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Awareness of esophageal cancer among the adult population in Arar city, Saudi Arabia

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ABSTRACT

*Background***:** Early detection of cancer and better health seeking behavior depend on cancer awareness. Lack of awareness may result in a slow adoption of screening techniques and delayed diagnosis. *Objectives*: To assess the awareness of esophageal cancers (EC) risk factors, protective factors and symptoms among the general population in Arar city, northern Saudi Arabia. *Subjects and methods:* Descriptive cross sectional study design was conducted included 385 participants using self-administered questionnaire. *Results*: The study included 385 participants, their mean age 31±10.2 years old. The highest percentage of the respondents reported that smoking is risk factors for EC (83.9%) weight loss reported by more than half of the participants (56.9%) as a symptom of EC. The majority of the participants mentioned that early detection of EC decreases the mortality associated with it. *Conclusion:* Although Saud is citizens in the city of Arar are relatively well aware of the risk and protective factors of EC, the prevalence of the disease in Saudi Arabia is high.

Keyword: Esophageal cancer, awareness, risk factors, protective factors, symptoms.

1. INTRODUCTION

Cancer is a well-documented cause of death worldwide and represents a major challenge to increasing life expectancy around the world. It is the 1st or 2nd leading cause of death in many countries and the third or fourth in others (Ferlay et al., 2019; Sung et al., 2021; Jemal et al., 2009). In Saudi Arabia, there has been a significant increase in certain cancers in recent years due to the clustering of various risk factors, which vary regionally with in the Kingdom (Almutlaq et al., 2017).

The most common causes of a significant increase in cancer incidence in Saudi Arabia are life style habits and lack of knowledge (Alshammari et al., 2015; Alreshidi et al., 2017; Alrashidi et al., 2017). EC is regarded as the eighth

most prevalent cancer and the sixth leading cause of cancer related deaths (Ferlay et al., 2019; Sheikh et al., 2019; Jemal et al., 2009; Torre et al., 2015; Sung et al., 2021; Duron et al., 2013). EC is the seventh most frequent cancer in men is EC and the thirteenth most prevalent cancers in women in the Western world (Siersema et al., 2019). In addition, EC is characterised by a poor prognosis at diagnosis, with a 30% five year survival rate (Zeng et al., 2018) and less than 25% in other studies (Arnal et al., 2015; Hassanipour et al., 2017). Studies conducted in Saudi Arabia by Althubiti Eldein (2018) and Alshamsan (2022) found that the incidence of EC cancer is increasing (Althubiti and Eldein, 2018; Alshamsan et al., 2022).

Primary prevention is important to control modifiable risk factors for EC (Adami et al., 2001). Secondary prevention, including early detection of EC, is also associated with a better prognosis (Pennathur et al., 2009; Arnal et al., 2015). Numerous studies have concluded that obesity and some cancers, including EC, are related (Al-Sharif et al., 2018). There is no doubt that raising awareness about cancer is important because of its increasing prevalence and associated health care costs (Sheshachalam and Chakravarthy, 2015).

Most new cases and deaths from EC in men were recorded in Saudi Arabia, followed by Iraq in the Gulf regions, while Iraq and Saudi Arabia recorded most new cases and deaths from EC in women (WHO, 2020). The aim of the study is to determine the awareness of EC risk factors, protective factors and symptoms among general population of Arar city.

2. SUBJECTS AND METHODS

Study design

The study used was a descriptive cross sectional one over a seven-month period, from February to September 2022, among the adult citizens in Arar district, northern Saudi Arabia. Adults who were at least 18 years old, no history of EC and with no family history of EC were allowed to participate in the study. The sample size was calculated using Epi Info software program, version 7.2.4.0, based on the following assumptions: 95% confidence interval, 5% margin of error, 49% expected prevalence of awareness from previous studies (Qahtani et al., 2017) and total population 200000. The estimated sample size was 383, which we then increased to 385 considering the lack of response.

Data collection

After obtaining official approval for conducting the research from local committee of bioethics, Northern Borders University, data were collected from the participant electronically (Google form) using a pre designed Arabic self-administered questionnaire prepared by the researchers in accordance with a thorough literature review.

