

AWARENESS OF CANCER RISK FACTORS, EARLY WARNING SIGNS AND ATTITUDE TOWARDS PERVENTIVE HEALTH BEHAVIORS TOWARDS CANCER AMONG UNDERGRADUATE NURSING STUDENTS

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Abstract

Cancer is one of the major killers globally especially in the low- and medium-income nations where the disease is mostly diagnosed at its advanced stages. The research evaluated knowledge of nursing undergraduate students about cancer risk factors, the ability to identify early warning signs, and their attitudes toward cancer preventive health behaviours at the University of Lahore. The study utilized a descriptive cross-sectional design between March and June of the year 2025 with a validated 30-item Cancer Awareness Measure (CAM) questionnaire. The participation was by 178 students who were sampled using purposive sampling. The results showed that although 45 percent of the people interviewed displayed a good knowledge of cancer risk factors, knowledge of some lifestyle-related risks, including daily intake of red or processed meat and low consumption of fruits and vegetables, were not well known. Knowledge of early warning signs was also moderate with only one-third indicating good awareness. The more obvious symptoms like unexplained lumps were more well known whereas the less obvious symptoms such as changes in bowel habits and difficulty in swallowing were less known. The preventive behaviours also received positive attitudes with a high rate of adherence to avoidance of smoking, eating well, and having a balanced diet. Nevertheless, the contact with media-related cancer and alcohol moderation was minor. These findings highlight the importance of better educational approaches in nursing programs to increase the knowledge of less recognized symptoms and lifestyle risk factors of cancer among the students. Among the nursing students, it is important to reinforce such knowledge as they are usually at the frontline of providing care to patients; they are also important in terms of early detection and promotion of health amongst the members of their communities.

CHAPTER I

INTRODUCTION

1.1 : BACKGROUND:

One of the biggest causes of death globally is still cancer, and its prevalence is rising, especially in low- and middle-income nations. Lack of public knowledge of risk factors, early warning signals, and attitudes toward cancer prevention measures

is a major obstacle to early cancer detection and treatment. Late-stage diagnoses are common in many nations, including Oman, which leads to high mortality rates and a bad prognosis.(Algamdi, Farah, & Gonzales, 2021). Cancer remains a major global health concern, accounting for a considerable number of fatalities globally. Higher death rates are largely caused by

late-stage cancer diagnosis, particularly in low-and middle-income nations. The awareness of cancer risk factors, warning signals, and attitudes toward cancer prevention—which are still poor in many communities, especially among healthcare professionals—are important variables influencing early detection. As future medical professionals, undergraduate nursing students are essential in identifying cancer symptoms early and assisting patients in getting proper medical attention.(Algamdi and others, 2021).

Through their direct patient interactions, nursing students are well positioned to impact early detection among healthcare providers. Nonetheless, research indicates that undergraduate nursing students frequently have inadequate knowledge of cancer risk factors, early warning indicators, and attitudes toward cancer prevention practices. This information gap may affect the standard of patient treatment and postpone the detection of cancer symptoms.(Ibrahim, Karima, B, & Mohammed, 2021).

As aspiring medical professionals, undergraduate nursing students are crucial in spotting cancer symptoms early and directing patients toward prompt treatments. However, research indicates that a large number of nursing students lack basic understanding of early warning indicators and cancer risk factors, which can cause delays in diagnosis and treatment. It is imperative to evaluate and raise nursing students' awareness of these issues in light of the rising cancer burden, especially in settings with limited resources.Al Bashir and associates, 2024.

Nursing students are essential to healthcare professionals in detecting cancer symptoms early and raising community awareness. Studies have revealed that nursing students' understanding of the risk factors and early warning symptoms of cancer is severely lacking, despite their crucial role in

cancer care. This ignorance can lower the likelihood of a successful outcome and postpone early discovery. (Mehdi and Al Bahrani, 2021).

In order to lower the death rate from cancer, early detection and prevention are essential. The public, especially medical professionals like nursing students, frequently lacks knowledge of

the disease's early warning signals and risk factors, according to studies. Given that nurses frequently serve as patients' initial point of contact, it is imperative that they comprehend cancer signs and risk factors. They are crucial in spotting cancer early and helping people get proper medical attention.(Al-Hosni, Al-Azri, Sumri, and Chan, 2024).

In order to improve cancer outcomes, healthcare professionals—especially nurses and paramedical staff—play a crucial role. Since they frequently serve as patients' initial point of contact, these frontline healthcare professionals must be knowledgeable on cancer symptoms, risk factors, and prevention techniques in order to diagnose the disease early and treat it effectively. Research has indicated that raising cancer awareness among healthcare workers, including nursing students, is essential for educating the public and promoting behaviours that can prevent or detect cancer in its early stages. In order to improve early detection and lower mortality, there has been an increasing focus on raising cancer awareness among healthcare workers. Almutairi, Alodhailah, and Almutairi (2024).

The general public's awareness of cancer has been a significant issue in Libya. Late-stage diagnoses are caused by a variety of causes, including societal stigma, ignorance of the disease, and limited access to cancer prevention education. In order to lower the death rate, public health campaigns and educational initiatives that emphasize cancer prevention, early detection, and warning sign recognition are essential.(Tawel, Elfzani, and Hweissa, 2022).

A breast cancer diagnosis can cause major emotional and social upheavals for young women, which can affect how they interact with their family, friends, and society. The psychological pain that often follows a breast cancer diagnosis leads to changes in self-perception, body image, and social roles. These changes may result in low self-esteem, social disengagement, and a shift in relationships, especially with close friends and family. Furthermore, it may be more challenging for breast cancer survivors to interact with their community due to cultural factors including stigma and social expectations. Concerns about

fertility, career advancement, and body image can also have an impact on young women's coping strategies and social interactions. Al-Bimani, Al-Kiyumi, Al-Azri, and Al-Awaisi (2024).

Infections like the human papillomavirus (HPV) for cervical cancer and lifestyle factors have a major impact on the incidence of cancer in India. The general people still doesn't know enough

about the early warning signs of cancer, even though awareness of the disease is increasing because to numerous government initiatives. Early diagnosis is essential for lowering death rates, but it is severely hampered by this dearth of knowledge. Previous research has shown how little people know about early cancer symptoms and the different sociocultural elements that affect how many populations seek care. (Vikas, Sv, & Hemant, 2024).

1.2 : PROBLEM STATEMENT:

With high death rates, especially in low- and middle-income nations, cancer is a significant worldwide health concern. Poor outcomes are a result of late-stage diagnoses, which are frequently brought on by a lack of knowledge about early warning signs, risk factors, and attitudes toward cancer prevention. Healthcare workers, particularly nursing students, who play a critical role in patient education and early detection, are also unaware of this. The lack of knowledge about cancer among many undergraduate nursing students can cause delays in detection and treatment. (Dare and others, 2021). Furthermore, early intervention is encouraged by social and cultural variables like shame and limited access to cancer care, which improves cancer survival rates in these communities.

1.3 :SIGNIFICANCE:

Both public health outcomes and healthcare education was be significantly impacted by this study. The study intends to discover important information gaps that could postpone early identification and treatment by evaluating undergraduate nursing students' awareness of cancer risk factors, early warning indicators, and attitude toward preventive health practices regarding cancer. Improving nursing students'

awareness can directly improve patient outcomes because they are typically the first point of contact for patients, particularly in low- and middle-income countries where cancer diagnoses are often made at advanced stages.

Knowledge of cancer risk factors is not significantly correlated with sex, age, nationality, marital status, employment position, cancer diagnosis, and routine cancer screening and self-examination, according to a 2021 Saudi Arabian study. Knowledge of cancer risk factors and educational attainment were significantly correlated ($P=0.017$).

The understanding of risk factors was low among those with secondary and university education (23.9 and 27.3%, respectively). Risk factor awareness is significantly correlated with family history ($P=0.048$). Compared to those with a family history of cancer (11%), over half of the individuals (54.7%) who had no family history of cancer showed noticeably less awareness about risk factors. Participants' knowledge of cancer risk factors and their information sources were shown to be significantly correlated ($P=0.000$).

