RESEARCH ARTICLE

# Awareness of risk factors for cancer among high health institute students in Basrah

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## ABSTRACT

**Introduction**: Cancer is the second leading cause of death globally; the World Health Organisation (WHO) reported that nearly 18.1 million new cases and 9.6 million deaths, one in six deaths, occurred worldwide due to cancer in 2018. Cancer prevention is a crucial step and the most cost-effective long-term strategy for the control of cancer, especially in middle and low-income countries. Assessing the general public's awareness of cancer risk factors is thus an important step in identifying potential areas where awareness needs to be raised.

**Objective**: This study aimed to assess students' awareness of cancer risk factors at a high health institute in Basrah.

**Methods**: A cross-sectional study was conducted on 192 students from the high health institute. The authors used a questionnaire based on a previous study to assess students' awareness of 15 cancer risk factors. On average, students who identified fewer than seven correct associations were considered to have inadequate awareness, while those who identified 7 to 15 correct associations were considered to have adequate awareness.

**Results**: The majority of students were in the < 24 years age group (84.9%). The most widely known association was between smoking and lung cancer (98.4%), followed by having many sexual partners as a cause of cervical cancer (76.2%). The association between colon cancer and a low fibre diet was known among 84(46.4%) students. The highest known risk factors of breast cancer among the studied sample were a positive family history of cancer (37.2%).

**Conclusion**: Our study showed that, except for smoking as a risk factor for lung cancer and multiple sexual partners as a risk factor for cervical cancer, students' awareness of cancer risk factors was low.

**Key words**: Awareness, Cancer, Risk factors, Basrah.

## INTRODUCTION

Cancer is the second leading cause of death globally. The World Health Organisation (WHO) reported that nearly 18.1 million new cases and 9.6 million deaths, one in six deaths, had occurred worldwide due to cancer in 2018. [1,2] The incidence of different types of cancer has increased in the past 20 years and is expected to rise further, with an estimated 13.1 million deaths per annum by 2030.[3] In low- and middle-income countries, approximately 70% of deaths are attributed to cancer.[2,4] Furthermore, cancer survival tended to be poorer in developing countries, most likely because of a delayed diagnosis, low availability of the test or screening programs, limited access to standard treatment, fear of being diagnosed with cancer and not seeing oneself at risk.[5]

Many genetic and environmental factors increase the risk of developing cancer. According to the World Health Organisation, 35% of deaths caused by cancer worldwide are due to potentially preventable or modifiable risk factors. These risk factors are related

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to lifestyle, including smoking and alcohol consumption; infections and parasites; exposure to ultraviolet (UV) light and tanning devices that emit UV radiation; environmental exposures; dietary factors; hormone replacement therapy; and exposure to ionising radiation. [6,7]

Worldwide, tobacco use causes the death of around 6 million people every year. Cigarette smoking is the most harmful form of tobacco use, causing the largest cancer burden. Passive smoking, like actual smoking, is also carcinogenic. Substances contained in the sediments of tobacco smoke remain chemically active and are harmful to health. [8] Moreover, the International Agency for Research on Cancer (IARC) has classified alcohol as a Class I carcinogen for liver cancer. It also increases the risk of cancer of the mouth, throat, larynx, oesophagus, and breast.[9,10] Diet also plays an important role in contributing to cancer development. Indeed, the World Cancer Research Fund estimates that 35% of the incidences of cancer worldwide can be linked to nutrition and lack of physical activity. Epidemiological studies have also shown that obese patients with oncologic treatment have worse prognoses and greater morbidity and mortality than those with normal Body Mass Index (BMI).[11] According to a synthetic analysis, infections are linked to about 15.4% of cancers worldwide.[12] Also, the Centres for Disease Control and Prevention (CDC) estimates 3 to 6% of all cancers worldwide to be caused by exposures to carcinogens in the workplace.[13]

