

Awareness of head and neck cancers in Saudi Arabia

A questionnaire based study

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ABSTRACT

الأهداف: لسد فجوة معرفة أنواع وأعراض سرطانات الرأس والعنق من خلال توفير بيانات وتحليلات لحالة الوعي بين البالغين السعوديين.

المنهجية: أجريت هذه الدراسة المستندة إلى استبيان مستعرض في المملكة العربية السعودية خلال الفترة من أغسطس 2018م إلى أغسطس 2019م من خلال منصات التواصل الاجتماعي باستخدام موقع SurveyMonkey. اشتملت مجالات الاستبيان على بيانات ديموغرافية، ومعرفة أنواع وأعراض سرطانات الرأس والعنق (HNCs)، وعلاقة HNCs بفيروس الورم الحليمي البشري (HPV) ولقاحه.

النتائج: أكمل 3171 مستجيباً الاستبيان. وكشف التحليل أن العديد من المستجيبين للدراسة (49.3%) لم يكونوا على دراية بسرطان HNCs. ما يقارب ثلثي (61.2%) من مجتمع الدراسة اعتقدوا بشكل خاطئ أن سرطان الدماغ كان مدرجاً في HNCs. أكثر من النصف (57.8%) لم يتعرفوا على الصداع كأعراض. من حيث عوامل الخطر، أظهر الذكور وعياً أعلى بالتبغ والكحول المفرط كعوامل خطر، بينما كانت الإناث أكثر دراية بعدوى فيروس الورم الحليمي البشري ($p < 0.05$).

الخلاصة: كشفت هذه الدراسة عن نقص المعرفة والوعي بالسمات الإكلينيكية وعوامل الخطر لـ HNCs بين السكان السعوديين.

Objectives: To address the gap in knowledge by providing data and analyses of the status of awareness among Saudi adults.

Methods: This cross-sectional questionnaire-based study was carried out in Saudi Arabia from August 2018 to August 2019 through social media platforms using SurveyMonkey. The domains of the questionnaire included demographic information, knowledge of types and symptoms of head and neck cancers (HNCs), and the relation of HNCs to *human papillomavirus* (HPV) and its vaccine.

Results: A total of 3171 respondents completed the questionnaire. The analysis revealed that many of the study respondents (49.3%) were not knowledgeable about HNCs. Almost two-thirds (61.2%) of the study population incorrectly believed that brain

cancer was included in HNCs. Over half (57.8%) did not recognize headaches as a symptom. In terms of the risk factors, males showed higher awareness of tobacco and excessive alcohol as risk factors, while females were more knowledgeable about HPV infection ($p < 0.05$).

Conclusion: This study revealed that there is a lack of knowledge and awareness of the clinical features of and risk factors for HNCs among the Saudi population.

Keywords: head and neck cancers, cancers, awareness, HPV

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Head and neck cancers (HNCs) entail a group of cancers arising from the oral cavity, pharynx, larynx and nose, and paranasal sinuses. The Global Cancer Observatory (Globocon) ranked thyroid cancer as the third most common cancer in Saudi Arabia after breast and colorectal cancer.¹ As a group, HNCs are considered the ninth leading cause of cancer in Saudi Arabia.² These cancers are primarily found among the

adult and aging population, with 98% of cases occurring in patients older than 40 years and 50% in patients older than 60 years.³ The survival rates of HNCs range between 89% in the early stages and 27% in the advanced stages.⁴ Thus, it is of paramount importance that HNCs be diagnosed early.⁵

The diagnosis of HNCs relies heavily on the patient's history and physical examination. Using endoscopic techniques to diagnose or rule out masses is essential and usually takes place in an outpatient setting. With this in mind, patients should have a clear idea on the signs and symptoms of HNCs to allow for early recognition and management. Head and neck cancers are preventable, with estimates suggesting that more than 75% of cases in the United States are caused by tobacco use.^{6,7} However, other factors-including alcohol use, unprotected sun exposure, and dietary factors-can play a role in the disease pathogenesis. *Human papillomavirus* (HPV) infection has been established as a key element of HNCs, especially for carcinoma of oropharyngeal origin.⁸ Despite a decrease in the overall incidence of HNCs, the incidence of oropharyngeal cancer has markedly increased over the last 2 decades, and this phenomenon is largely due to increasing HPV infections.⁹