A poor level of knowledge was assessed by almost one-third of individuals (27.4%), who chose the internet as their primary source of information regarding cancer risk factors. Participants' level of awareness was substantially correlated with their overall awareness of cancer risk ($P=0.000$). Just 7.3% of the sample had a high level of awareness, compared to over half (58.7%) who had a low level and 34.1% who had an average level.

According to the discussion, this study was help improve preventative care, lower cancer mortality rates, and create healthier communities by helping nursing students identify cancer symptoms early. In the end, the study was be vital in equipping upcoming medical professionals to promote early intervention, lower stigma, and support prompt screenings, which was increase cancer survival rates in their communities.

1.4 : RESEARCH OBJECTIVE

1. To Exploring awareness of cancer risk factor
2. Investigate the eearly warning signs
3. Assess the attitude towards preventive health behaviours towards cancer among undergraduate

nursing students.

1.5: HYPOTHESIS:

Null Hypothesis (H₀):

1. There is no significant relationship between awareness of cancer risk factors, early warning signs and attitude towards preventive health behaviours towards cancer among Undergraduate Nursing students.

Alternative Hypothesis (H₁):

1. There is a significant positive relationship between awareness of cancer risk factors, early warning signs and attitude towards preventive health behaviours towards cancer among Undergraduate Nursing students.

CHAPTER II

LITERATURE REVIEW

This review of the literature looks at undergraduate nursing students' knowledge of cancer risk factors, early warning indicators, and attitudes toward preventive health behaviors towards cancer. To locate relevant studies, Google Scholar, PubMed, and CINAHL were searched using the terms "risk factors," "early warning signs," "attitudes toward preventive health behaviours," and "under graduate nursing students." Moreover, the Boolean operators "AND" and "OR" were used, which allowed the search to be refined and the results filtered by using specific words and phrases. Additionally, we employ filters to limit our search results to scholarly sources, peer-reviewed journals, and current articles. These tools and methods produced useful information and corroborating evidence that direct my research into this significant and complex topic.

In 2019 study conducted by King Saud Bin Abdulaziz University for Health Sciences evaluated 372 health and related students' knowledge and awareness of colorectal cancer (CRC). 54.3% of participants in the survey did not know what colorectal cancer (CRC) was, and only 39% were aware that it might be prevented. Furthermore, while 76.1% of respondents believed that screening is essential for early detection, 59.7% were unaware of the CRC screening procedures. 54% to 68% of students

accurately identified the signs of colorectal cancer, indicating a reasonable level of awareness. Only 34.4%, however, were able to accurately identify five of the twelve risk variables. In order to prepare upcoming healthcare professionals for the growing burden of CRC, the study found that students lacked sufficient understanding about the disease and emphasized the need for better educational initiatives and curriculum modifications.(Aga and others, 2021).

In 2021, the following study was carried out in Pakistan to gauge university students' awareness of breast cancer. The purpose of the study was to assess their understanding of breast cancer risk factors, symptoms, and indicators as well as the best practices for breast cancer screening. The average age of the 774 students that took part was 23.06 ± 4.35 years.

Only 29.8% of participants knew that a family history of breast cancer was a risk factor, and only 14.1% knew that using oral contraceptives for an extended period of time was a danger. Additionally, there was a low level of understanding of the signs and symptoms of breast cancer, with 35.5% recognizing a tumor beneath the armpit and 38.6% recognizing a painless breast lump. The study identified a substantial knowledge gap, highlighting the necessity of more

educational programs on breast cancer awareness for Pakistani female students. (Hussain and others, 2022).

Another study in 2021, King Saud University conducted a second study to evaluate the clinical knowledge and attitudes of undergraduate healthcare students on thyroid cancer (TC). Assessing senior pharmacy, nursing, and medical students' understanding of TC signs, symptoms, and risk factors was the aim of the study. A total of 141 students participated, with 46.8% being pharmacy students, 28.4% nursing students, and 24.8% medical students. The study found that 54.6% of the participants identified neck lumps or swelling as a common early indicator of TC, while 55.3% reported sufficient knowledge about TC. Female students had significantly better knowledge than male students. The study concluded that there is a need for improved educational interventions to enhance awareness

of TC among healthcare students to support early diagnosis and prevention. (Hussain et al., 2022)

In 2021, a new study was conducted in Kyrenia, Northern Cyprus, to evaluate university students' awareness of early warning indicators and their understanding of cancer risk factors. Of the 150 students who took part, 51.3% were not in the medical field. According to the study, there was a substantial difference in the groups' consumption of processed red meat and alcohol, and both medical and non-medical students had poor levels of knowledge of cancer risk factors. Medical students were more likely than non-medical students to recognize symptoms like persistent, unexplained discomfort, indicating a lack of awareness of typical warning indicators. In order to strengthen early detection and prevention efforts, the study underlined the necessity of better cancer education through university programs. (Baku & Al-Taie, 2024).

The following study evaluated the oral cancer prevention (OCP) knowledge, attitudes, and practices (KAP) of 472 dental students, interns, and faculty members at Jazan University's College of Dentistry between May 2019 and February 2020. According to the survey, only 28.1% of participants had strong awareness of oral cancer prevention, while 71.9% had inadequate knowledge. Furthermore, 62.9% of respondents reported subpar preventative methods, and 83.6% had negative opinions on OCP. In the previous year, only 29.7% of participants engaged in OCP activities, and 42% and 53%, respectively, referred suspicious cases to the departments of oral medicine and maxillofacial surgery. The study found that dental practitioners' knowledge, attitudes, and behaviours were insufficient, underscoring the need for better educational initiatives, ongoing training, and curriculum modifications to strengthen efforts to prevent oral cancer. (Shubayr, Al Agili, Bokhari, Essa, and Nammazi, 2021).

The following study, carried out by Jahangirnagar University in Bangladesh, evaluated how an educational intervention affected 400 female students' knowledge about breast cancer and their habits of breast self-examination (BSE). Following the intervention, mean scores for symptoms, risk factors, therapy, preventive, and

screening increased significantly ($p < 0.001$), indicating considerable changes in knowledge. The percentage of individuals exercising BSE increased from 21.3% to 33.8%, indicating an improvement in BSE practice as well. According to the study's findings, the educational intervention successfully improved BSE behaviours and awareness about breast cancer, highlighting the significance of ongoing education for early diagnosis and prevention. (Sarker and colleagues, 2022).

Another study, conducted by (KIM, I.J. and KIM, S.H., 2012) in this study they discussed about Relationships between Knowledge, Attitude and Preventive Health Behaviour about Cancer in University Students. The Findings of the study A mean score of

14.33 ± 5.32 was obtained for knowledge about cancer, 31.76 ± 3.75 for attitude toward cancer, and 57.20 ± 8.48 for preventative behaviour. Knowledge of cancer and attitude toward cancer were somewhat positively correlated. The attitude towards cancer and cancer prevention practices were positively correlated.

The following study by KUTLUTÜRKAN, S., et al., 2023, examined Turkish nursing students' perceptions of cancer and its contributing factors: Sixty-three were the study's findings. 36.8% of the pupils were first-year students, 87.8% had been ladies, and 3% had been between the ages of 17 and 20. The decision was made that 51. During clinical practices, 4% of the students assisted in the care and treatment of a patient who had been diagnosed with cancer. The Questionnaire for Measuring Attitudes toward the majority of malignancies had an average score of 3.23 ± 0.47 . In this study, a statistically significant correlation was found between the students' years in the application and the impossibility of recovery subscale, between gender and the scale, having a family member with cancer and their immediate surroundings with disclosure, and the spread of cancer diagnosis ($p < 0.05$). According to the linear regression analysis's stepwise methodology, gender and telling an afflicted individual about their cancer diagnosis significantly impacted the dimensions ($p < 0.05$).

However, Beijing's 2022 study, the last one in

this evaluation of the literature, evaluated 3055 inhabitants' awareness and understanding of oral cancer. 52.9% of participants in the survey reported having heard about oral cancer, which is a far lower

awareness rate than those of other cancer types like lung cancer (94.5%). Furthermore, more than 60% of participants did not know the early warning symptoms and risk factors for oral cancer. Just 39.6% of respondents said smoking was a danger factor, and only 28% said age was a risk factor. According to the study's findings, there is a need for more public education and awareness regarding oral cancer, its risk factors, and early warning indicators. (Zhou and others, 2022).

