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Research Article

Awareness of Esophageal Cancer Among the Adult General Population in Western Region of Saudi Arabia

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Abstract

Background: Esophageal cancer (EC) is one of the most common cancers in Saudi Arabia and sixth of the most common cancer killers worldwide However, no pervasive study assessing EC awareness among the general adult population in the western region of Saudi Arabia has been conducted.Therefore, in this study, we aimed to assess the level of EC awareness among the general adult population in the western region of Saudi Arabia.

Methods: Between September and November 2023, we conducted a cross-sectional study including 628 adults aged 18 years who resided in the western region of Saudi Arabia during the study period. Data was collected using a previously validated questionnaire, distributed via a Google Form survey. Of these, 118 (18.8%) had a secondary level of education,456 (72.6%) had an undergraduate degree, and 38 (6.1%) had a postgraduate degree.

Results: Good awareness regarding EC risk factors was observed in 87.5% of lower-educated participants compared to 57.9% of those with postgraduate degrees, with a recorded statistical significance (P = .048). Personal characteristics had no significant association with awareness level.

Conclusion: The findings of this study indicated a good level of EC awareness among the Saudi Arabian adult population in the western region. And the awareness regarding risk factors, smoking was the most known, followed by alcohol consumption, and the symptoms awareness, swallowing difficulty was the most known, followed by voice hoarseness. And personal characteristics were not significantly related to overall awareness.

INTRODUCTION

EC is the sixth most common cancer killer worldwide for various reasons, including inadequate screening methods and advanced disease at the time of diagnosis (Jobe et al., n.d.). EC is distinguished by its poor prognosis at diagnosis and high mortality rate, with a 5year survival rate of only approximately 25% (Arnal et al., 2015). In addition, it is a complex disease because there are significant regional variations in the histology, mortality, and incidence rates (Arnal et al., 2015). The most prevalent ECs are adenocarcinoma and squamous cell carcinoma (Napier et al., 2014). According to the Surveillance, Epidemiology, and End Results cancer data 2023, approximately 21,560 new cases of EC and 16,120 fatalities were reported globally, accounting for 1.1% and 2.6% of all new cancer cases, respectively (Hu et al., 2022). Some of the risk factors for squamous cell carcinoma include 60–70 years of age, achalasia, alcohol consumption, smoking, high starch diet devoid of fruits and vegetables, Plummer–Vinson syndrome, history of head and neck squamous cell carcinoma, and radiation therapy (Freeman, 2004; Martin et al., 1997; Wong & Fitzgerald, 2005). For adenocarcinoma, the risk factors include 50–60 years of age, Barrett's esophagus, gastroesophageal reflux syn-

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drome, and hiatal hernia (Freeman, 2004; Martin et al., 1997; Wong & Fitzgerald, 2005). The signs and symptoms of EC vary based on the initial affected section of the esophagus and often manifest 3–4 months before the diagnosis. Dysphagia, odynophagia, and gradual weight loss are typical presenting symptoms of esophageal cancer (Layke & Lopez, 2006). To decrease the incidence of advanced disease stage at diagnosis and to increase therapeutic efficacy, promptness of diagnosis is a critical component of cancer control planning (De Angelis et al., 2014; Richards et al., 1999). For patients exhibiting symptoms of EC, accurate symptom interpretation is crucial for prompt diagnosis (Emery et al., 2014). However, delayed presentation in these cases can further delay the diagnosis (Keeble et al., 2014), and the primary cause is underestimating the earliest signs, which may not be considered as critical or may be attributed to comorbidities (Forbes et al., 2014; Walter et al., 2015). A study conducted in Al Majma'ah found that the targeted population's understanding of cancer was generally good and promising; however, they differed in their identification of the many risk factors of EC. Age and sex were both statistically positively associated with knowledge of EC (Al Qahtani et al., 2017). Another study conducted in Arar reported a high frequency of the disease among the residents despite their reasonable knowledge of the risk factors, protective factors, and symptoms of EC (Abd ElMawgod et al., 2022). However, studies assessing EC awareness among the general adult population in the western region of Saudi Arabia are scarce, which the present study aimed to determine.

MATERIALS AND METHODS

Study Design, Setting, and Time

Between September and November 2023, we conducted a cross-sectional study in the western region four cities were included (Makkah , Jeddah , Taif , Madinah) of Saudi Arabia.

