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The level of public awareness of cancer in Hail, Saudi Arabia

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Abstract. – OBJECTIVE: Cancer is a group of diseases characterized by uncontrolled cell division of abnormal cells that can result in death if not treated well. Cancer is considered to be a leading cause of mortalities throughout the globe and an important barrier to increase life span. This study was conducted to assess awareness among graduates studying in university of Hail related to cancer.

MATERIALS AND METHODS: This is an online survey-based study conducted using online tool "Google Forms". The inclusion criteria were that the participants should understand Arabic, must have 18 years or above age and currently living or a permanent resident of Hail city.

RESULTS: Total 108 valid responses were included in this analysis, 56 were male and 52 were female participants. Around 106 of the participants were Saudi nationals among which 62 were the permanent resident of the Hail city and 46 were migrants which were not the permanent resident but moved into the city for the purpose of education or business. There was significant association between awareness level of individuals regarding cancer associated symptoms including weight loss, fatigue, inflammation and hair loss and common causes of cancers, including family history, radiation exposure, smoking, obesity, aging and fast-food exposure. However, there was no significance between awareness of cancer and other factors, including age, gender, marital status, education, nationality, residence and monthly income.

CONCLUSIONS: Overall our study reveals that there is significant knowledge among Hail population but still there is a need to increase awareness level of general population to manage the disease more efficiently.

Key Words:
Cancer, Awareness, Saudi Arabia.

Introduction

Cancer is characterized by uncontrolled cell division of abnormal cells that can result in death if not treated well. Though the main causes of cancer progression are still poorly known, several factors are considered to be responsible for increasing cancer risk, including the use of tobacco, obesity, and genetic mutations. These risk factors may act instantaneously or chronologically to start and/or progress cancer growth[1]. The emergence of cancer is one of the major health care challenges globally, with an increasing burden gradually[2]. Cancer is considered to be a leading cause of mortalities throughout the globe and an important barrier to increasing life span[3]. According to an estimate, around 1.9 million new cases of cancers are expected to be diagnosed in the United States (US) in the year 2022, and more than 0.6 million deaths from cancer are expected, which is almost 1670 deaths per day. Risk assessment of cancer reveals that everyone is at risk of occurring cancer[4]. Cancer can develop in anyone due to genetic susceptibility, changes in the environment, lifestyle, and other factors, such as smoking, obesity, family history, alcohol consumption, unhealthy diet, and certain infectious agents, but people over the age of 55 are more susceptible[1].

In 2020 it was estimated that the overall ratio of developing cancer in men is 19% higher (222 cases per 100,000) than in females (186 cases per 100,000), though these figures vary across regions[2]. The ratio of men suffering from cancer in Australia and New Zealand is (5-fold) 494 cases per 100,000 to Western Africa, 100 cases per 100,000. While, in women rate of developing can-

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cer is relatively low (4-fold) than in males, from (405 cases per 100,000) in Australia and New Zealand to (102 cases per 100,000) in south-central Asia. Similarly, the mortality rate in men is also higher, 43% (120 per 100,000), than the women (84 per 100,000). At the same time, some countries have a low rate of cancer incidences. This variation is due to differences in exposure to factors associated with cancer[4].

According to a survey published in 2015, 16,210 (50 cases per 100,000) patients were diagnosed with cancers in Saudi Arabia[5]. In recent years, the rate of cancer incidents has increased drastically, including a 26-fold increase in thyroid cancer; 10-fold in breast, colon, uterine, and bladder cancer; 8-fold in the prostate; 5-fold in renal cancer; 4-fold in ovarian and pancreatic cancer; 3.5-fold in lung cancer; 3-fold in liver cancer; and 2-fold in lymphoma, leukemia, and gastric cancer[6]. In 2010, breast cancer was the 9th leading cause of death in Saudi Arabia. Around 13,08 new cases are reported annually[7,8], and the incidence of breast cancer is expected to increase in coming decades due to an increase in population[9]. Despite the (72%) survival rate, it remains the lowest survival rate of western countries[10-12]. The main reason behind this is the prevalence of advanced stages of cancer (12.5%) and the lowest screening rate[13,14].