Cancer prevention is a crucial step and the most cost-effective long-term strategy for the control of cancer, especially in middle and low-income countries.[14] Prevention programs are an important weapon to fight against cancer, because they can contribute to reducing both the incidence of cancer and mortality.[15] The risk of getting cancer can also be reduced by making healthy choices. Keeping a healthy weight, avoiding tobacco, eating a healthy diet with plenty of fruit and vegetables, exercising regularly, limiting alcohol use, practising safe sex, reducing exposure to UV and ionising radiations (occupational or medical diagnostic imaging), avoiding urban air pollution, and indoor smoke from household use of solid fuels can all contribute to decreasing the risk of cancer.[1]

It is widely accepted that awareness is essential, although not sufficient on its own, for stimulating behavioural change. For some cancers, risk can be reduced through behavioural changes of modifiable cancer risk factors. Furthermore, for both modifiable and non-modifiable factors, awareness might promote appropriate health-seeking behaviour. By addressing known modifiable risk factors, it has been estimated that a third to half of all cancers in the developed world could be prevented, and that early diagnoses and effective treatments could cure another one-third.[16] Assessing the general public's awareness of cancer risk factors is thus an important step in identifying potential areas where awareness needs to be raised. The Cancer Awareness Measure (CAM) was implemented in Tanzania, Nepal, the UAE, Oman, and India to assess and increase public awareness of cancer and its risk factors.[17-21] The knowledge level differed between these countries. Other studies suggest that awareness of specific risk factors varies for different cancer types.[22] There is a need for such studies in Basrah to inform the development of a prevention strategy. The objective of this study was to assess students' awareness of cancer risk factors at a high health institute in Basrah.

## METHODS

**Setting and study design**: The study is a descriptive, cross-sectional type, conducted at a high-level health institute in Basrah, affiliated with the Basrah Directorate of Health/ Iraqi Ministry of Health. It offers a year's diploma with various specialisations (nursing, first aid, midwifery, haematology). The study duration was from the 2nd of January to the 1st of April, 2023.

**Ethical considerations**: Ethical approval for

the study was obtained from the High Health Institute and the Basrah Directorate of Health ethics committee before the study began. Participation was voluntary, and informed consent was obtained before data collection; participants' confidentiality was assured. An introductory discussion on the aims and importance of the study was conducted with first and second-year students.

**Inclusion and exclusion criteria**: Participants in the study were all first- and second-year students at the high health institute. One hundred ninety-two students were given a questionnaire at the end of lectures on three separate occasions, each a few days apart. The questionnaire was completed anonymously in the presence of research team members, and the time required was approximately 10-15 minutes. Neither communication between students was allowed, nor was any further explanation beyond the general instructions given. The students who were unwilling to participate in the study were excluded.

**The questionnaire and outcome variables**: A validated, pre-tested questionnaire was used to collect data. The researchers selected and modified elements of the questionnaire from a published study.[23] The questionnaire included the following parts: general socio-demographic information about the participating students, including age, gender, stage, department, place of residence, marital status, smoking status, and family history of cancer. The questionnaire also included questions to assess students' awareness of cancer risk factors. Students were asked to identify risk factors for breast, lung, cervix, colon and prostate cancer from a list of 14 which included both established causes (older age, many sexual partners, low fibre diet, smoking, having a relative with the same type of cancer, low fruit and vegetable diet, taking hormone replacement therapy or contraceptive pills, being overweight, viruses or infection, a high fibre diet) and so-called 'mythic' causes that are unfounded beliefs about factors that increase cancer risk such as (food additives, living near power lines, pollution, stress). To examine socio-demographic trends associated with risk factors, we calculated scores for correct identification and mythical causes. The correct score included only those widely accepted by epidemiologist, giving a possible maximum of 15, breast cancer: age, family history hormonal replacement therapy (HRT), overweight; cervical cancer: sexual partners, virus, smoking; prostate cancer: age, family history; colon cancer: age, low fibre diet, family history, fruit and vegetables; lung cancer: smoking, age). On average, students who identified fewer than seven correct associations were considered to have inadequate awareness, while those who identified 7 to 15 correct associations were considered to have adequate awareness.