Study Participants

The inclusion criteria were adults aged 18 years who resided in the western region (Makkah , Jeddah , Taif , Madinah) of Saudi Arabia during the study period and voluntarily agreed to participate in this study after the study's purpose and goals were explained to them. The exclusion criteria were healthcare workers and those who disagreed to participate in the study. The study included 628 adults. Of these, 118 (18.8%) had a secondary level education, 456 (72.6%) had an undergraduate degree, and 38 (6.1%) had a postgraduate degree.

Data Collection

A previously validated questionnaire from an earlier study was translated into Arabic and prepared in a Google form which was then distributed to the general population who met the inclusion criteria. The questionnaire consisted of 3 sections (Al Qahtani et al., 2017). The first section included demographic data such as age, sex, educational level, and smoking habits. The second section included questions regarding common risk factors of EC, such as smoking, family history of EC, longstanding heartburn, obesity, hot drinks, processed meat, and alcohol consumption. The third section included questions regarding symptoms of EC such as weight loss, difficulty swallowing, cough, hoarseness of voice, dyspepsia, and chest pain.

Patient Consent and Ethical Approval

The purpose of the survey and an invitation to participate voluntarily in the survey were sent to each responder by an electronic link. Ethical approval for the study was obtained from the Institutional Research Board of Umm Al - Qura University (approval no.: HAPO02K0122023101777).

Data Analysis

After the data was collected, it was revised, coded, and fed to statistical software IBM SPSS version 22(SPSS Inc., Chicago, IL). All statistical analysis was performed using two - tailed tests. P-value 0.05 was considered statistically significant. Regarding EC knowledge and awareness, the overall score was obtained by summing up all discrete item scores. Participants with an overall score of 60% were considered to have a poor awareness level, and those with $\geq$60% were considered to have a good awareness level. Descriptive analysis based on frequency and percentage distribution was performed for all variables, including biodemographic data, work, and smoking.

Furthermore, participants' awareness regarding EC risk factors and symptoms was plotted in the form of tables and graphs. Cross tabulation and graph were used to assess factors associated with awareness level regarding EC risk factors and symptoms. The overall awareness level was tested using Pearson's chi - square test and exact probability test for small frequency distributions.

RESULTS

A total of 628 eligible adults were included. Participants' ages ranged from 18 to more than 50 years with a mean age of 32.1 ± 12.9 years old. Exact of 414 (65.9%) were females. Considering educational level, 456 (72.6%) had a university level of education, 118 (18.8%) had a secondary level of education and 38 (6.1%) had a postgraduate degree. Exactly 321 (51.1%) participants were unemployed, 267 (42.5%) were non-healthcare employees and 40 (6.4%) were retired. A total of 100 (15.9%) participants were smokers (Table 1).

Table 2 shows risk factors awareness, 96.3% know that smoking is a risk factor for esophageal cancer, followed by alcohol consumption (89.3%), family history of esophageal cancer (81.5%), prolonged heartburn (68.3%), processed meat (67.4%), and obesity

Table 1: Personal characteristics of the adult general population in Western region, Saudi Arabia

Personal data	Number	%
Age in years		
18-30	289	46.0
31-40	131	20.9
41-50	134	21.3
>50	74	11.8
Gender		
Male	214	34.1
Female	414	65.9
Educational level		
Below secondary	16	2.5
Secondary	118	18.8
University	456	72.6
Post-graduate	38	6.1
Employment		
Unemployed	321	51.1
Non-health care employee	267	42.5
Retired	40	6.4
Smoking		
Non-smoker	528	84.1
Smoker	100	15.9

Table 2: Awareness of esophageal cancer among the adult gen-eral population in Western region, Saudi Arabia

Awareness items	Yes		No	
	Number	%	Number	%
Risk factors				
Smoking	605	96.3	23	3.7
Family history	512	81.5	116	18.5
Prolonged heartburn	429	68.3	199	31.7
Obesity	382	60.8	246	39.2
Hot drinks	283	45.1	345	54.9
Processed meat	423	67.4	205	32.6
Alcohol consumption	561	89.3	67	10.7
Symptoms				
Weight loss	329	52.4	299	47.6
Difficulty swallowing	395	62.9	233	37.1
Cough and voice hoarseness	344	54.8	284	45.2
Indigestion	311	49.5	317	50.5
Chest pain	317	50.5	311	49.5

(60.8%). About 45.1% think that hot drinks increase the risk of having esophageal cancer. As for symptoms, the most known among the current adults included difficulty swallowing (62.9%), cough and voice hoarseness (54.8%), weight loss (52.4%), chest pain (50.5%), and indigestion (49.5%).