Lung cancer is ranked as the 17th number of cancers in women and 4th among men[15]. The ratio of lung cancer is considered as only 3.9% of all other types of cancer that were reported in the same year in Saudi. According to the Saudi cancer registry, the ratio of kidney cancer is about 2.3% of all cancer types in Saudi Arabia[2]. Colorectal cancer (CRC) is considered to be a high disease burden worldwide which is expected to increase by 60% by the year 2030. In Saudi Arabian males, Colorectal Cancer (CRC) is the most common type of cancer and the third most common cancer in a female, with a rate of 9.6 individuals per 100,000, and it is still increasing adversely[6,16,17]. This study was conducted to assess the awareness level of graduates from the University of Hail related to cancer.

Materials and Methods

Study Design and Study Population

The study questionnaires were developed in the Arabic language for a better understanding of questions for the general population of Hail and followed the standard study format[18,19]. The study was conducted on "Google Forms" which is an online survey tool. The inclusion criteria were: (1) The participants should speak and understand Arabic, (2) they must have 18 years or above age (3) Currently living or a permanent resident of Hail city. There were no restrictions based on gender, education, occupation, and socioeconomic level of study participants. The participants hailing from other parts of Saudi Arabia, apart from Hail, were excluded from the study.

Data Collection

All study participants living in Hail city were invited through emails and/or social media programs, mainly WhatsApp, to participate in an online survey. The Snowball sampling method was developed to select the study participants. An online link to the "Google Form" was shared with the participants who were willing to participate in the survey between October and November 2021. A short statement highlighting the significance of the study and a consent form was attached to the first page of the questionnaires.

Designing and Validation of Questionnaire

Before the formulation of the questionnaire, an extensive literature review was done, followed by a discussion with field experts. After the development of the questionnaire, it was also validated by the field experts to resolve any discrepancies. Most of the questions were adopted from CAM (cancer awareness measurement).

Study Tool

The "Google Forms" survey questionnaire consisted of 25 questions divided into three main parts: (1) General information (8 questions); (2) Information about public health (4 questions); (3) Reasoning questions about cancer (13 questions). Overall, our survey covers the understanding of participants about symptoms of cancer, information about their diet and physical activities. The risk factors associated with cancer, and involvement of other demographic factors associated with cancer.

Statistical Analysis

All the data were analyzed statistically using GraphPad Prism version 5.0 (San Diego, CA, USA). To calculate awareness level, data were represented by mean and standard deviation. p-value <0.05 was considered statistically significant.

Results

A total of 108 valid responses were included in this analysis, out of which 56 (51.9%) were male and 52 (48.1%) were female participants. Around 106 (98%) of the participants were Saudi nationals, among which 62 (57.4%) were permanent residents of Hail city, and 46 (42%) were migrants (who) were not permanent residents but moved into the city for education or business. Among study participants, around 81 (75%) individuals were youth (18-30 years), 25 (23%) between the age of (31-50 years) and 2 (1%) between (51-90 years). Among participants, 75 (70%) individuals have a university degree or higher. Here it is notable that the majority of the participants were university graduates; that's why only 29 (27%) individuals were employed out of 108 participants. Only 21 (19%) population was addicted to smoking out of 82 (76%) non-smoker and 5 (4%) ex-smoker population. Only 12 (11%) population were exercising regularly, and 34 (31%) of the population were suffering from obesity. 25 (23%) of the participants reported a family history of cancers, and 25 (23%) were exposed to X-rays in the past six months. (Table I).

As the majority of the participants were university graduates, so 82 (75%) of the population described adequate knowledge about cancer (Table II), and most common, 39 (36%) reported that their source of information comes from research articles following (32%) from World Health Organization (WHO) and (21%) from Ministry of Health (MOH) (Table III). Statistical analysis of questions tabulated showed that the majority of the population was well aware of general information regarding cancer, its progression, risks, and the role of genetic factors in developing

Table I. Basic information of the participants.