**Table 1** | Characteristics of the study population

| Variable | No. | % |
|---|---|---|
| **Age (years)** | | |
| **< 20** | 93 | 48.4 |
| **21-25** | 73 | 38 |
| **26-30** | 12 | 6.3 |
| **31-35** | 4 | 2.1 |
| **> 36** | 10 | 5.2 |
| **Gender** | | |
| **Female** | 101 | 52.6 |
| **Male** | 91 | 47.4 |
| **Stage** | | |
| **First** | 100 | 52.1 |
| **Second** | 92 | 47.9 |
| **Department** | | |
| **Nursing** | 101 | 52.6 |
| **First aid** | 47 | 24.5 |
| **Midwifery** | 31 | 16.1 |
| **Haematology** | 13 | 6.8 |
| **Marital status** | | |
| **Single** | 158 | 82.3 |
| **Married** | 34 | 17.7 |
| **Place of residence** | | |
| **Urban** | 55 | 28.6 |
| **Rural** | 137 | 71.4 |
| **Smoking status** | | |
| **Smoker** | 30 | 15.6 |
| **Non-smoker** | 162 | 84.4 |
| **Family history of cancer** | | |
| **Yes** | 62 | 32.2 |
| **No** | 130 | 67.7 |
| **Total** | **192** | **100** |

**Table 2** | Awareness of risk factors for cancer among students

| Type of Cancer / Risk factors | Lung | | Cervix | | Prostate | | Breast | | Colon | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| **Smoking** | 187 | 98.4 | 11 | 5.9 | 31 | 17.9 | 30 | 17.4 | 41 | 22.7 |
| **Low Fibre diet** | 27 | 14.2 | 11 | 5.9 | 31 | 17.9 | 24 | 14 | 84 | 46.4 |
| **Older age** | 30 | 15.8 | 54 | 29.2 | 64 | 37 | 43 | 25 | 33 | 18.2 |
| **Many sexual partners** | 5 | 2.6 | 141 | 76.2 | 74 | 42.8 | 30 | 17.4 | 7 | 3.9 |
| **Being overweight** | 20 | 10.5 | 13 | 7 | 25 | 14.5 | 31 | 18 | 54 | 29.8 |
| **Taking HRT & pills** | 6 | 3.2 | 105 | 56.8 | 11 | 6.4 | 50 | 29.1 | 18 | 9.9 |
| **Relative with cancer** | 53 | 27.9 | 33 | 17.8 | 24 | 13.9 | 64 | 37.2 | 42 | 23.2 |
| **Low fruit & vegetable diet** | 6 | 3.2 | 7 | 3.8 | 15 | 8.7 | 28 | 16.3 | 54 | 29.8 |
| **Food additive** | 18 | 9.5 | 9 | 4.9 | 23 | 13.3 | 20 | 11.6 | 50 | 27.6 |
| **Stress** | 5 | 6.1 | 20 | 10.8 | 25 | 14.5 | 39 | 22.7 | 69 | 38.1 |
| **Viruses or infection** | 57 | 30 | 78 | 42.2 | 61 | 35.3 | 53 | 30.8 | 32 | 17.7 |
| **High-fat diet** | 4 | 2.1 | 3 | 1.6 | 13 | 7.5 | 12 | 7 | 40 | 22.1 |
| **Living near power lines** | 117 | 60.9 | 21 | 11.4 | 25 | 14.5 | 27 | 15.7 | 24 | 13.3 |
| **Pollution** | 130 | 67.7 | 9 | 4.9 | 14 | 8.1 | 19 | 11 | 15 | 8.3 |

HRT: Hormonal replacement therapy

**Data analysis**: The data were analysed using the Statistical Package for the Social Sciences (SPSS) version 22. Descriptive statistics, such as socio-demographic information and students' awareness of cancer risk factors, were presented as frequencies and percentages. The association between students' awareness and their socio-demographic variables was analysed using the Chi-squared test.

## RESULTS

Table 1 presents characteristics of the study population. The study included 192 students; 101 (52.6%) were female, and 91 (47.4%) were male. The majority were in the < 20 years age group (48.4%). Approximately 100 (52.1%) students were in the first stage of study, while the remaining 92 (47.9%) were in the second. A total of 101 (52.6%) students were from the nursing department, 47 (24.5%) from the first aid department, 31 (16.1%) from the midwifery department, and 13 (6.8%) from the haematology department. About three-quarters of the students (71.4%) were from rural areas, and the remaining (28.6%) were from urban areas. More than three-quarters of the students (82.3%) were single, and 17.7% were married. Only 30 students (15.6%) were smokers. 62 (32.3%) students report a family history of cancer.