The nine studies under review provide valuable insights into the factors influencing undergraduate nursing students' knowledge of cancer risk factors, early warning indicators, and attitudes toward cancer prevention. Additionally, there is a dearth of research on Pakistani students' sociodemographic traits, awareness, and attitudes toward cancer prevention. This gap analysis highlights the need for more research to close the gaps identified in the literature on offering comprehensive care and support services.

CHAPTER III

MATERIALS AND METHODS

3.1 : Study Design:

The study was adopted a descriptive, cross sectional study design. A descriptive design is appropriate to gather detailed, current data on Cancer risk factors, early warning signs and attitude towards health preventive behaviours towards cancer among undergraduate nursing students. The cross-sectional approach allows the collection of data at a single point in time, making it efficient.

3.2 : Variables:

1. Awareness of cancer risk factors
2. Awareness of early warning signs of cancer
3. Attitude towards preventive health behaviours towards cancer.

3.3 : Operational Definitions:

3.3.1 : The operational definitions with good, average, and poor categories:

- Awareness of Cancer Risk Factors (8–40)
- Awareness of Early Warning Signs (8–24)
- Attitude towards preventive health behavior towards Cancer (0–10)

3.3 Operational Definitions

3.3.1 Cancer Awareness Measure (CAM):

In this research, cancer awareness and attitude were measured using a structured questionnaire based on the Cancer Awareness Measure (CAM). The scoring system categorizes participants into three levels based on their total percentage scores:

- **Good Awareness/Attitude:** Score $\geq 75\%$
- **Average Awareness/Attitude:** Score 50% – 74%
- **Poor Awareness/Attitude:** Score $< 50\%$

The classification was applied separately to each component of the CAM:

Awareness of Cancer Risk Factors (Score Range: 8–40)

- **Good Awareness:** 75–100% → Score 30–40
- **Average Awareness:** 50–74% → Score 20–29
- **Poor Awareness:** $< 50\%$ → Score 8–19

Awareness of Early Warning Signs of Cancer (Score Range: 8–24)

- **Good Awareness:** 75–100% → Score 18–24
- **Average Awareness:** 50–74% → Score 12–17
- **Poor Awareness:** $< 50\%$ → Score 8–11

Attitude Toward Preventive Health Behaviors (Score Range: 0–10)

- **Good Attitude:** 75–100% → Score 8–10
- **Average Attitude:** 50–74% → Score 5–7
- **Poor Attitude:** $< 50\%$ → Score 0–4

Overall CAM Score (Total Score Range: 16–74)
(Combined score from all three sections)

- **Good Overall Awareness and Attitude:** $\geq 75\%$ → Score 56–74
- **Average Overall Awareness and Attitude:** 50–74% → Score 37–55
- **Poor Overall Awareness and Attitude:** $<$

50% → Score 16–36

3.4 : Conceptual Definitions

3.4.1. Awareness:

The term "awareness" refers to a person's knowledge, cognition, and understanding of the causes, symptoms, risk factors, consequences, and management of a specific problem.

3.4.2. Warning Signs of Cancer:

The warning signs of cancer refer to a set of early symptoms or changes in the body that may indicate the presence of cancer. These signs serve as indicators for individuals to seek medical advice, as early detection of cancer significantly improves treatment outcomes.

3.4.3. Attitude:

An "attitude" refers to a multifaceted mental condition that includes an individual's emotions, convictions, and actions regarding a specific object, person, or topic. It signifies a tendency to react in a particular manner, shaping a person's perceptions, evaluations, and behaviours.

3.5 : Study Setting:

The University of Lahore's Lahore School of Nursing was the site of this investigation.

3.6 : Study Population:

The study population was Nursing Students of Lahore School of Nursing The University of Lahore.

3.7 : Sampling Technique:

In this investigation, sampling was done using a purposeful non-probability sampling strategy.

3.8 : Sample Size:

Cochran's Formula:

$$n = \frac{e^2 Z^2 \cdot p \cdot (1-p)}{(1 + e^2 \cdot N Z^2 \cdot p \cdot (1-p))}$$

Where:

- $Z = 1.96$ (for 95% confidence)
- $p = 0.5$ (maximum variability)
- $e = 0.05$ (margin of error)
- $N = 330$ (population size)

Sample Size for Population of 330:

$$n = 178$$

Based on the known population, the statistics

department and research supervisor assist in determining the sample size, which is 178.

3.9 : Study Duration:

The study was conducted over 4 months from March 2025 to June 2025.

3.10.: Inclusion Criteria:

1. All nursing students enrolled in the Lahore School of Nursing at the University of Lahore.
2. Able to understand and respond to the Questionnaire.

3.11 : Exclusion Criteria:

1. Participants who are not prepared to take part in the study are not included, nor are any nursing students who were absent from school or on leave.
2. Not able to understand and respond to the Questionnaire.

3.12 : Research Tool:

Data was collected from the study participants via using Questionnaire: Cancer Awareness Measure (CAM) scale.

Contents of Questionnaire:

The version of Questioner consisted of 30 questions divided into four parts which was take approximately 10 to 15 minutes. The survey's first section asked about the participants' demographics, including their gender, age, Year of Qualification and

Marital Status. The survey's second section about the 8 items was assess awareness of cancer risk factors, with the answer strongly agree, disagree, not sure, agree and strongly disagree. The survey's third section about the 8 items data was collect to assess awareness of early warning signs of cancer and respondent was give the option to answer Yes, No, or don't know. The surveys forth section about the 10 items which was assess the data about attitude towards health preventive behaviours towards cancer include the answer Yes, or No.

3.13 : Validity and Reliability:

Cancer Awareness Measure (CAM) Scale was used as a free online tool that was valid, clear, relevant, understandable and pretested. The questionnaire's developer evaluated its reliability to be 0.831

3.14 : Data Collection Procedure:

Data was gathered using a questionnaire that has been adopted. The participants were introduced to it through an introductory conversation. Participants received assistance in completing the questionnaire. The data is gathered collaboratively and with a purpose. All participants were taken into consideration at the conclusion of the project due to their voluntary involvement, which is confirmed by informed consent.

3.15 : Data Analysis:

This chapter deals with the analysis of data from

the current study "Cancer Awareness Measure (CAM)" IBM SPSS Statistics 27.0.1. The demographic and other variables are presented in the form of Frequencies, Percentages, and graphs.

3.16. ETHICAL CONSIDERATION:

The research was conducted in accordance with the guidelines established by the University of Lahore's ethical committee, and the rights of research participants were upheld.

1. All participants were asked to provide written informed consent.

2. All data collection and information was kept private.

3. Throughout the study, participants remained anonymous.

4. The participants were made aware that there are no risks or drawbacks to the study's methodology.

3.17. GANTT CHART

Activity	Months				
	Feb 2025	March 2025	April 2025	May 2025	June 2025
Proposal completion					
Data collection					
Data analysis and interpretation					
Research compilation					
Research presentation and Final submission					