Each participant answered questions on a pre designed Arabic questionnaire covering the following topics: Socio economic back grounds such as age, gender and education level; risk factors for EC such as smoking, long standing heart burn, family history of EC, obesity, hot drinks, processed meats and alcohol consumption; symptoms of EC such as weight loss, difficulty swallowing, cough and hoarseness, dyspepsia, and chest pain and protective factors for EC such as early detection of EC and physical activity. The research objectives were explained to the participants at the beginning of the survey. The researchers used social media to specifically target individuals (Whats App, Telegram, twitter and Face book). All study participants provided written informed consent that was at the start of the survey and was required to fill the questionnaire.

Tool validity

The content validity of the questionnaire was done by three experts in the field (2 Surgery and 1 Medicine). A pilot study with 30 participants was under taken to evaluate the questions for clarity, completeness of the response sets and time required to answer all questions. The pilot study's data weren't included in the analysis.

Statistical analysis

Data collected, entered then analyzed using SPSS version 16 (SPSS Inc, Chicago, IL, USA). Qualitative data were presented as frequency and percentage, whilst quantitative data were presented as mean and standard deviation. The chi square was employed for qualitative data and a p-value of less than 0.05 was taken in to account for statistical significance.

3. RESULTS

Table 1 shows the socio-demographic background of the study participants. The study included 385 participants whose mean age was 31±10.2 years, with the highest percentage (60%) from the 18-30 age group. More than half of the participants were males (62.6%). In terms of educational level, the majority of participants had a university degree (78.5%), followed by high school (13.2%),

a post graduate degree (6%) and finally less than a middle school degree (3%). More than one third of respondents were smokers (38.2%).

Table 1 Socio-demographic background of the studied participants

Item	No (385)	%
Age per years	Mean± SD= 31±10.2	Range (18-67)
18-30	231	60
31-40	82	21.3
41-50	55	14.3
51 and more	17	4.3
Sex		
Male	241	62.6
Female	144	37.4
Educational level		
University	302	78.5
High school	51	13.2
Middle and less school	9	3.3
Post graduate	23	6
Smoking habits		
Smoker	147	38.2
Non smoker	238	61.8

Table 2 Awareness of EC risk factors of among the studied participants

Item	No (385)	%
Aware that smoking increases the risk of EC		
Yes	323	83.9
No	62	16.1
Aware that family history of EC increases the risk of EC		
Yes	230	59.7
No	155	40.3
Aware that long standing heartburn increases the risk of EC		
Yes	207	53.8
No	178	46.2
Aware that obesity increases the risk of EC		
Yes	172	44.7
No	213	55.3
Aware that hot drinks increases the risk of EC		
Yes	138	35.8
No	247	64.2
Aware that processed meat increases the risk of EC		
Yes	141	36.6
No	244	63.4
Aware that that alcohol consumption increases the risk of EC		
Yes	105	27.3
No.	280	72.7

Table 2 provides information on the awareness of EC risk factors. The highest percentage reported smoking as a risk factor for EC (83.9%), followed by family history of the disease (59.7%), long standing heartburn (53.8%), obesity (44.7%), hot drinks (35.8%),

processed meat (36.6%) and alcohol consumption (27.7%). Table 3 shows the awareness of the symptoms of EC among the studied respondents. Weight loss was reported by more than half of the participants (56.9%), followed by difficulty swallowing (46.5%), cough and hoarseness (39.5%), dyspepsia (37.4%) and chest pain (37.4%).

Table 4 showing the distribution of participants' risk factors awareness by genders explicitly; females were statistically more aware of smoking (P-value=0.02), family history (P-value=0.001) and alcohol consumption (P-value=0.001) than males.

Table 3 Awareness of EC symptoms among the study participants

Item	No (385)	%
Aware that weight loss is a symptom of EC		
Yes	166	56.9
No	219	43.1
Aware that difficulty of swallowing is a symptom of EC		
Yes	179	46.5
No	206	53.5
Aware that cough and hoarseness of voice are symptoms of EC		
Yes	152	39.5
No	223	60.5
Aware that dyspepsia is a symptom of EC		
Yes	144	37.4
No	241	62.6
Aware that chest pain is a symptom of EC		
Yes	144	37.4
No	241	62.6