The most widely known association was between smoking and lung cancer (98.4%), followed by having many sexual partners as a cause of cervical cancer (76.2%). About 78 (42.2%) students were aware of the association between cervical cancer and viral infection. The highest known risk factors of breast cancer among the studied sample were positive family history of cancer (37.2%), infection (30.8%), and hormonal therapy (29.1%). The association between colon cancer and a low fibre diet was known among 84(46.4%) students, other risk factors like stress, low fruit and vegetables intake and overweight were known among 38.1%, 29.8%, and 29.8% of the students, respectively. Older age was a previously under appreciated risk factor (lung: 15.8%, cervix: 29.2%, prostate: 37%, breast: 25%, colon: 18.2%), Table 2. On average, students identified only 8.56 out of 29 correct causes with an SD of 4.78 and a range of 1 to 23.

Table 3 illustrates no significant difference in the awareness level of risk factors for cancer among the participating students in comparison with their age, gender, stage of study, smoking status and family history of cancer ( $p > 0.05$).

**Table 3** | Awareness level of risk factors for cancer in association with socio-demographic characteristics of students

| Variable | Adequate awareness | | Inadequate awareness | | P value |
|---|---|---|---|---|---|
| | N | % | N | % | |
| **Age** | | | | | |
| **< 20** | 19 | 50.0 | 74 | 48.0 | 0.640 |
| **21-30** | 15 | 39.5 | 70 | 45.5 | |
| **> 31** | 4 | 10.5 | 10 | 6.5 | |
| **Gender** | | | | | 0.856 |
| **Male** | 19 | 50.0 | 72 | 46.8 | |
| **Female** | 19 | 50.0 | 82 | 53.2 | |
| **Stage** | | | | | 0.588 |
| **First** | 18 | 47.4 | 82 | 53.2 | |
| **Second** | 20 | 52.6 | 72 | 46.8 | |
| **Smoking history** | | | | | 0.427 |
| **Yes** | 5 | 13.2 | 25 | 16.2 | |
| **No** | 33 | 86.8 | 129 | 83.8 | |
| **Family history of cancer** | | | | | 0.249 |
| **Yes** | 10 | 26.3 | 52 | 33.8 | |
| **No** | 28 | 73.7 | 102 | 66.2 | |

## DISCUSSION

Cancer has a profound impact on a patient's life, affecting them physically, emotionally, and financially. Thus, the most important step in managing cancer is the prevention whenever possible. As cancer has been linked to many preventable environmental risk factors,[1] having a good knowledge about these risk factors is an essential step to help prevent and reduce the burden of this disease.[24] In this study, a high level of cancer risk factor awareness was reported for smoking and lung cancer (98.4%). This is in line with the results obtained from studies in the US, Tanzania and Lebanon, where smoking was identified as a risk factor for cancer in 94%,90%, and 90.4%, respectively.[25,17,11] A good proportion of students (76.2%) considered that having many sexual partners increased the risk of cervical cancer, which is higher than proportions obtained in Lebanon (36.4%).[11] More than half of our participants were unaware that viral infection is a risk factor for cervical cancer, which is in line with studies in Denmark, Sweden and Lebanon, where 76 %, 64 %, and 63.4%, respectively, lack that awareness.[11, 16]

Our findings showed that awareness about breast cancer risk factors was poor among high health institute students; only 37.2% of the students were aware that a positive family history of cancer was a risk factor. Other studies have consistently found poor knowledge of risk factors for breast cancer in Indonesia and Iran.[26], [27] A poorer awareness level of breast cancer risk factors seems to lead to difficulties in the recognition of breast cancer symptoms, a greater disease severity and more advanced stages of disease due to a more extended time period before help is sought.