Over the past years, there has been a noticeable increase in health campaigns across the Kingdom of Saudi Arabia. These campaigns usually take place in shopping malls and venues where families spend their free time. Due to the preventability of HNCs by avoidance of risk factors and management in its early stages, enhancing the knowledge and awareness of the Saudi public would benefit both primary and secondary prevention of HNCs. However, there is a lack of studies assessing the level of awareness among the Saudi population regarding HNCs. This study aims to address this gap in knowledge by providing data and an analysis of the status of awareness among our sample. Our findings would serve as a building block and benchmark for future studies and help health committees in the country to develop and implement new tools to prevent HNCs.

Methods. In this questionnaire-based cross-sectional study, we adopted the questionnaire by Luryi et al⁶ with modification. The study was approved by the review board of Prince Sattam Bin Abdulaziz

University, Al Kharj, Saudi Arabia. We administered the questionnaire from August 2018 to August 2019. We used SurveyMonkey to deliver the survey online to a wide range of regions in Saudi Arabia through social media platforms. The questionnaire included individuals' demographic information, social habits, and knowledge on HNCs and how it relates to HPV. Demographic information included gender, age, regions of residence, and educational status. The questionnaire's knowledge section addressed the self-reported level of knowledge regarding HNCs, their types, and the most common risk factors. Additionally, we also addressed HPV and its vaccine to check the level of awareness of this issue. The number of respondents was 3171. We excluded healthcare professionals because these individuals have a better understanding of the subject compared to the general population. We also excluded respondents outside of Saudi Arabia.

Statistical analysis. Data were analyzed using statistical software IBM SPSS version 21 (IBM Corp. Armonk, NY, USA). Descriptive analyses with calculated measures of central tendency and variation were computed, along with frequency tables for categorical variables. We considered demographic and social habits (example, smoking and alcohol usage) variables as correlates and knowledge variables as outcomes. Pearson's χ^2 and t-tests were used to determine the significance of association between these variables. We considered a *p*-value of <0.05 to be statistically significant.

Results. A total of 3171 respondents were surveyed regarding their knowledge of HNCs. Over half of the respondents were male (54%) and ages 18 to 29 years old (67.4%). Regarding lifestyle, 77.4% of respondents were non-smokers, and 96.3% of them did not consume alcohol. **Table 1** shows the demographics of the respondents.

Most of the respondents did not consider themselves to be knowledgeable of the subject (n=1564). No significant association was seen between perceived knowledge and alcohol consumption (*p*=0.053) or tobacco use (*p*=0.779). Gender (*p*<0.001), marital status (*p*=0.003), education (*p*=0.001), and age (*p*=0.041) were found to be significantly associated with knowledge on HNCs.

Figure 1 shows that few of the respondents knew the different types of cancers included in HNCs. Almost two-thirds (61.2%) of respondents incorrectly included brain cancer as an HNC. The questions on symptoms of HNCs in **Figure 2** shows that over half of respondents (57.8%) incorrectly stated that headaches

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Table 1 - Respondent's demographic characteristics (N=3171).

Characteristics	n (%)
<i>Working in health care sector?</i>	
No	2347 (74.0)
Yes	824 (26.0)
<i>Gender</i>	
Female	1078 (46.0)
Male	1263 (54.0)
<i>Age</i>	
29 and Below	1578 (67.4)
30 to 49	669 (28.6)
50 and Above	94 (4.0)
<i>Marital status</i>	
Single	1486 (63.5)
Married	797 (34.0)
Divorce	41 (1.8)
Widow	17 (0.7)
<i>Region</i>	
Middle	1023 (43.7)
Western	457 (19.5)
Eastern	552 (23.6)
North	167 (7.1)
South	142 (6.1)
<i>Education</i>	
Diploma and below	1161 (49.6)
Bachelor degree and higher	1180 (50.4)
<i>Are you a smoker</i>	
Current user	415 (17.7)
Not a user	1813 (77.4)
Former smoker	113 (4.8)
<i>Do you consume alcohol</i>	
No	2254 (96.3)
Yes	87 (3.7)
<i>Knowledge about head and neck cancer</i>	
Not at all knowledgeable	1564 (66.8)
Not very knowledgeable	565 (24.1)
Somewhat knowledgeable	161 (6.9)
Very knowledgeable	40 (1.7)
Extremely knowledgeable	11 (0.5)