Table 4 Distribution of participants' risk factors awareness by gender

Variables	Male (N= 241) N (%)	Female (N= 144) N (%)	χ 2	P-value
Aware that smoking increases the risk of EC				
Yes	194(80.5)	129(89.6)	5.5	0.02
No	47(19.5)	15(10.4)		
Aware that family history of EC increases the risk of EC				
Yes	128(53.1)	102(70.8)	11.7	0.001
No	113(46.9)	42(29.2)		
Aware that long standing heartburn increases the risk of EC				
Yes	126(52.3)	81(56.3)	0.5	0.4
No	115(47.7)	63(43.7)		
Aware that obesity increases the risk of EC				
Yes	108(44.8)	64(44.4)	0.00	0.9
No	133(55.2)	80(55.6)	5	
Aware that hot drinks increases the risk of EC				
Yes	93(38.6)	45(31.3)	2.1	0.1
No	148(61.4)	99(68.7)		
Aware that processed meat increases the risk of EC				
	86(35.7)	55(38.2)	0.2	0.6
	155(64.3)	89(61.8)		
Aware that that alcohol consumption increases the risk of EC				
Yes	161(66.8)	119(82.6)	11.4	0.001
No	80(32.2)	25(17.4)		

χ 2 Chi square test Significant p<0.05

Table 5 showed the relationship between gender and symptoms awareness of EC. Female individuals experienced higher awareness regarding weight loss, difficulty in swallowing, cough and hoarseness of voice and dyspepsia than male participants, but the differences are statistically insignificant P value > 0.05.

Table 6 revealed the association between gender and protective factors awareness of EC among the studied respondents. Females were more statistically aware than male participants' regarding physical exercise (p-value=0.03) and early detection of EC (p-value=0.002). Figure 1 illustrates the awareness of protective factors in the sample studied. Most participants (82.6%) stated that early detection of EC reduces associated mortality and almost (75%) highlighted physical exercise as a protective factor (75.6%).

Table 5 Distribution of participants' symptoms of awareness EC by gender

Variables	Male (N= 241) N (%)	Female (N= 144) N (%)	χ 2	P-value
Aware that weight loss is a symptom of EC				
Yes	100(41.5)	66(45.8)	0.7	0.4
No	141(58.5)	78(54.2)		
Aware that difficulty of swallowing is a symptom of EC				
Yes	111(46.1)	68(47.2)	0.04	0.8
No	130(53.9)	76(52.8)		
Aware that cough and hoarseness of voice are symptoms of EC				
Yes	90(37.3)	62(43.1)	1.2	0.2
No	151(62.7)	82(56.9)		
Aware that dyspepsia is a symptom of EC				
Yes	85(35.3)	59(41)	1.2	0.2
No	156(64.7)	85(59)		
Aware that chest pain is a symptom of EC				
Yes	90(37.3)	54(37.5)	0.001	0.5
No	151(62.7)	90(62.5)		