Variables		Count	% age
Gender	Male	56	51.9
	Female	52	48.1
Nationality	Saudi	106	98
	Non-Saudi	2	2
Residence	Hail	62	57.4
	Non- Hail	46	42.6
Age	18-30 years	81	75
	31-50 years	25	23
	51-70 years	1	1
	71-90 years	1	1
Marital Status	Single	73	68
	Married	29	27
	Better not mention	5	5
Employment status	Employed	29	27
	Un-employed	79	73
Qualification	Secondary school or less	32	30
	University degree	75	70
Smoking status	Smoker	21	19
	Non-Smoker	82	76
	Ex-Smoker	5	4
Monthly Income	1k-10k	84	77
	11k-20k	18	16
	21k-30k	6	7
Obesity	Yes	34	31
	No	73	67
Exercise per week	4-5 days	12	11
	2-3 days	27	25
	Yes	11	10
	Not frequently	58	53
History of Cancer in Family or Friends	Family	25	23
	Friends	36	33
	Don't Know	47	43
X-Ray exposure in the past 6 months	Yes	25	23
	No	79	73
	Don't Know	4	3

Table II. Information regarding cancer.

	Yes		No		I don't Know		
	Count	% age	Count	% age	Count	% age	*p*-value
1 Do you have sufficient awareness of cancer?	82	75	17	15	9	10	0.0003*
2 Have you Researched about Cancer?	75	70	29	27	4	3	0.0002*
3 Do you think cancer is contagious?	1	1	95	88	12	11	0.0001*
4 Do you think Genetic factor has a role in developing cancer?	67	62	19	18	22	20	0.0004*
	Male		**Female**		**I don't Know**		
	Count	% age	Count	% age	Count	% age	*p*-value
5 In your opinion, what gender is most likely to get cancer?	21	20	51	47	36	33	0.002*
	Elderly		**Young**		**I don't Know**		
	Count	% age	Count	% age	Count	% age	*p*-value
6 What age group is at risk of developing cancer?	47	44	25	23	36	33	0.0035*
	Yes		**No**		**I don't Know**		
	Count	% age	Count	% age	Count	% age	*p*-value
7 In your opinion, early diagnosis contributes to the prevention of cancer?	85	78	4	4	19	18	0.0002*

*Statistically significant.

Table III. Sources of Information reported by participants.

	Name	Count	% age	*p*-value
Sources of Information	MOH	23	21	0.0082*
	WHO	35	32	
	Scientific articles	39	36	

*Statistically significant.

cancers. 43 (40%) participants think that breast cancer is the most prevalent type of cancer in Hail Saudi Arabia, following 14% lung cancer, 15% blood cancer, and 5% colon cancer (Table IV). However, there was no significance between awareness of cancer and other factors, including age, gender, marital status, nationality, residence, and monthly income.

There was a significant association between the awareness level of individuals and other factors, like education, and cancer-associated symptoms, including weight loss, fatigue, inflammation, and hair loss (Figure 1A). Participants showed significant knowledge about the most common causes of cancers, including family history (67%), radiation exposure (45%), smoking (83%), obesity (42%), Aging (25%), and fast-food exposure (32%) (Figure 1B). Figure 1 shows a significant level of awareness among individuals between the most common symptoms and causes of cancers.

Discussion

This study was carried out to assess the awareness level of the general population and there was an attempt to correlate cancer symptoms, causes, types, and general opinions based on sociodemographic correlates of the study participants. Overall, our study reveals that there is significant knowledge among the Hail population, but still, there is a need to increase the awareness level of the general population to manage the disease more efficiently. The knowledge gap about cancer is not unique to this study. McVeigh et al[20] in Ireland also reported less level of awareness among the general Irish population. Less awareness level of the population regarding cancer was also reported in the Czech Republic, United Kingdom, and Malaysia[21-23]. These studies encouraged the initiation of screening campaigns at the national level to increase the basic knowledge about cancer and further take steps for the detection and prevention of the disease. The current survey indicated that around (78%) of the population thinks early detection of cancer could contribute to treating the disease more efficiently. Similarly, a study reported by Almutlaq et al[24] also indicated similar findings that around (88.8%) of the population think early detection of colorectal cancer (CRC) could prevent the severity of the disease. Although the large population answered correct answers related to causes and symptoms of cancer, there was still a large knowledge gap among participants about other questions related to the most prevalent type of cancer, age group, and gender most likely to get cancer. A similar study also reported the knowledge gap in participants[25]. The study being a cross-sectional design is one of the limitations, and a self-administered questionnaire might lead to a recall bias. The study was carried out in a single province, and the results cannot be extrapolated to the whole of Saudi Arabia.