CHAPTER IV

RESULTS AND DISCUSSION

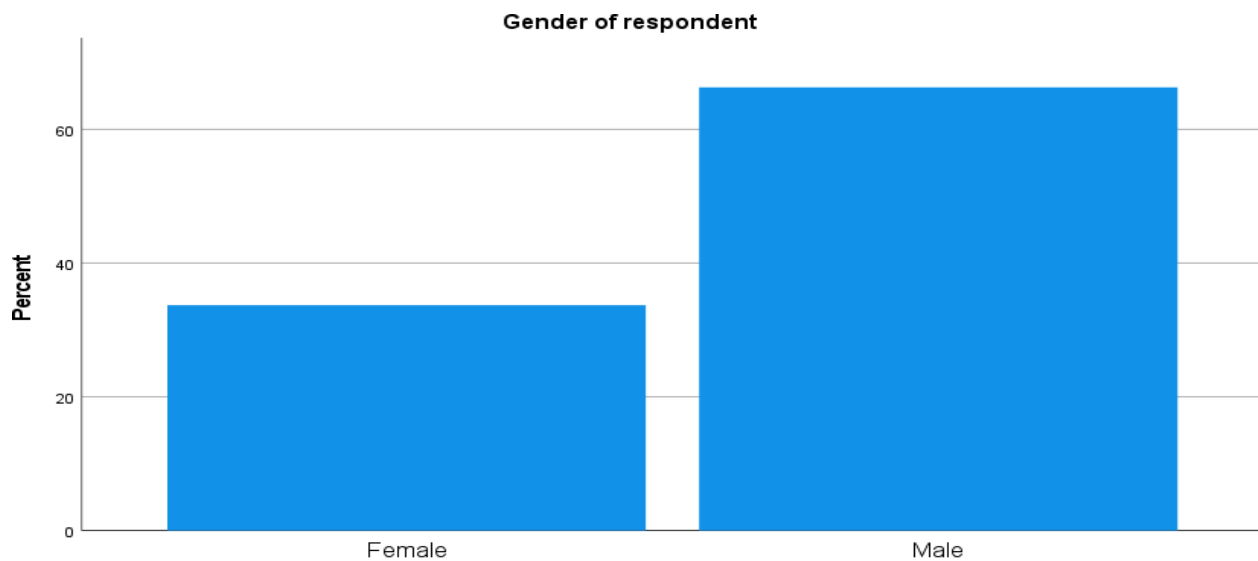
Statistics

Gender of respondent

	178
	0
Mean	1.6629
Std. Deviation	.47405

Gender of respondent

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	Female	60	33.7	33.7	33.7
	Male	118	66.3	66.3	100.0
	Total	178	100.0	100.0	



Gender of respondent

Males make up the majority of responders (66.3%). 33.7% of the sample consists of female responders. Since there are no missing values, the data is full (178).

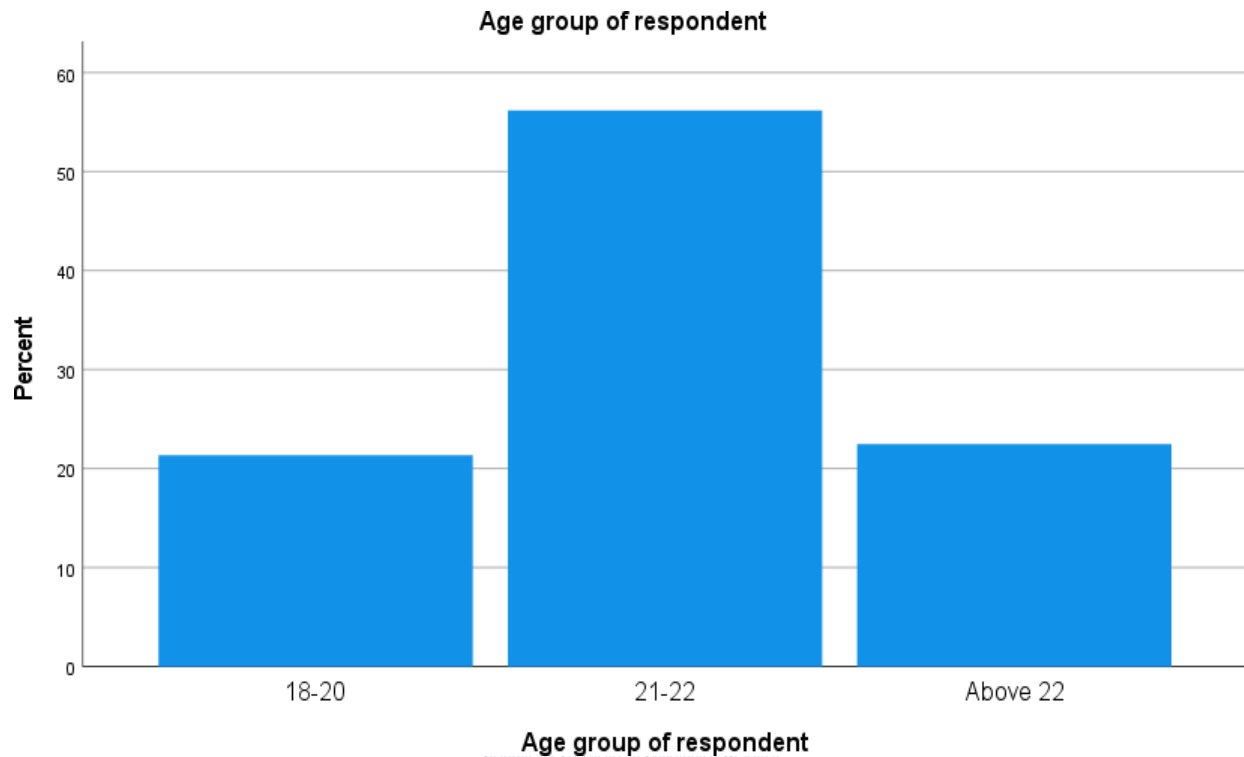
Statistics

Age group of respondent

		178
Missing		0
Mean		2.0112
Std. Deviation		.66374

Age group of respondents

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	18-20	38	21.3	21.3	21.3
	21-22	100	56.2	56.2	77.5
	Above 22	40	22.5	22.5	100.0
	Total	178	100.0	100.0	



Distribution of Age Groups

18-20: 38 people (21.3%) responded

21-22: One hundred responders (56.2%)

40 responders (22.5%) were over 22.

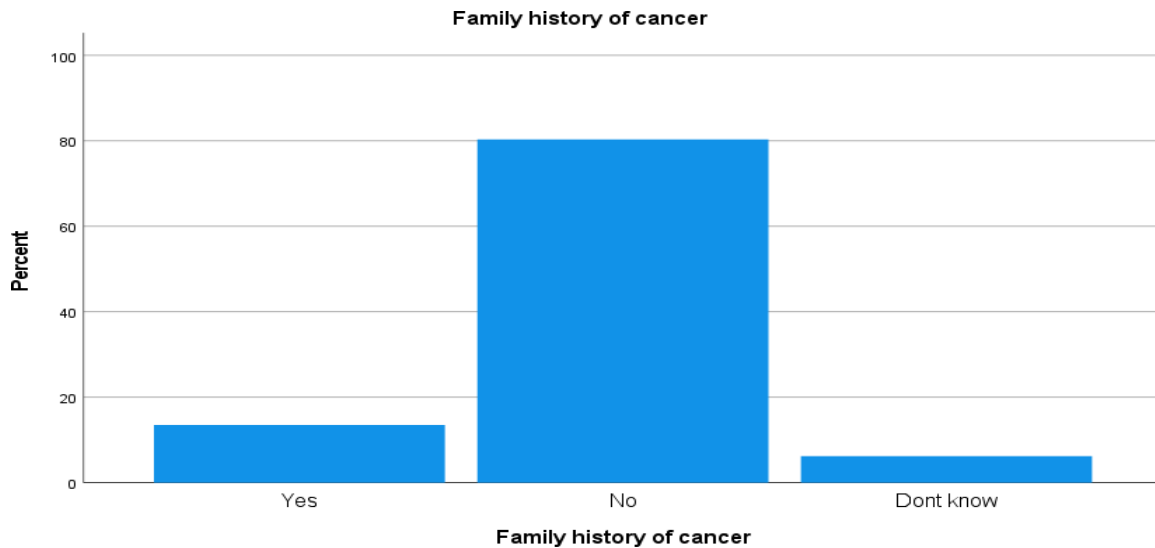
1. Dominant age group: Those aged 21 to 22 make up the majority of responders (56.2%).

2. Equitable distribution: The proportions of the remaining age categories (18-20 and over 22) are comparatively comparable at 21.3% and 22.5%, respectively. Cancer in the family history

3. Low variability: The age groups appear to be fairly grouped around the mean, according to the standard deviation.

Family history of cancer

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	Yes	24	13.5	13.5	13.5
	No	143	80.3	80.3	93.8
	Dont know	11	6.2	6.2	100.0
	Total	178	100.0	100.0	



1. **Most people don't have any family history:**

Eighty-three percent of those surveyed said they had no family history of cancer.