The highest known risk factor of prostate cancer among the studied sample was multiple sexual partners (42.8%), which is not considered an evidence-based risk factor for prostate cancer. Awareness of certain evidence-based risk factors, such as older age, family history of cancer, being overweight, and a high-fat diet, was low, 37%, 13.9%, 14.5%, and 7.5%, respectively. Our results were lower than the findings in a study conducted in Saudi Arabia, which also reported that the knowledge of prostate cancer was poor.[28] Regarding risk factors for colon cancer, less than half of the students knew that a low fibre diet is a risk factor. Another important finding regarding the same concept was that just about one-quarter

knew that being overweight, family history, and a high-fat diet were risk factors. Only 18.2% of students knew that older age is a risk factor. Similarly, low levels of knowledge about colon cancer have been reported by other studies in Malaysia and Saudi Arabia. [29], [30]

## CONCLUSION

Our study showed that, except for smoking as a risk factor for lung cancer and multiple sexual partners as a risk factor for cervical cancer, students' awareness of cancer risk factors was low. As the incidence of cancer in Iraq increases, strategies to raise public awareness of cancer risk factors for common types of cancer are needed. Public awareness of cancer risk factors can be increased through mass media, leaflet distribution, school visits, and poster displays in hospitals and primary care health centres. Indeed, intensive and tailored printed information, as well as community-based awareness programs, were found to be effective strategies for improving cancer risk awareness. Greater educational activity is needed in Basrah to improve public health awareness of adopting a healthy lifestyle to reduce the incidence of cancer.

## REFERENCES


1. World Health Organization. Cancer. 2020. Available at: https://www.who.int/health-topics/cancer#tab=tab_1 (accessed the 11th of January, 2023)
2. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians*. 2018; 68(6): 394–424.
3. Babu GR, Lakshmi SB, Thiyagarajan JA . Epidemiological correlates of breast cancer in South India. *Asian Pac J Cancer Prev*. 2013; 14, 5077-83.
4. De Souza JA, Hunt B, Asirwa FC, Adebamowo C, Lopes G . Global health equity: cancer care outcome disparities in high-, middle-, and lowincome countries. *Journal of Clinical Oncology*. 2016; 34(1): 6-13.
5. Norwati D, Harmy MY, Norhayati MN, et al. Colorectal cancer screening practices of primary care providers: results of a national survey in malaysia. *Asian Pac J Cancer Prev*.2014; 15, 2901-4.
6. Weiderpass E. Lifestyle and cancer risk. *J Prev Med Pub Health*. 2010;43:459.
7. Monsalve J, Kapur J, Malkin D, Babyn PS. Imaging of cancer predisposition syndromes in children. *RadioGraphics* .2011; 31:263-80.
8. Leon ME, Peruga A, McNeill A, Kralikova E, Guha N, Minozzi S, et al. European code against cancer, 4th Edition: tobacco and cancer. *Cancer Epidemiol*. 2015; 39: S20-33.
9. International agency for research on cancer personal habits and indoor combustions. Available at: https://www.ncbi.nlm.nih.gov/books/NBK30439 (accessed the 2nd of February, 2023).
10. Chang JS, Straif K, Guha N. The role of alcohol dehydrogenase genes in head and neck cancers: a systematic review and meta-analysis of ADH1B and ADH1C. Mutagenesis 2012; 27:275-86.
11. Kabalan M, El-Hajj M, Khachman D, et al. Public awareness of environmental risk factors of cancer and attitude towards its prevention among the Lebanese general population. *J PREV MED HYG* 2021; 62: E466-E478.
12. Plummer M, de Martel C, Vignat J, Ferlay J, Bray F, Franceschi S. Global burden of cancers attributable to infections in 2012: a synthetic analysis. *Lancet Glob Health* 2016; 4:e609-16.
13. Center Disease Control. Occupational cancer. Available at: https://www.cdc.gov/niosh/topics/cancer/default.html (accessed the 5th of February, 2023).
14. Centers for disease control and perception. How to prevent cancer or find it early. Available at: https://www.cdc.gov/cancer/dcpc/prevention/index.htm (accessed the 17th of February 2023).
15. Valle I, Tramalloni D, Bragazzi NL. Cancer prevention: state of the art and future prospects. *J Prev Med Hyg*. 2015; 56:E21-7.
16. Lagerlund M, Hvidberg L, Hajdarevic S, et al. Awareness of risk factors for cancer: a comparative study of Sweden and Denmark. *BMC Public Health*.2015; 15:1156.
17. Munishi OM, McCormack V, Mchome B, Mangi G, Zullig LL, Bartlett J, et al. Awareness of Cancer Risk Factors and Its Signs and Symptoms in Northern Tanzania: a Cross-Sectional Survey in the General Population and in People Living with HIV. *J Cancer Educ* 2020; 35: 696-704.
18. Poudel K, Sumi N. Knowledge about risk factors for cancer among adults in Nepal. *KnE Life Sci*. 2018;4:126.
19. Ahmed SBM, Amer S, Hussein A, Kampani DD, Al Hasham N, Assker MM, Shawa N, Saleh D, Alfarouk KO. Assessing the knowledge of environmental risk factors for cancer among the UAE population: a pilot study. *Int J Environ Res Public Health*. 2020; 17: 2984.
20. Al-Azri M, AL-Rasbi K, Al-Hinai M, Davidson R, Al-Maniri A. Awareness of risk factors for cancer among omani adults - a community based study. *Asian Pac J Cancer Prev* 2014; 15:5401-6.
21. Raj S, Piang LK, Nair KS, Tiwari VK, Kaur H, Singh B. Awareness regarding risk factors, symptoms and treatment facilities for cancer in selected states of India. *Asian Pac J Cancer Prev*. 2012; 13: 4057 -62.
22. Richards R, McNoe B, Iosua E, Reeder AI, Egan R, Marsh L, Robertson L, Maclennan B, Dawson A, Quigg R, Petersen A-C. Changes in awareness of cancer risk factors among adult New Zealanders (CAANZ): 2001 to 2015. *Health Educ Res* .2017; 32: 153-162.
23. Wardle J, Waller J, Brunswick N, Jarvis. Awareness of risk factors for cancer among British adults. *Public Health*. 2001; 115:173-174.
24. Centers for disease control and prevention. How to prevent cancer or find it early. Available at: https://www.cdc.gov/cancer/dcpc/prevention/index.htm (accessed the 17th of March 2023).
25. American Institute for Cancer Research (AICR). The AICR 2015 Cancer Risk Awareness Survey Report. (2015) Availa-