The exact of 399 (63.5%) of the study adults had good awareness level regarding esophageal cancer risk factors, 317 (50.5%) had good awareness about symptoms and 325 (51.8%) had an overall good awareness about esophageal cancer in total (figure 1).

Table 3 shows a good awareness regarding risk factors was reported among 87.5% of low educated participants versus 57.9% of others with postgraduate degree with recorded statistical significance (P=.048). All other factors showed insignificant association with adults' awareness about risk factors (P 0.05).

In table 4, None of the adult's personal characteristics showed any significant relation with their awareness level regarding esophageal cancer symptoms.

In table 5 we found none of the adult's personal characteristics showed any significant relation with their overall awareness level regarding esophageal cancer (P 0.05 for all).

DISCUSSION

EC is one of the most common cancers in Saudi Arabia. In this study, we used a questionnaire to assess the level of EC awareness among the general adult population in the western region of Saudi Arabia. While many studies in Saudi Arabia have investigated the level of

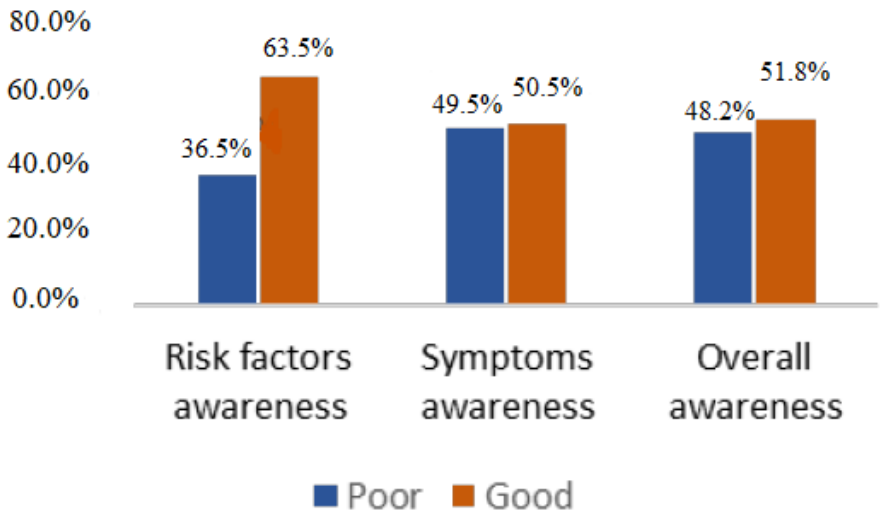

Figure 1: Risk factors, symptoms, and overall awareness level regarding esophageal cancer among the adult general population in Western region, Saudi Arabia

Table 3: Factors associated with adult's awareness of esophageal cancer risk factors.

Factors	Risk factors awareness				p-value
	Poor		Good		
	Number	%	Number	%	
Age in years					
18-30	106	36.7	183	63.3	.201
31-40	52	39.7	79	60.3	
41-50	52	38.8	82	61.2	
>50	19	25.7	55	74.3	
Gender					
Male	84	39.3	130	60.7	.297
Female	145	35.0	269	65.0	
Educational level					
Below secondary	2	12.5	14	87.5	.048*^
Secondary	41	34.7	77	65.3	
University	170	37.3	286	62.7	
Post-graduate	16	42.1	22	57.9	
Employment					
Unemployed	118	36.8	203	63.2	.469
Non-health care employee	100	37.5	167	62.5	
Retired	11	27.5	29	72.5	
Smoking					
Non-smoker	189	35.8	339	64.2	.423
Smoker	40	40.0	60	60.0	

P: Pearson X2 test ; $Exactprobabilitytest * P < 0.05(significant)$

EC awareness among adults, studies investigating EC awareness in this target area are scarce.

We found that the participants possessed extensive knowledge regarding EC, including the risk factors and symptoms. In addition, there was no significant association between their personal characteristics and awareness level regarding EC symptoms or overall awareness level regarding EC (P 0.05 for all). However, there was a positive relation between education and awareness level. Good awareness regarding the risk factors was reported in 87.5% of lower educated participants as compared to 57.9% of those with postgraduate degrees, with statistical significance (P = .048).

