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Knowledge regarding cancer and its determinants and barriers to seeking medical help among university students in the city of Hail, KSA

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ABSTRACT

Background: The burden of cancer has been increasing among the young population worldwide, specifically in Saudi Arabia. The present study aims to assess the knowledge of cancer and its determinants and barriers to seeking medical help among university students. *Methods:* It is a cross-sectional study, and 300 students were selected through stratified random sampling. A validated and structured questionnaire was used. Descriptive statistics were used to calculate the mean and standard deviation of the variable. Regression analysis was used to determine the association of risk factors with the outcome variable of knowledge level. A P-value< 0.05 was considered significant. *Results:* Out of 300 study participants, most had inappropriate knowledge (67.7%). The important determinant which caused barrier to seeking medical advice is fear of being diagnosed positive cancer test. In univariate analysis, social science students whose father's occupation was a job were significantly associated (OR 3.27, CI 1.96-5.45, p-value 0.00) and (OR 1.70, CI 1.01-2.84, p-value 0.043) with in-appropriate knowledge. After adjusting covariates, the age group 16-21 years and social science students were significantly associated (OR 3.33, CI 1.22-9.10, p-value 0.019) and (OR 2.78,CI 1.58-4.90, p-value 0.000) with inappropriate knowledge towards cancer respectively. *Conclusions:* The study found that university students, specifically in the social science program, had inappropriate knowledge of cancer signs and symptoms. Health promotion programme should be developed to the young population of the society, it will help to prevention of the Cancer.

Keywords: Cancer, Health, Knowledge, Science, Students, Social

1. INTRODUCTION

Cancer has the highest rate of mortality and morbidity worldwide. The majority of deaths from cancer occur in developing countries because of

delayed detection of cancer due to the relation between poverty and cancer rate (WHO, 2022). The important determinants which caused cancer are tobacco, radiation, obesity, etc. (Macleod et al., 2009). A lack of access to cancer screening and treatment was due to poor public knowledge of the sign and symptoms of cancer and obstacles to received early treatment (Harford, 2011). Some cancers are slow-progressing, taking longer times for the signs and symptoms to appear, which would delay testing. Most of these slow-growing cancers can be controlled when diagnosed and treated early (Simon et al., 2010). Public awareness regarding cancer informationis essential, which helps the healthcare provider diagnose and manage cancer at an early stage to reduce mortality and improve the survival rate (Simon et al., 2010; Gouse et al., 2022).

A population study from the England in 2001 has revealed that <1 in ten of the population could identify different indications of cancer. After eight years, in 2009, another study done in the same country showed no change, specifically among young males of low socioeconomic status (Robb et al., 2009). The result of previous study in the gulf state were found that 68% of study participnats were poor knowledge regarding signs and symptoms of cancer (Ravichandran et al., 2010). Saudi Arabia is a developing country with a total population of 34.8 million. Approximately 37% of the Saudi population is below the age of 14, and only 3.4% are above 65 years, with the median age being 31.8 years (Alsanea et al., 2015). A cross-sectional study performed at three universities in the United Arab Emirates about warning signs and methods of cancer revealed a lack of awareness about breast cancer among female university students (Al-Sharbatti et al., 2014; Algamdi et al., 2021). The most noticeable disparities identified in the knowledge level were those concerning breast cancer screening tests.

National Cancer Registry shows that approximately 24000 new cancer cases are reported annually in Saudi Arabia. The prevalence of non-communicable diseases (NCD) was 32% in Saudi Arabia (Al-Hanawi, 2021). The prevalence of NCDs was higher among women and older people aged 60 years. Prostate cancer prevelance highest among male and breast cancer prevelance highest among female were found in the previous study (Alqahtani et al., 2020). Most patients with cancer in Saudi Arabia tend to come to the clinic at advanced stages. There were also other social and cultural barriers; some people may feel ashamed or embarrassed to be examined the common type of cancer, such as prostate and breast cancer (Alqahtani et al., 2020). These determinants were affected the in the early detection and diagnosis of cancer in Saudi Arabia.

The study objective is to determine the awareness level regarding signs and symptoms, determinants and obstaticles to seeking the help of cancer among university students in the city of Hail, KSA.