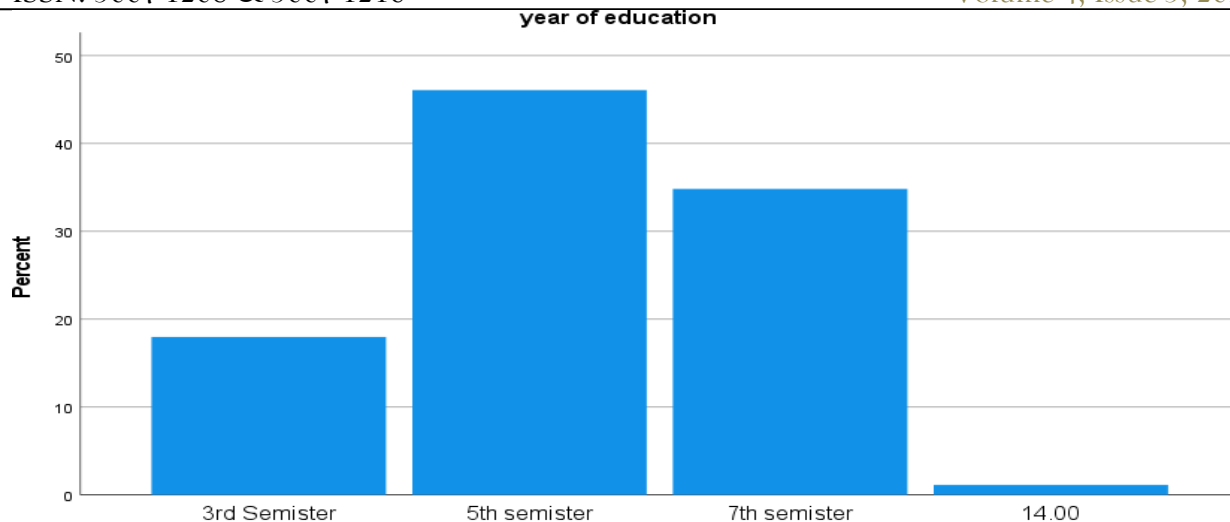
2. **Small percentage with family history:** Only 13.5% of respondents said they had a family

history of cancer.

3. **Uncertainty:** Just 6.2% of those surveyed were unclear if they had a family history of cancer.

Year of education

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	3rd Semister	32	18.0	18.0	18.0
	5th semister	82	46.1	46.1	64.0
	7th semister	62	34.8	34.8	98.9
	14.00	2	1.1	1.1	100.0
	Total	178	100.0	100.0	



1. Concentration in the 5th semester: The distribution shows a peak with the majority of responses (46.1%) in the 5th semester.

2. Notable presence in 7th semester: A sizable fraction of responders (34.8%) are enrolled in the

7th seme

3. Third semester representation is lower: The third semester accounts for a somewhat lesser percentage of responders (18.0%).

Statistics

			Eating less than 5 portions of fruit and vegetables a day	Drinking more than 1 unit of alcohol a day	Eating red or processed meat once a day or more	Being overweight (BMI over 25)	Getting sun-burnt more than once as a child	Having a close relative with cancer	Infection with HPV (Human Papillomavirus)
Smoking any cigarettes at all	Valid	178	178	178	178	178	178	178	178
	Missing	0	0	0	0	0	0	0	0
Mean		3.2247	2.7640	3.0337	2.7022	2.7753	2.9607	2.9326	2.9719
Std. Deviation		1.51268	1.30642	1.43365	1.13302	1.13747	1.08593	1.33020	1.28630

Results: Risk Factor Awareness for Cancer (Descriptive Statistics)

The mean answers of 178 participants to different statements regarding cancer risk factors are shown in this table. A **Likert scale**, with 1 denoting **strongly disagree** and 5 denoting

strongly agree, was probably used to measure the responses; a higher mean suggests that the risk factor was more widely known to be associated with cancer.

Mean Scores and Interpretation:

Cancer Risk Factor Statement
Smoking any cigarettes at all

Mean
3.22

Interpretations
Good awareness

Infection with HPV	2.97	Good awareness
Getting sun-burnt more than once as a child	2.96	Good awareness
Having a close relative with cancer	2.93	Good awareness
Drinking more than 1 unit of alcohol a day	3.03	Good awareness
Being overweight (BMI over 25)	2.78	Average awareness
Eating less than 5 portions of fruit and vegetables a day	2.76	Average awareness
Eating red or processed meat once a day or more	2.70	Lower Awareness

Statements Showing Good Awareness (Mean $\geq$ 2.90):

These indicate that participants understand and acknowledge these as cancer risk factors:

1. Drinking more than 1 unit of alcohol a day – Mean: 3.03
2. Smoking any cigarettes at all – Mean: 3.22
3. HPV infection – Mean: 2.97
4. Sunburns in childhood – Mean: 2.96
5. Family history of cancer – Mean: 2.93

Interpretation: Respondents generally demonstrate good awareness of these well-established cancer risks.

Statements Showing Average Awareness (Mean $\approx$ 2.70–2.89): These indicate moderate understanding, but there's room for improvement:

6. Being overweight (BMI $>$ 25) – Mean: 2.78
7. Eating less than 5 portions of

fruits/vegetables a day – Mean: 2.76

Interpretation: Many participants may underestimate lifestyle-related cancer risks like poor diet and excess weight.

Statements Showing Poor Awareness (Mean $<$ 2.70): These reflect lower recognition of the cancer risk:

8. Eating red or processed meat daily – Mean: 2.70

Interpretation: This suggests that public knowledge is relatively weak about the link between processed meat consumption and cancer risk, despite WHO warnings.

- Respondents show strong awareness of obvious or widely publicized cancer risks such as smoking, alcohol, HPV, and sunburn.
- Lifestyle-related risks like diet, obesity, and processed meat are less well understood.