Regarding risk factor awareness, we found that the majority of the participants were aware that smoking is a risk factor for EC, followed by alcohol consumption, family history of EC, prolonged heartburn, processed meat, and obesity, in line with a previous study con-

Table 4: Factors associated with adult's awareness of esophageal cancer symptoms.

Factors	Overall awareness				p-value
	Poor		Good		
	Number	%	Number	%	
Age in years					.470
18-30	137	47.4	152	52.6	
31-40	72	55.0	59	45.0	
41-50	68	50.7	66	49.3	
>50	34	45.9	40	54.1	
Gender					.498
Male	110	51.4	104	48.6	
Female	201	48.6	213	51.4	
Educational level					.550^
Below secondary	8	50.0	8	50.0	
Secondary	53	44.9	65	55.1	
University	228	50.0	228	50.0	
Post-graduate	22	57.9	16	42.1	
Employment					.413
Unemployed	151	47.0	170	53.0	
Non-health care employee	138	51.7%	129	48.3%	
Retired	22	55.0%	18	45.0%	
Smoking					.917
Non-smoker	261	49.4%	267	50.6%	
Smoker	50	50.0%	50	50.0%	

P: Pearson X2 test ⁻ $Exactprobabilitytest$

Table 5: Factors associated with adult's overall awareness of esophageal cancer.

Factors	Overall awareness				p-value
	Poor		Good		
	Number	%	Number	%	
Age in Years					.419
18-30	136	47.1	153	52.9	
31-40	70	53.4	61	46.6	
41-50	66	49.3	68	50.7	
>50	31	41.9	43	58.1	
Gender					.256
Male	110	51.4	104	48.6	
Female	193	46.6	221	53.4	
Educational level					.273^
Below secondary	6	37.5	10	62.5	
Secondary	52	44.1	66	55.9	
University	222	48.7	234	51.3	
Post-graduate	23	60.5	15	39.5	
Employment					.361
Unemployed	146	45.5	175	54.5	
Non-health care employee	137	51.3	130	48.7	
Retired	20	50.0	20	50.0	
Smoking					.548
Non-smoker	252	47.7	276	52.3	
Smoker	51	51.0	49	49.0	

P: Pearson X2 test ⁻ $Exactprobabilitytest$

ducted in Arar (Abd El- Mawgod et al., 2022). Another study conducted in Majma'ah showed that the majority cited smoking as a risk factor for EC, followed by a family history of EC (Abd El- Mawgod et al., 2022; Al Qahtani et al., 2017). A study conducted in Bomet district, Kenya, reported similar results; while 47% of the respondents disagreed that family history poses a risk, 30% believed that smoking tobacco was the only risk factor (Duron et al., 2013). In Maharashtra, India study found that the majority of the patients with cancer had a history of tobacco chewing, followed by smoking (cigarette, bidi, or both) which supports that smoking is the highest risk factor for cancer (Giri et al., 2014).

Regarding symptoms, the most known among our par-

ticipants included difficulty swallowing, followed by cough, hoarseness of voice, weight loss, chest pain, and indigestion. This finding was similar to that reported in the study conducted in the Bomet district, where 79% accurately claimed dysphagia as the most common symptom of EC. The study in Majma'ah also showed that difficulty in swallowing was the most common symptom of EC. A similar study in Shropshire, UK found the most common presenting symptom of esophageal cancer is dysphagia (Tentzeris et al., 2011).

However, a number of studies in Europe, Africa, and the US have examined people's awareness of esophageal cancer. This is the first research in the western part of Saudi Arabia to examine this topic.

A series of research has examined Saudi women's awareness of breast and colorectal cancers, among other cancers, but has not looked particularly for awareness of esophageal cancer.(Alazzeh & Azzeh , 2018; Al- Wassia et al., 2017; Bowser et al., 2017)

The strength of this study is that the inclusion of participants from multiple cities enhanced the generalizability of our findings, thereby enabling them to reflect the overall knowledge and awareness of the Saudi Arabian population. However, this study has some limitations. First, the possibility of self-reporting inaccuracies exists due to the use of a self-administered questionnaire. Second is the lack of a standardized questionnaire.

CONCLUSION AND RECOMMENDATION

There is a high percentage of EC awareness among the general adult population in the western region of Saudi Arabia. We recommend applying the same awareness strategies used in the western region to areas with low awareness levels.

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DECLARATIONS

Conflict of interest: The authors have no relevant financial or non-financial interests to disclose. The authors declare no conflict of interest.

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