2. METHODOLOGY

Study Setting, Study Participants, and Study design

The present work is a cross-sectional study performed from January 2022 to March 2022. The study group consisted of students from five health science colleges and five non-health sciences colleges in a public sector university. Health science colleges include colleges of Medicine, Dentistry, Pharmacy, Nursing, and applied medical sciences. Non-Health Colleges include social science, Business administration, Arts, Science, Community, and engineering colleges. The total strength of students in these colleges is 2000, and 30 participants were selected from each college. The age of students was approximately between 18-26 years.

Sampling technique and Sample Size

The participants enrolled in the present study were selected through stratified random sampling. The study participants were randomly selected according to the proportion of students in the classes. Sample size calculated from Raosoft Inc software, 3.8% margin of error with 95% Confidence interval, 2000 estimated population size and response distribution 50%, the total sample size is 300.

Data Collection Procedure and Study instruments

After getting permission from the deans of colleges, the questionnaire was distributed among study participants with a written consent form. Study participants requested to return within a week. A validated and structured questionnaire was used (Alsanea et al., 2015), the internal validity and consistency of the study instruments were to be very high (Alqahtani et al., 2020; Algamdi et al., 2021). The items consistency in each domain and overall was assessed using Cronbach's alpha coefficients at a 95% CI, and the value of the tool was 0.78 (95% CI: 0.76-0.81). The questionnaire had been pretested and looked out for any inconsistency in responses. The questionnaire was improved according to the responses of the pretest study participants.

The questionnaire had five domains; the first part was regarding the socio-demographic characteristics of study participants, including age, gender, college, year of study, family history of cancer, and place of origin. The second part consisted of five questions about students' knowledge of cancer. The third part was about recognizing signs and symptoms of cancer, the fourth part

was regarding the cancer risk factors (three questions), and the fifth part had questions regarding the perceived barriers to seeking cancer help.

Scoring

The knowledge scale is based on an instrument developed by a previous study (Akkour et al., 2022) containing statements about disease presentation, transmission, precaution, and prevention, and scored as 'yes,''no' with 1 and 0 scores, respectively. Right awnser were added in a 13-point ranking scale. Those who had a cancer knowledge score ≤ 10 were considered to have appropriate cancer knowledge, and score >10 were regarded as having inappropriate knowledge.

Statistical analysis

Epi-data software was used for data entry, and data analysis was done in Statistical Package of Social Science Software program (SPSS) version 22.0 software (IBM Corp). Descriptive statistics in the form of mean, standard deviation, frequency, and percentage were used for data summarization. Knowledge scores were converted into categories, i.e., appropriate/inappropriate knowledge. Inferential statistical analysis was performedusing logistic regression models to test the association of cancer risk factors with the knowledge score. A P-value of <0.05 was considered statistically significant.

Ethical approval

The study was performed after being permitted by the Committee of ethics, the University of Hail (Ethical approval number is H-2021-207). Study participants and stakeholders were explained study objective.

3. RESULTS

In our study, study participants' mean age was 21.45 years ± 1.46 SD; more than half (59.3%) of the study participants belonged to the age group between 18-21 years. More than two-thirds (77.7%) were males, and 51.3% of students were from social science colleges. 24.7% of participants were ever smokers, while 20.3% had a history of cancer among family members (Table 1).

Table 1 Socio-Demographic Characteristics of Study Participants. (n=300)

Characteristics	Frequency (%)
Age (Years) (Mean ±SD)	21.45±1.46
18-21	178(59.3)
22-26	122(40.7)
Gender	
Male	233(77.7)
Female	67(22.3)
Marital Status	
Single	282(94)
Married	18(6)
Colleges	
Health Science	146(48.7)
Social Science	154(51.3)
Academic Year of Study	
First year	46(15.3)
Second year	89(29.7)
Third Year	119(39.7)
Fourth Year	46(15.3)
Father Occupation	
Business	91(30.3)
Job	209(69.7)
Smoking	

Ever	74(24.7)
Never	226(75.3)
Family History of Cancer	
Yes	61(20.3)
No	239(79.7)
Relationship with family member with Cancer®	
1st Degree	18(29.5)
2nd Degree	11(18)
Others	32(52.5)

©The total dataset for this variable was calculated out of the total number of students reporting a history of cancer among family memb ers (n = 61)

More than half of the study participants (67.7%) had inappropriate knowledge regarding cancer awareness. The mean score of cancer knowledge among study participants was 9.46 (SD±4.09). The majority (67.7%) of the respondents had inappropriate cancer knowledge (Figure 1).