Table IV. Common types of cancers as reported by participants.

	Breast cancer		Lung cancer		Colon cancer		Blood cancer		I don't know		
	Count	% age	Count	% age	Count	% age	Count	% age	Count	% age	*p*-value
Most common types of cancer	43	40	15	14	6	5	16	15	28	26	0.0001*

*Statistically significant.

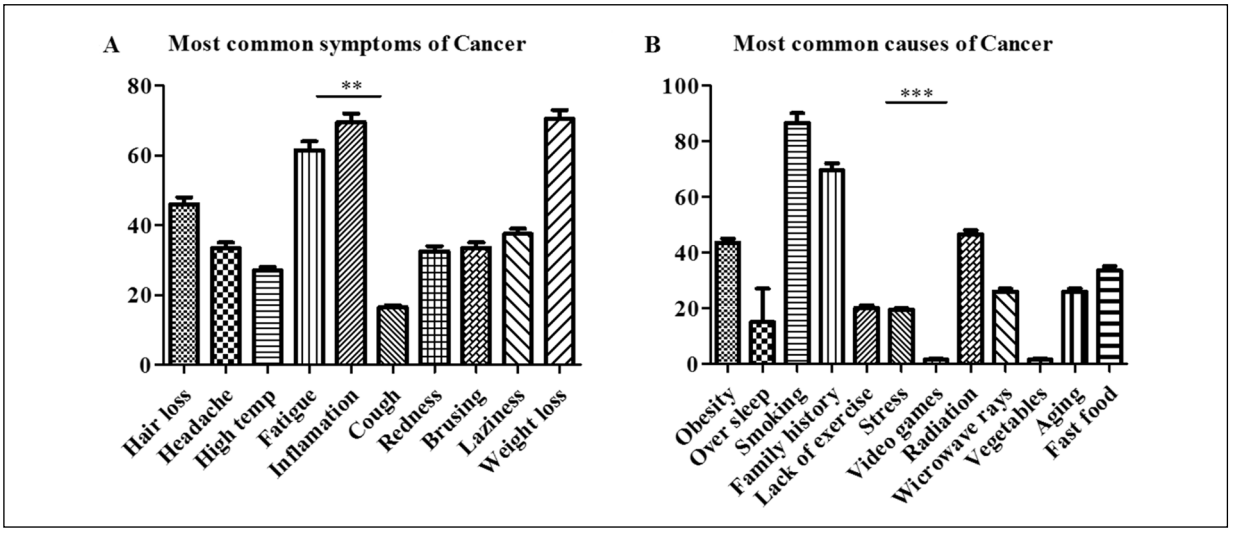

Figure 1. A, Most common symptoms of cancer; **B,** Most common types of cancer; *Statistically significant.

Conclusions

This study indicates that there is significant knowledge among the Hail population but still, there is a need to increase the awareness level of the general population to manage the disease more efficiently. Although most of the participants were university graduates and they have exposure to sites that provides information related to cancer but still, there is need for inventive methods to increase awareness level towards cancer for better management of the disease in Hail, Saudi Arabia.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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Informed Consent

The google form questionnaire included a statement before the start of the survey on informed consent.

Authors' Contribution

Conceptualization: Done by AA, SA; designing the study: AA, SFA; data collection: AMA, SFA, OA, MA, SA; compiling: SFA, MA, SA; analysis and interpretation of the data were done by MA. All the drafts were reviewed by all the authors before submission.

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