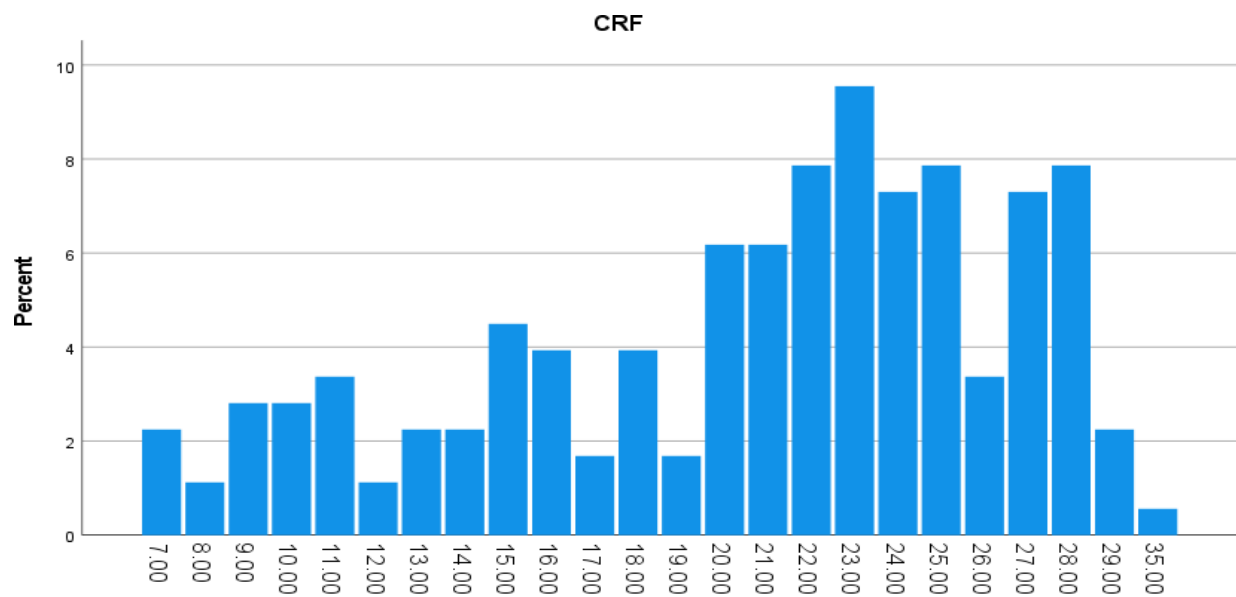
Statistics

CRF

N	Valid	178
	Missing	0
Mean f		20.5899
Std. Deviation		6.01648

CRF

Frequency	Percent	Valid Percent	Cumulative Percent
Valid 7.00 4	2.2	2.2	2.2
8.00 2	1.1	1.1	3.4
9.00 5	2.8	2.8	6.2
10.00 5	2.8	2.8	9.0
11.00 6	3.4	3.4	12.4
12.00 2	1.1	1.1	13.5
13.00 4	2.2	2.2	15.7
14.00 4	2.2	2.2	18.0
15.00 8	4.5	4.5	22.5
16.00 7	3.9	3.9	26.4
17.00 3	1.7	1.7	28.1
18.00 7	3.9	3.9	32.0
19.00 3	1.7	1.7	33.7
20.00 11	6.2	6.2	39.9
21.00 11	6.2	6.2	46.1
22.00 14	7.9	7.9	53.9
23.00 17	9.6	9.6	63.5
24.00 13	7.3	7.3	70.8
25.00 14	7.9	7.9	78.7
26.00 6	3.4	3.4	82.0
27.00 13	7.3	7.3	89.3
28.00 14	7.9	7.9	97.2
29.00 4	2.2	2.2	99.4
35.00 1	.6	.6	100.0
Total 178	100.0	100.0	



Out of 178 participants, 28% had average awareness (scores 15-21), 45% had good

awareness (scores 22-35), and 18% had low awareness (scores 7-14) of cancer risk factors. A

modest level of general understanding was indicated by the average awareness score of 20.59. Even if about half of the participants

know a reasonable amount, a sizable percentage still don't know much.

Statistics

		Do you think an unexplained lump or swelling could be a sign of cancer?	Do you think a persistent unexplained pain could be a sign of cancer?	Do you think a persistent cough or hoarseness could be a sign of cancer?	Do you think a persistent change in bowel or bladder habits could be a sign of cancer?	Do you think a persistent difficulty swallowing could be a sign of cancer?	Do you think a persistent change in the appearance of a mole could be a sign of cancer?	Do you think a persistent change in the appearance of a mole could be a sign of cancer?	Do you think a persistent change in the appearance of a mole could be a sign of cancer?
N	Valid	178	178	178	178	178	178	178	178
	Missing	0	0	0	0	0	0	0	0
Mean		2.4157	2.1966	2.1292	2.1798	2.0730	1.9888	2.2472	2.3258
Std. Deviation		.75628	.76697	.76664	.68167	.80272	.73637	1.22848	.81338

Mean Scores and Interpretation per Statement:

Symptom Statement	Mean	Std. Deviation	Interpretation
1. Unexplained lump or swelling	2.42	0.76	High awareness
2. A sore that does not heal	2.33	0.81	Moderate to high awareness
3. Change in the appearance of a mole	2.25	1.23	Moderate to high awareness
4. Persistent unexplained pain	2.20	0.77	Moderate awareness
5. Persistent cough or hoarseness	2.18	0.68	Moderate awareness
6. Unexplained bleeding	2.13	0.77	Low to moderate awareness
7. Persistent change in bowel or bladder habits	2.07	0.80	Low awareness
8. Persistent difficulty swallowing	1.99	0.74	Lowest awareness

Statements Showing Good Awareness (Higher Mean Values):

These suggest that participants recognize them as cancer warning signs:

1. Unexplained lump or swelling – Mean: 2.42
 2. A sore that does not heal – Mean: 2.33
- Respondents demonstrated the best awareness

for these, which are commonly recognized early signs of cancer.

Statements Showing Moderate Awareness:

Participants are somewhat aware, but understanding may be incomplete:

3. Change in the appearance of a mole – Mean:

2.25 (but high variability)

4. **Persistent unexplained pain** – Mean: 2.20

5. **Persistent cough or hoarseness** – Mean: 2.18

6. **Unexplained bleeding** – Mean: 2.13

These symptoms are also significant for early cancer detection but may not be as strongly associated with cancer by the general public.

Statements Showing Poor Awareness (Lower Mean Values):

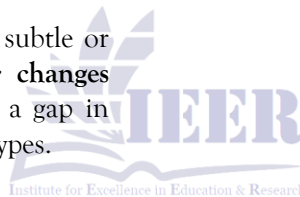
These are symptoms with **the lowest recognition** as potential signs of cancer:

7. **Persistent change in bowel or bladder habits** – Mean: 2.07

8. **Persistent difficulty swallowing** – Mean: 1.99

These results indicate **poor awareness**, despite these being well-documented cancer warning signs (e.g., colorectal, esophageal cancers)

- Respondents show **good awareness** of classic signs like **lumps** and **non-healing sores**.
- There is **moderate awareness** of pain, moles, and cough/hoarseness.
- **Poor awareness** is evident for more subtle or internal symptoms like **bowel/bladder changes** and **difficulty swallowing**, highlighting a gap in public understanding of certain cancer types.



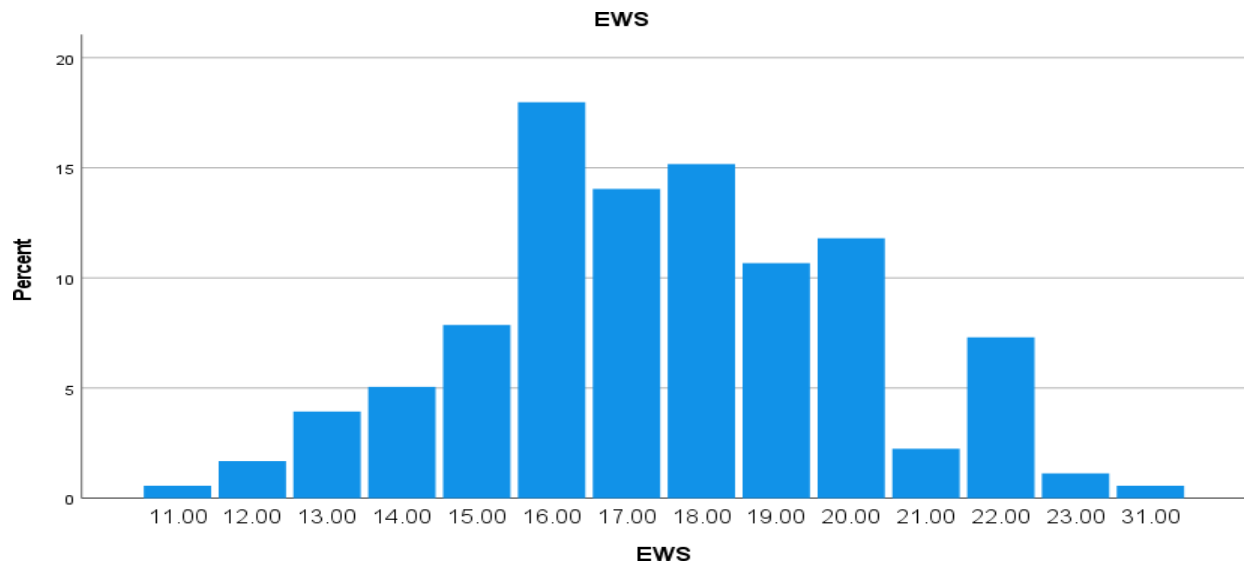
Statistics

EWS

	178
Missing	0
Mean	17.5562
Std. Deviation	2.69540

EWS

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	11.00	1	.6	.6	.6
	12.00	3	1.7	1.7	2.2
	13.00	7	3.9	3.9	6.2
	14.00	9	5.1	5.1	11.2
	15.00	14	7.9	7.9	19.1
	16.00	32	18.0	18.0	37.1
	17.00	25	14.0	14.0	51.1
	18.00	27	15.2	15.2	66.3
	19.00	19	10.7	10.7	77.0
	20.00	21	11.8	11.8	88.8
	21.00	4	2.2	2.2	91.0
	22.00	13	7.3	7.3	98.3
	23.00	2	1.1	1.1	99.4
	31.00	1	.6	.6	100.0
	Total	178	100.0	100.0	



A moderate level of awareness of the early warning signals of cancer was indicated by the mean EWS score of 17.56 out of 178 participants.