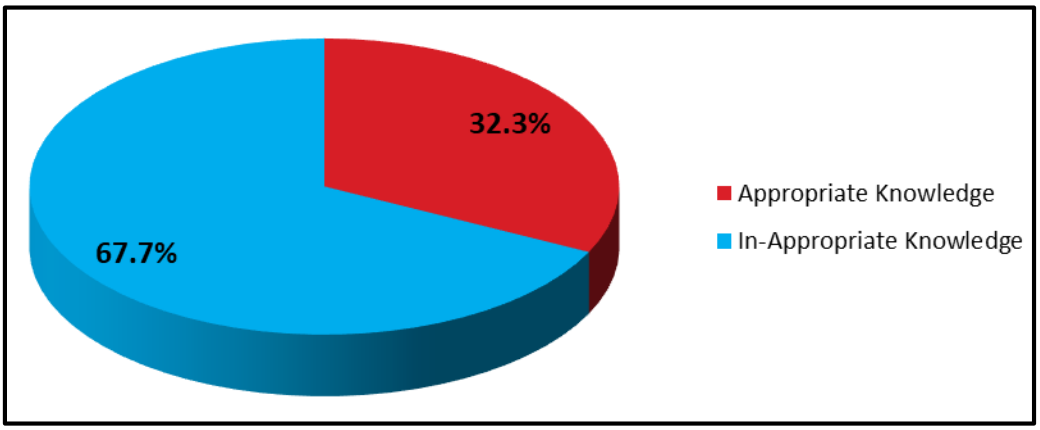

Figure 1 Knowledge level regarding Cancer among Study Participants

Nearly 90% of the respondents knew that cancer could be treated if diagnosed early (92.7%), and the breast cancer were common in females (88.7%). Lifestyle factors knowledge regarding cancer were only 32%, 49% of the respondents believed unexplained swelling of any body part (59.3%) and unexplained weight loss (57.7%) were the most common cancer risk factors (Table 2). In our study, the most common barriersto seeking help werei) fearinga positive test for cancer (60.7%), ii) worried that doctor might find cancer (48.7%), and iii) less priority for seeking doctor help (34.3%) (Table 3).

Table 2 General Knowledge and recognition of sign and symptoms about Cancer among Study Participants (n=300)

Variables regarding Knowledge and recognition of sign and symptoms about Cancer	Correct Response	Frequency (n=300)	Percentage (%)
Cancer is common in Saudi Arabia	Yes	136	45.3
Can cab be treated if diagnosed early	Yes	278	92.7
Common Cancer in Women	Breast	266	88.7
Common Cancer in Men	Prostate	154	51.3
Common determinents of cancer	Lifestyle	96	32
Un-explained lump/ Swelling any part of body	TRUE	178	59.3
Changes of appearance of any mole on the body	TRUE	113	37.7
Persistent Un-explained pain in any part of body	TRUE	147	49
Un-explained bleed from any part of body	TRUE	111	37
A soar does not heal	True	85	28.3

Un-explained weight loss	True	173	57.7
Persistent difficulty swallowing	TRUE	96	32
Persistent Cough	TRUE	101	33.7

Table 3 Perceived barriers towards seeking medical help		
Perceived barriers	Response	Frequency n(%)
Busy/no time to go to a doctor	Yes	103(34.3)
Worried about what the doctor might find	Yes	146(48.7)
Scared of positive test for cancer.	Yes	182(60.7)
Embarrassed	Yes	66(22)
Difficulty arranging transport	Yes	53(17.7)
Difficulty communicating with the doctor	Yes	82(27.3)

Social science students had more than three [OR- 3.27(CI 1.96-5.45)), p-value 0.000,] times inappropriate knowledge regarding cancer among our study participants. Moreover, such students whose father's occupation was a job were more than one time more likely to have inappropriate knowledge. Insignificant relation with outcome and independent variables were found. After adjusting the covariate, the age group 21-26 years was more than three [OR 3.33(CI 1.22-9.10), p-value 0.019] times had inappropriate knowledge. Moreover, social science students were more than two [OR 2.78 (CI 1.68-4.90) p-value 0.000] times had inappropriate knowledge (Table 4). Approximately 67.7% of social science students had inappropriate knowledge regarding cancer compared to health science students (Figure 2).