were not a symptom, while less than one-quarter recognize their pain (19.4%) or a sore throat (16.9%) as symptom. The knowledge of risk factors involved in HNCs, specifically tobacco and excessive alcohol consumption, were shown to be significantly different depending on gender ($p=0.002$), marital status ($p=0.006$), education ($p=0.007$), and age ($p=0.037$) (Table 2). Likewise, the knowledge of HPV infection varied significantly by gender ($p=0.003$), marital status ($p=0.005$), education ($p=0.002$), and age ($p=0.036$). No significant differences were seen for the risk factor of prolonged exposure to the sun based on demographics. Furthermore, the results showed that males (81%) had better knowledge regarding tobacco and excessive alcohol use as risk factors, while females (21.8%) were more knowledgeable on HPV infection as a risk factor.

Respondents who were single (80.3%) had better knowledge regarding tobacco and excessive alcohol use as a risk factor, while those who were divorced (29.3%) were more knowledgeable on HPV infection as a risk factor. Additionally, respondents who had a diploma (82.6%) had more knowledge regarding tobacco and excessive alcohol use as a risk factor. Older respondents (88.9%) were more aware in using tobacco and excessive alcohol are risk factors for developing HNCs (Table 3).

Knowledge of the relationship between HPV and HNC was shown to be significantly associated with marital status ($p=0.018$), specifically for those who were widowed (11.8%). However, no significant association was seen regarding the knowledge of a vaccine against HPV based on demographics.

Discussion. Most cases of HNC are detected at later stages owing to various factors. A common reason is

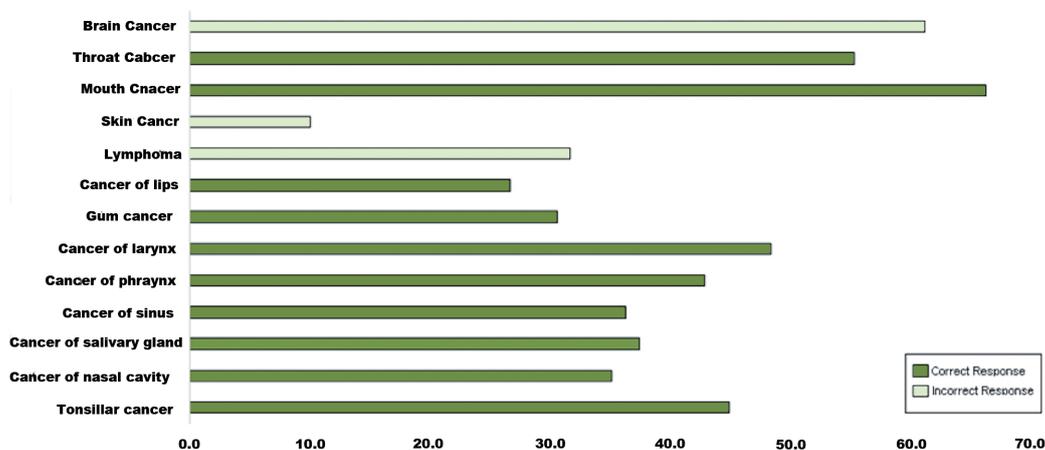


Figure 1 - Respondents' knowledge of cancers, including oral, head, and neck cancers.

