerns and create a more comfortable environment for learning about cancer screening programs. By acknowledging and addressing the emotional impact of cancer, nursing students may be better equipped to engage with cancer-related topics and develop a deeper understanding of the importance of screening initiatives.

Furthermore, the varying levels of awareness about common cancers and screening methods highlight the importance of providing comprehensive and accurate information to nursing students. Misconceptions about the prevalence of different cancer types and lack of awareness about screening methods for certain cancers underscore the need for targeted educational interventions.

The study by Fathey et al. (2021) found that awareness-raising educational interventions improved access to cervical cancer screening services and increased individuals' competence in Saudi Arabia. This aligns with the current study's findings, which suggest the need for educational initiatives to address gaps in knowledge and awareness about cancer screening programs among nursing students.

The gaps in knowledge and awareness observed in this study can potentially hinder nursing students' ability to effectively promote and facilitate cancer screening programs in their future practice. Targeted educational interventions that provide comprehensive information on cancer prevalence, risk factors, and available screening methods are crucial to equip nursing students with the necessary knowledge and skills. These interventions should be designed to address specific misconceptions and knowledge gaps identified in the study, ensuring that future nurses have accurate and up-to-date information to effectively contribute to cancer prevention and early detection efforts.

By addressing these gaps in knowledge and perceptions, nursing education programs can better prepare future nurses to play a more effective role in promoting cancer screening and early detection. Well-informed nursing students can contribute to raising awareness among the general population, encouraging participation in screening programs, and ultimately contributing to efforts to reduce cancer mortality rates in Saudi Arabia.

The study by Getaneh et al. (2021) found that while the majority of female university students in Ethiopia had good knowledge and favorable attitudes towards cervical cancer screening, less than 1% had been screened. This highlights the importance of not only improving knowledge and awareness but also addressing barriers and promoting actual participation in screening programs, aligning with the current study's emphasis on the role of nursing students in promoting cancer screening.

The findings of this study underscore the significance of integrating comprehensive education on cancer screening programs into nursing curricula in Saudi Arabia. By equipping nursing students with accurate knowledge and addressing their perceptions and potential discomfort, nursing education programs can play a vital role in preparing future nurses to effectively promote and facilitate cancer screening initiatives. Well-informed and equipped nursing students can contribute to raising awareness among the general population, encouraging participation in screening programs, and ultimately contributing to efforts to reduce cancer mortality rates in Saudi Arabia.

The study's findings also shed light on the importance of including more information about cancer screening programs in the undergraduate nursing curricula in Saudi Arabia. By integrating comprehensive education on this topic into nursing education programs, future nurses can gain the necessary knowledge and awareness to effectively promote cancer screening and early detection among the Saudi population.

The study by Yang et al. (2022) conducted in China found that integrating breast cancer awareness and health information literacy into nursing curricula improved students' knowledge and awareness. This aligns with the current study's emphasis on the need for incorporating cancer screening education into nursing programs in Saudi Arabia.

Integrating comprehensive information about cancer screening programs into undergraduate nursing curricula can equip future nurses with the necessary knowledge and skills to effectively promote and facilitate these initiatives. By addressing topics such as cancer prevalence, risk factors, available screening methods, and their importance in early detection and improved treatment outcomes, nursing students can develop a solid foundation to support cancer prevention efforts.

Additionally, incorporating practical training, case studies, and opportunities for hands-on experience can further enhance nursing students' preparedness to engage with cancer screening programs. This can include simulations, clinical rotations, or community outreach programs focused on cancer screening promotion and education.

Furthermore, addressing potential emotional barriers and discomfort related to discussing cancer within the curriculum can help create a supportive learning environment. This can involve incorporating counseling techniques, emotional intelligence training, and open discussions to acknowledge and address the emotional impact of cancer. By equipping nursing students with the skills to navigate these emotional aspects, they can better support and guide patients through cancer screening processes.

Overall, this study contributes to the existing body of knowledge by providing insights into nursing students' perceptions and awareness about cancer screening programs in Saudi Arabia. The findings highlight areas for improvement and reinforce the need for targeted educational efforts, as well as the integration of comprehensive cancer screening education into nursing curricula.

The study by Hoque et al. (2014) in South Africa found a significant positive relationship between cervical cancer knowledge and perceived benefits of screening, as well as self-efficacy in undergoing screening among female university students. This aligns with the current study's emphasis on the importance of education and awareness in promoting participation in cancer screening programs.

By addressing the identified gaps in knowledge and perceptions through comprehensive educational interventions and curriculum integration, nursing education programs in Saudi Arabia can better equip future nurses to contribute effectively to cancer prevention and early detection efforts. Well-informed and prepared nursing students can serve as valuable resources for promoting cancer screening, addressing misconceptions, and encouraging participation in screening programs among the general population.

Furthermore, the findings of this study highlight the potential for nursing students to play a crucial role in increasing awareness and facilitating access to cancer screening services within their communities. Through community outreach programs, health education campaigns, and collaborative efforts with healthcare providers, nursing students can actively contribute to raising awareness, addressing barriers, and promoting the importance of regular cancer screening.

By addressing the knowledge gaps, misconceptions, and emotional barriers identified in this study, nursing education programs in Saudi Arabia can better align their curricula and educational interventions to meet the needs of future nurses and the communities they will serve. Ultimately, this can lead to improved healthcare outcomes, increased early detection of cancer cases, and potentially reduced cancer mortality rates in Saudi Arabia

VI. Conclusion And Nursing Implications

The purpose of cancer screening programs is to discover cancers in early stages in asymptomatic patients in order to provide an earlier diagnosis and management, which can lead to improved outcomes for many individuals. This study was conducted to be a quick reference that includes nursing students' perceptions and awareness of cancer screening programs in Saudi Arabia. Despite half of participants had positive perceptions about cancer and cancer screening programs, nursing students' awareness about cancer detection and screening was low. The study revealed a lack of knowledge regarding the most common types of cancer and cancer screenings in Saudi Arabia. Most students answered that cancer only affects people with a family history, and this requires increasing awareness about the most common risk factors of cancer and screening programs. Since Saudi Arabia is characterized by its relatively young population, it becomes necessary to target students early to increase their awareness about cancer and the importance of detection, especially focus on screening programs. This study emphases key messages for nursing education and school professors, counting the importance of investing in prevention and early detection screenings through providing well-educated and trained nurses. The study suggested the importance of raising awareness about cancer screening programs, specifically among Saudi nursing students. Nursing colleges should include more information about the availability and importance of cancer screenings and detection in the curricula to raise awareness about this important topic.

Recommendations

Future studies should take into account is needed to encourage nursing faculty to educate students more about cancer screening and early detection, identify and address barriers that prevent people from accessing cancer screening, such as lack of time, fear, or lack of information, and develop targeted education.

Programs and campaigns to improve knowledge and awareness about cancer, its risk factors, common types, and the importance of early detection among nursing students. Data indicate that there are gaps in understanding the most common types of cancer, screening procedures, and the availability of free cancer screening programs.

Limitations

The generalizability of the results is limited by the data is from a cross-sectional survey, limiting the ability to determine causal relationships or track changes over time. A longitudinal study design would provide more insights into the evolution of cancer awareness and screening practices.

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