Table 4 Socio-demographic determinants of cancer knowledge among study participants				
Characteristics	Inappropriate Knowledge		Inappropriate Knowledge	
	Crude Odd Ratio (COR) (95% Confidence Interval (CI)	P-value	Adjusted Odd Ratio (AOR) (95% Confidence Interval (CI))	P-value
Age				
18-21	1		1	0.019
22-26	1.09(0.66-1.79)	0.716	3.33 (1.22-9.10)	
Gender				
Male	1		1	0.357
Female	1.39(0.76-2.55)	0.279	1.36(0.70-2.64)	
Marital Status				
Single	1		1	0.957
Married	1.049(0.38-2.88)	0.925	1.03(0.34-3.07)	
Colleges				
Health Science	1		1	0.000
Social Science	3.27(1.96-5.45)	0.000	2.78(1.58-4.90)	
Academic Year of Study				
First	2.07(0.77-5.58)	0.147	1.99(0.59-6.71)	0.264
Second	0.90(0.42-1.95)	0.799	1.05(0.40-2.73)	0.909
Third	0.69(0.33-1.43)	0.326	1.09(0.46-2.56)	0.838
Fourth	1		1	
Father Occupation				
Business	1		1	0.074
Job	1.70(1.01-2.84)	0.043	1.65(0.95-2.86)	
Smoking				
Never-smoker	1		1	0.208
Ever smoker	1.17(0.66-2.07)		1.49(0.80-2.78)	

Family History of Cancer				
No	1		1	0.623
Yes	1.35(0.75-2.42)	0.316	1.17(0.623-2.20)	