- 19.1% of people (scoring 11–15) had **little awareness**.
- 47.2% had **average awareness**, with scores between 16 and 18.

- Of those with scores 19–31, 33.7% showed **good awareness** for

The majority of the scores are grouped around the **average**, and they are reasonably consistent (SD = 2.70). Nearly one in five individuals had low knowledge, despite the fact that many are moderately to well-informed.

Statistics

		I don't smoke.	I take vegetables and fruits enough.	I have a balanced meal with various diets.	I drink alcohol below 2 glasses per day.	I maintain normal weight.	I have been vaccinated against hepatitis B.	I keep safety and health regulations not to expose carcinogen.	I take an examination according to cancer prevention guidelines.	I avoid the early exposure to sunlight for long time.	I take TV or radio programs for the early detection and diagnosis of cancer.
N	Valid	178	178	178	178	178	178	178	178	178	178
	Mis sing	0	0	0	0	0	0	0	0	0	0
Mean		.7809	.8258	.7303	.3146	.7360	.6742	.7753	.6629	.6966	.5618
Std. Deviation		.41480	.38031	.44504	.46567	.44207	.47001	.41857	.47405	.46101	.49757

Attitudes Toward Preventive Health Behaviors for Cancer

This data provides mean scores (0 to 1 scale) for various preventive health behaviours, where:

- 1 = Yes (I engage in this behaviour)

Preventive Behaviour	Mean
I take vegetables and fruits enough	0.83
I don't smoke	0.78
I keep safety and health regulations not to expose to carcinogen	0.78
I have a balanced meal with various diets	0.73
I maintain normal weight	0.74
I avoid being exposed to sunlight for a long time	0.70
I have been vaccinated against hepatitis B	0.67
I take an examination according to cancer prevention guidelines	0.66
I take TV or radio programs for early prevention and diagnosis of cancer	0.56
I drink alcohol below 2 glasses per day	0.31

Statements Showing Good Attitudes (High Mean Values ≥ 0.70): These reflect positive preventive behaviours:

1. Eating enough fruits and vegetables – 0.83
2. Not smoking – 0.78
3. Avoiding carcinogen exposure – 0.78
4. Balanced diet – 0.73
5. Maintaining normal weight – 0.74

Interpretation: Respondents show strong commitment to healthy lifestyle choices and environmental cancer risk reduction.

Statements Showing Average Attitudes (Mean ≈ 0.65 – 0.70): These reflect moderate levels of awareness or action:

6. Avoiding prolonged sun exposure – 0.70
7. Vaccination against hepatitis B – 0.67
8. Following cancer screening guidelines – 0.66

- 0 = No (I do not engage in this behaviour)

Thus, higher mean values indicate better preventive behaviours and more positive attitudes toward cancer prevention.

and Interpretation by Behaviour:

Interpretations

Very good attitude towards health diet.

Strong preventive behavior (non-smoking).

Very good awareness of environment risk.

Good deity habit for cancer prevention.

Good awareness of weight control.

Moderate awareness of UV related risk.

Moderate adherence preventive care.

Moderate participation in screening.

Low engagement in cancer education media.

Poor preventive behaviour regarding alcohol.

Interpretation: While there's some effort in these areas, improvement is needed, particularly in screening participation and vaccination coverage.

Statements Showing Poor Attitudes (Low Mean < 0.60): These reflect gaps in preventive behaviour:

9. Engaging with media for cancer awareness (TV/radio) – 0.56

10. Limiting alcohol consumption (≤ 2 glasses/day) – 0.31

Interpretation: There is low engagement in informational programs and poor alcohol moderation, suggesting a need for public health education campaigns in these areas.

- Respondents show strong preventive behaviours in diet, smoking avoidance, and

environmental health practices.

- There is room for improvement in sun protection, vaccination, and screening.
- Alcohol moderation and use of cancer awareness media are notably weak areas.

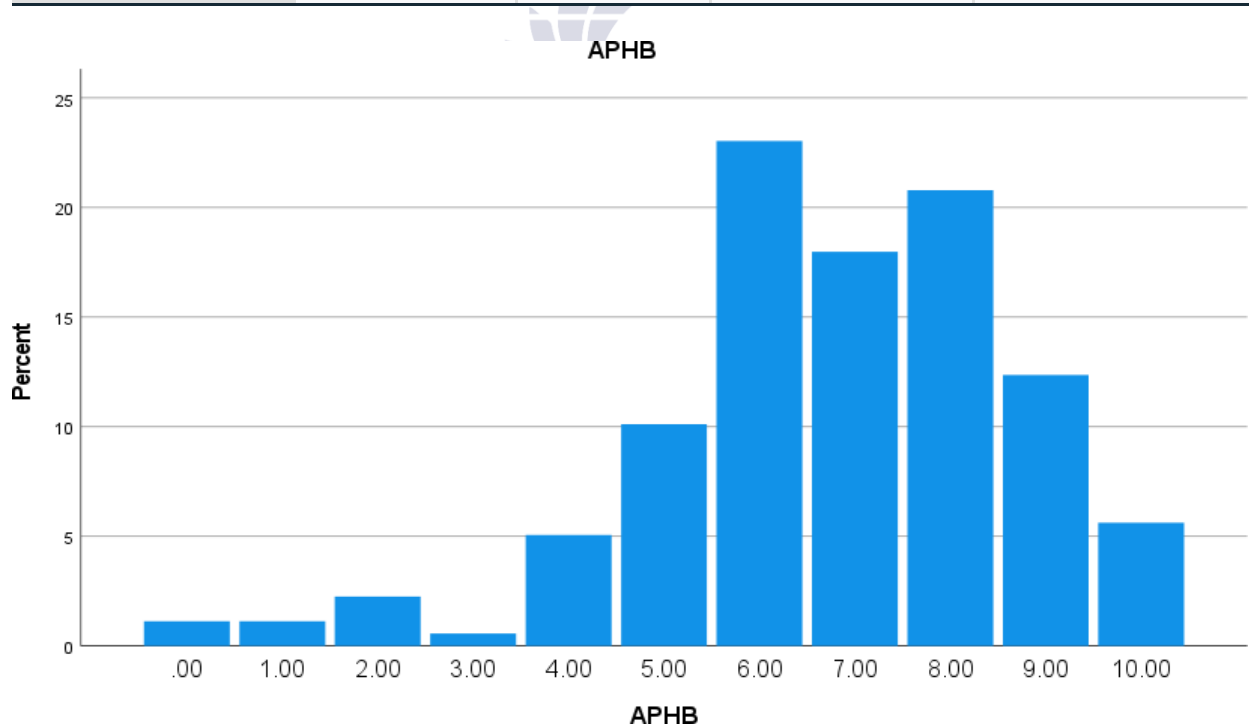


Statistics

APHB

N	Valid	178
	Missing	0
Mean		6.7584
Std. Deviation		1.96669

APHB		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	1.1	1.1	1.1
	1.00	2	1.1	1.1	2.2
	2.00	4	2.2	2.2	4.5
	3.00	1	.6	.6	5.1
	4.00	9	5.1	5.1	10.1
	5.00	18	10.1	10.1	20.2
	6.00	41	23.0	23.0	43.3
	7.00	32	18.0	18.0	61.2
	8.00	37	20.8	20.8	82.0
	9.00	22	12.4	12.4	94.4
	10.00	10	5.6	5.6	100.0
	Total	178	100.0	100.0	



A moderate level of knowledge of preventive health behaviours was indicated by the **average** APHB score of 6.76, which was obtained from 178 participants. 38.8% of participants had **high**

awareness (scoring 8–10), whereas more than half (51.1%) had **moderate awareness** (scores 5–7). **Low awareness** (scoring 0–4) was seen in a smaller percentage (10.1%).

DISCUSSION:

This research, carried out to evaluate the level of cancer awareness among students at the University of Lahore, provides information about the present day knowledge of the population about cancer risk factors, warning signs and preventive health practices. The sample was composed of male respondents mainly (66.3 percent), with the majority of them being in the 21-22 age bracket (56.2 percent). Such a demographic mix corresponds with other research carried out in a university population in other countries such as Iran and Oman, where younger adults tend to make up the highest percentage of respondents because of their ready availability and the applicability of health-related studies (Radi et al., 2014; Montazeri et al., 2008).