ble from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.aicr.org/assets/docs/pdf/education/aicr-awareness-report-2015.pdf . Accessed 18th March 2025.

26. Solikhah S, Promthet S, Hurst C. Awareness Level about Breast Cancer Risk Factors, Barriers, Attitude and Breast Cancer Screening among Indonesian WomenAsian. *Pac J Cancer Prev*. 2019; 20 (3): 877-884.

27. Tazhibi M, Feizi A. Awareness levels about breast cancer risk factors, early warning signs, and screening and therapeutic approaches among Iranian adult women: a large population based study using latent class analysis. *Biomed Res Int*. 2014;2014:306352. doi: 10.1155/2014/306352. Epub 2014 Sep 11. PMID: 25295257; PMCID: PMC4180890.

28. Jarb AF, Aljuaid AK, Alghamdi SM, Almathami AA, Altawili AA, Alesawi A. Awareness about prostate cancer and its screening in Medina, Jeddah, and Makkah, Saudi Arabia population. *Urol Ann*.2022; 14:27-32.

29. Puteh S, Khairudin S, Kabinchong C, Musa N, Joo C,Saad N,et al. Relationship of knowledge, attitude, practice (KAP) and demographic factors with quality of life among urban colorectal cancer patients in Malaysia. *Middle East J Cancer*.2014; 5: 31-41.

30. Yasmine Samir Galal, Tarek Tawfik Amin, Abdulelah Khalid Alarfaj, et al. Colon Cancer among Older Saudis: Awareness of Risk Factors, Early Signs, and Perceived Barriers to Screening. *Asian Pac J Cancer Prev*.2016; 17(4): 1837-1846.

**Abbreviations list**: Body Mass Index (BMI), Cancer Awareness Measure (CAM), Centres for Disease Control and Prevention (CDC), Hormonal replacement therapy (HRT), International Agency for Research on Cancer (IARC), Standard Deviation (SD), Statistical Package for the Social Sciences (SPSS), Ultraviolet (UV), United Arab Emirates (UAE), World Health Organisation (WHO).

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