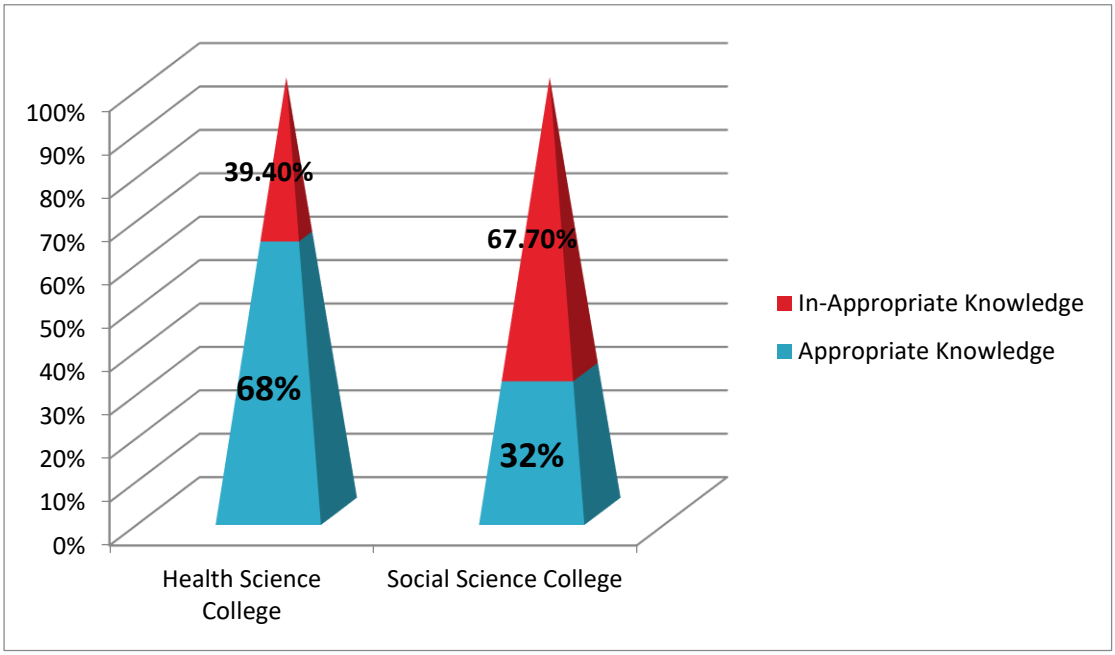

Figure 2 Knowledge level among Health and Social science students

4. DISCUSSION

Most of the study participants had inappropriate knowledge regarding cancer, indicating a lack of awareness of cancer among students, especially social science students. More than half (54.7%) of the participants did not consider cancer a common disease. These results showed a lack of cancer-related awareness among the study group. On the other hand, most students agreed that early diagnosis of cancer would be better management of cancer. These study findings were consistent with other study results (Akkour et al., 2022). An early cancer diagnosis is essential to ensure successful treatment and a better prognosis (WHO, 2017). However, previous research found that KSA cancer patients tend to be diagnosed at a late stage of cancer compared to other populations (cancer research centre, 2018; Koo et al., 2021). Increased awareness among students might encourage more people to seek medical attention at an earlier stage, resulting in better patient outcomes.

The study results found that only 32% of participants believed that lifestyle factors were significant determinants of cancer. There is strong evidence regarding the influence of lifestyle risk factors on the growth of cancer among young people (Sanderson et al., 2009; Ligibel, 2012; Klein, 2021). Increased awareness regarding lifestyle risk for cancer could significantly lower their lifetime risk of developing cancer. A classic example of this is the association between tobacco use and lung cancer, with smoking cessation education initiatives offering an ideal opportunity for lung cancer prevention (Hermans et al., 2021; Al-Lawati et al., 2017; van Mourik et al., 2020). In this study, most participants (75.3%) claimed that they had never smoked. This behavior showed that participants knew it was linked to a more likely chance of many cancers (Al-Zalabani, 2020). This finding might indicate a high level of awareness of the direct effect of modifiable lifestyle riskfactors on the development of certain types of cancer. Previous studies found similar research results (Mensah et al., 2021; Calvert et al., 2021).

The study result showed that the female gender had less awareness than the male gender regarding the cancer risk. This result contrasts with results from a previous study, which found that the female gender had more awareness regarding cancer than the male gender (Al-Azri et al., 2021). Low awareness among females might be due to living in a Muslim society where extramarital sex is not legal and socially unacceptable, specifically for women. Thus, many female students never heard of female breast or cervical cancers (Pang and Humphris, 2021). Age determinant is an important predictor of awareness level regarding cancer. This study found that younger aged< 21 significantly had a higher knowledge level than the >21 age group. These age-related findings might be linked to differences in education level (Feizi et al., 2011). Further studies are recommended to explore this relationship in more detail.

This study found that students from health-related colleges had a significantly higher awareness level than their social science colleges. These results are in agreement with other studies that found that health sciences students had a high level of knowledge regarding cancer compared to other students (Elshami et al., 2021; Kurtuncu et al., 2014). The common reason for this difference is that these signs and symptoms reflect clinical manifestations that medical and nursing students study in their curricula. Moreover, study results found that awareness level is associated with a history of cancer among family members. This association between cancer awareness level and family history is that students are more able to recognize cancer signs while living with family members having cancer. This might be due to individuals' personal experiences living or spending time with family members affected by cancer (McCutchan et al., 2021).

The current study found that the most common barrier to seeking help was being scared of a positive test for cancer, whichis an emotional barrier. This result is in agreement with another study result (Connor et al., 2020). The common reason is the natural fear of death and anxiety about visiting a hospital for surgery or medical treatment. Such barriers might be indicative of underlying fatalistic beliefs (Graham and Unger, 2018). There are several limitations of this stud, the study was cross-sectional, which precludes inferring causality. Second, as with many epidemiological studies, data based onsubjective to gauge sensitive risk behaviors, result may be the underestimate compred to real results.

5. CONCLUSION

Mass education regarding cancer among the students is urgently needed because our aim is to prevent cancer spread in this vulnerable sector of society so that each individual can enjoy a safe life without falling prey to this emerging disease. Knowledge gap was found regarding cancer in this study. This gap should be filled by disseminating information using schools and health institutions wherever they are available, for they seem to play an unsatisfactory role in our study. The use of television and radio to disseminate cancer information should be increased.

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Author Contributions

Conception and study design: MZ,. Data collection: AMA, AYA and AFA. Data analysis and interpretation: MZ. Manuscript drafting: MZ. Manuscript revision: AK. All authors approved final version of the manuscript: Guarantor of the study: MZ.

Ethical approval

The study was approved by the Medical Ethics Committee of university of Hail (Ethical approval code.h-2021-207).

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Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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