χ 2 Chi square test Significant p<0.05

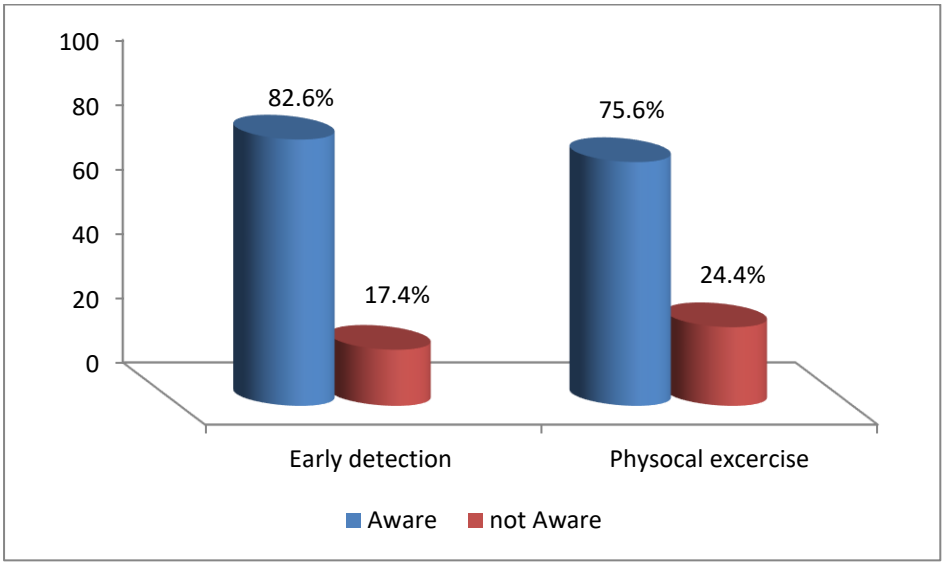

Figure 1 Participants awareness of EC protective factors

Table 6 Awareness of EC protective factors among the study participants

Variables	Male (N= 241) N (%)	Female (N= 144) N (%)	χ 2	P-value
Aware that early detection of EC decreases the mortality of EC				
	188(78)	130(90.3)	9.4	0.002
	53(22)	14(9.7)		
Aware that physical exercise is protective factor against EC				
	178(73.9)	113(78.5)	1.4	.03
	63(26.1)	31(21.5)		

χ 2 Chi square test Significant p<0.05

4. DISCUSSION

EC is one of the most prevalent cancers in Saudi Arabia. Few studies in Saudi Arabia have examined public awareness of EC. To our knowledge, no other study has examined a similar issue in this area. 385 participants took part in the current study to examine the awareness of EC risk factors, protective factors and symptoms associated.

Regarding participants' awareness of risk factors of EC, smoking typically mentioned followed by family history, long standing heart burn, obesity, hot drinks, processed meat and alcohol consumption. Participants in similar study carried out in Saudi Arabia stated that smoking, alcohol consumption, family history and long-standing heart burn were most often reported risk factors of EC (Qahtani et al., 2017).

(Sheikh et al., 2019) reported similar results in Iranian research, concluding that hot beverages intake and smoking were significantly mentioned risk factors to EC (Sheikh et al., 2019). In addition, a Chinese study found that hot beverages, such as coffee and tea, were frequently recorded risk factors of EC (Arnal et al., 2015). The result also supports the findings of prior studies that found smoking to be one of the primary reported risk factors for EC (Wheeler and Reed, 2012; Blot and Mc Laughlin, 1999). Obesity was mentioned as a risk factor of EC in both men and women by Alshammari et al., (2019) in Saudi Arabia and Hoyo et al., (2012) in the United States.

In terms of awareness of EC symptoms, weight loss most frequently mentioned by respondents followed by difficulty in swallowing, cough and hoarseness of voice, dyspepsia and chest pain. This is in line with previous studies in which difficulty swallowing was cited as the most common symptom of EC in Saudi Arabia (Qahtani et al., 2017), USA (Rubenstein and Shaheen, 2015), Kenya (Duron et al., 2013) and Ireland (FitzGerald et al., 2008).

In Kenya, participants in comparable research reported coughing and dysphagia is risk factors of EC (Duron et al., 2013). Regarding participants' awareness of protective factors, the majority agreed that early detection of EC reduces associated mortality, and about three quarters reported physical exercise. Similar findings were reported by Pennathur et al., (2009) in the USA, Duron's et al., (2013) in Kenya, and Jia et al., (2019) in china.

5. CONCLUSION

Although Saud is citizens in the city of Arar are relatively well aware of risk factors, protective factors and symptoms of EC, the prevalence of the disease in Saudi Arabia is high. We believe that this study is important for the development of targeted community education programs that could contribute to the early detection and treatment of this disease.

Limitations of the study

The self-administered questionnaire used in this study could cause self-reporting errors. The absence of a standardized questionnaire is another drawback.

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Authors Contributions

Mohamed M Abd El-Mawgod, PI of the study, preparation of the proposal, responsibility for study approval statistical analysis, reviewed of the results and writing of the manuscript. Naif Abdullah H Alanazi, Malek Shafi F. Alenezi, Muhannad Abdulrazaq M Almesned and Abdullaziz Faraj K Alenezi were involved in the development of the proposal, definition of the research objectives,

questionnaire design, data collection, data entry and interpretation of the results. The final manuscript was read and approved by all authors.

Informed consent

All individuals who took part in the study provided written informed consent. The questionnaires did not include any names of the participants and data confidentiality was assured.

Ethical consideration

The study approval was obtained by the local committee of bio ethics (HAP-09-A043) at Northern Borders University (NBU), the decision no (27-43-H), dated 15/2/2022.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

The corresponding author can provide the data used in the study upon request.

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