When it comes to knowledge about cancer risk factors, the data indicate that the participants knew the most about such risk factors as smoking (mean = 3.22), alcohol (3.03), HPV infection (2.97), and sunburn in childhood (2.96). The given tendency aligns with those of the research conducted in Oman, Lebanon, and the UK, where the population awareness campaigns proved effective in highlighting the significance of smoking and alcohol consumption as the key factors of cancer development (Al-Azri et al., 2015; Saab et al., 2021; Low et al., 2012). Particularly, the level of awareness for dietary risks and weight-related risks was relatively low among the respondents in this study as the mean score of being overweight (2.78), eating insufficient fruits and vegetables (2.76), and consuming red or processed meat daily (2.70). Such results are consistent with the existing body of research abroad, which demonstrates that the general population tends to be less aware of lifestyle-related risks of cancer than such external causes as tobacco use (Power et al., 2011; Saab et al., 2021).

Knowledge of early warning signs about cancer took a similar pattern. Symptoms that were more easily identified by the respondents included unexplained lumps (mean = 2.42), sores that do not heal (2.33) which are more observable than others like persistent trouble swallowing (1.99) and change in bowel or bladder habits (2.07). Such findings are supported by the studies conducted in the United Kingdom and Iran,

where the same discrepancies in identifying the symptoms have been noted, especially those that are internal or less evident (Forouzanfar et al., 2011; Robb et al., 2009). The standard deviation in certain answers, especially those concerning the transformation of the appearance of the mole, is moderate to high, which reflects the disparity in the individual interpretation, which could be due to the variation in health literacy or education exposure.

Regarding the preventive behaviors, the participants showed high engagement toward healthy eating habits and non-smoker status with the largest mean score of fruit and vegetables consumption (0.83), followed by avoiding smoking (0.78) and keeping to a balanced diet (0.73). Such attitudes are indicative of the study results in Lebanon and Tanzania, in which university students also indicated greater compliance with cancer prevention practices related to diet and exercise (Saab et al., 2021; Muliira et al., 2020). Nevertheless, smaller involvement was found in media use in cancer awareness (mean = 0.56) and especially in alcohol moderation (mean = 0.31) which may indicate the absence of persistent health communication or priority given to these problems among the students. These gaps are also recognized in the studies carried out in Ireland where it was discovered that there is a less than optimal involvement of the populace in cancer screening and information campaigns (Power et al., 2011).

In general, the findings indicate that even though university students in Lahore have moderate to good knowledge of the most common cancer risk factors and warning signs, there are still visible gaps in this knowledge, especially when it comes to less evident symptoms and the idea of lifestyle-related risks. The study results support those of the past literature, which has highlighted the necessity of specific public health communication and behavioral strategies to increase cancer literacy among young demographics (Al-Azri et al., 2015; Saab et al., 2021). Promoting the awareness of early detection, diet, alcohol in moderation, and cancer screening, may play a significant role in efforts aimed at preventing cancer in the area.

CHAPTER V

CONCLUSION, STRENGTH, LIMITATIONS AND RECOMMENDATION

5.1 : Conclusion:

The results of the present research outline an average rate of cancer awareness among the university students in Lahore that identifies the strong and the weak sides of the students in relation to the knowledge of cancer risk factors, early warning signs, and preventive health behavior. Knowledge of participants regarding such firmly established and extensively publicized risk factors as smoking, alcohol consumption, HPV infection, and childhood sunburn was good, suggesting that current public health messages on these subjects are having a positive effect. Lifestyle-related risk factors, such as being overweight or having poor dietary habits and frequently eating red or processed meats, were, however, less well known, and this is one of the key areas where education programs should be most focused. On the same note, although respondents could generally point out some clear early warning signs such as unexplained lumps and sores that are not healing, less obvious or internal symptoms such as long term changes in bowel or bladder habits and problems swallowing were not well recognized. This implies that there is a huge gap in knowledge that may lead to a hindrance in early detection and treatment which would influence the outcomes of cancer.

On preventive health behaviors, the study revealed some encouraging figures, with a good proportion of the students displaying good habits, such as adequate intake of fruits and vegetables, non-smoking, maintaining good balance of diet and weight. The interaction levels with cancer awareness media and adherence to alcohol moderation guidelines were much lower, though, which can indicate the potential health communication and behavioral change impediments as far as those factors are concerned. The levels of uptake of the vaccination and screening processes also need some overhauls, which is essential in the early intervention and prevention strategies. This paints a mixed awareness and attitude landscape, where good knowledge in some areas is offsetting by quite considerable gaps in others.

5.2 : Strength of the study:

The present research has a number of strong aspects that can increase its validity and relevancy. First, it focuses on undergraduate nursing students, who are a crucial group in early cancer detection and health promotion, meaning that the findings can be directly applied to the future health care providers. The reliability of obtained data is enhanced by the fact that the standardized and validated questionnaire of Cancer Awareness Measure (CAM) is used as the instrument to study cancer awareness. On top of that, the sample group comprising 178 students is large enough to yield adequate statistical power to identify relevant patterns and associations, and the fact that participants belong to various academic years gives a clear picture of the development of awareness over the duration of their study. The demographic factors that the study finds relevant include age, family morbidity of cancer, and living status as well, which provides an opportunity to sophisticatedly appreciate the factors that affect cancer awareness and attitudes. Analysis of data by use of SPSS was provide strict statistical treatment of data and proper interpretation of the findings. Moreover, categorization of the knowledge and attitudes into distinct groups (poor, average, good) makes the reporting quite clear, and allows making specific recommendations. All these strengths are related to the capacity of the study to provide practical recommendations that can be used to enrich the curriculum and health promotion practices in nursing education.

5.3 : Recommendations:

1. Educate More About Lifestyle Factors that Cause Cancer: The role of diet, obesity, and consumption of processed meat in development of cancer should be trained into students more effectively to increase their knowledge and capability to educate others.

2. Enhance Detection of Non-obvious Cancer Symptoms: The less evident cancer warning signs such as changes in bowel habits and difficulty swallowing should be included in the curricula in order to promote early detection.

3. Encourage engagement in Cancer Prevention behaviors: The students need to be

motivated and set good examples of healthy habits that include moderation of alcohol consumption, avoidance of smoking, maintaining a balanced diet and frequent screenings.

4. Explore Cancer Awareness Material: It is necessary to encourage students to engage in educational media and campaigns actively to remain informed and spread trustworthy information in their communities.

5. Cancer Prevention as a Part of Clinical Practice: Skill in practical counseling of patients about cancer risk factors, early signs and preventable measures should be instilled in training to enhance community health outcome.

6. Incorporate Cancer Education in University Curricula: Integration of the extensive cancer awareness material into the corresponding academic courses might assist in solidifying the information on the risk factors, symptoms and prevention. This kind of curricular integration leaves students with consistent evidence-based information over the course of their studies.

7. Carry out Additional Study on Obstacles to Cancer Knowledge and Behavior Change: Research should be done in future on issues that affect the uptake of cancer prevention media, screening and lifestyle change among students. Description of these obstacles was assist in the development of more efficient interventions that are culturally adequate.

8. Student Organizations and Health Clubs: By involving peer-led initiatives and student organisations in raising awareness campaigns, it is possible to increase acceptance of the messages and uptake of participation because of the social influence these groups have in encouraging positive health behaviours.

5.4 : Limitations of study:

1. Limited Generalizability: It was carried out on a sample of undergraduate students of one institution, which might be not reflective of all students.

2. Gender and Age Imbalance: It is also worth noting that the sample was skewed toward male sex and a very specific age group (21-22), which could discourage the extrapolation of results to other demographic variables.

3. Cross-Sectional Design: The awareness and attitudes are captured at one point in time; this does not allow assessment of changes or cause and effect relationship.

4. Inadequate Investigation on Influencing Factors: The research did not explore possible causes behind low awareness or inferior preventive habits, including cultural convictions or availability of health information.

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