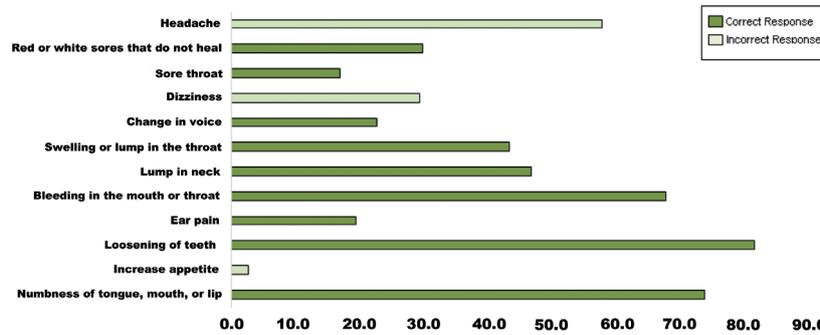


Figure 2 - Respondents' knowledge of the symptoms associated with oral, head, and neck cancers.

Table 2 - Respondent awareness of risk factors of head and neck cancer.

Characteristics	Tobacco and excessive alcohol consumption		HPV Infection		Prolonged exposure in the sun	
	%	p-value	%	p-value	%	p-value
<i>Gender</i>						
Female	75.7	0.002	21.8	0.003	2.5	0.390
Male	81.0		17.0		2.0	
<i>Age</i>						
29 and Below	80.2	0.018	17.6	0.013	2.2	0.997
30 to 49	75.0		22.7		2.2	
50 and Above	75.5		22.3		2.1	
<i>Marital Status</i>						
Single	80.3	0.039	17.4	0.019	2.2	0.575
Married	75.7		22.1		2.3	
Divorce	70.7		29.3		0.0	
Widow	76.5		17.6		5.9	
<i>Region</i>						
Middle	79.2	0.671	19.2	0.963	1.7	0.085
Western	79.2		18.4		2.4	
Eastern	76.4		19.9		3.6	
North	77.8		20.4		1.8	
South	81.0		18.3		0.7	
<i>Education</i>						
Diploma and below	81.3	0.001	16.3	0.000	2.4	0.535
Bachelor degree and higher	75.8		22.1		2.0	

HPV: human papilloma virus

that patients cannot identify the early signs of HNCs.¹⁰ Therefore, improving the knowledge, awareness, and attitude of the general population towards HNCs will ameliorate cancer prognosis and allow for earlier diagnosis. Studies investigating awareness and knowledge of this topic among the general Saudi population are scarce. Herein, we shed light on this public health concern through a population-based analysis. The analysis revealed that most of the study respondents were not knowledgeable on HNCs. Most participants incorrectly believed that headache is not a symptom. In terms of the risk factors, males showed higher awareness of tobacco and excessive alcohol as

risk factors, while females were more knowledgeable on HPV infection.

In our study, there was an alarming number of subjects who perceived themselves as having poor knowledge of HNC (66.8%). It is noteworthy that various countries have shown low rates of awareness regarding HNCs, such as Jordan (45.6%) and the United Kingdom (56%).¹¹ In contrast, some countries have reported higher rates of awareness, including Australia (79%), Sri Lanka (95%), the United States (84.5%), and Yemen (71.5%).^{12,13} It has been noted that the level of public awareness is higher in regions where

Table 3 - Respondent knowledge of *Human Papillomavirus* and its relationship to head and neck cancer.

Characteristics	Virus HPV that causes cervical cancer is also associated with throat cancer		Did you know that there is a vaccine against the virus HPV?	
	%	<i>p</i> -value	%	<i>p</i> -value
<i>Gender</i>				
Female	4.9	0.459	7.1	0.312
Male	4.3		6.0	
<i>Age</i>				
29 and below	4.2	0.241	6.5	0.995
30 to 49	5.7		6.4	
50 and above	3.2		6.4	
<i>Marital Status</i>				
Single	3.8	0.090	6.6	0.986
Married	5.8		6.3	
Divorce	4.9		7.3	
Widow	11.8		5.9	
<i>Region</i>				
Middle	3.7	0.272	6.4	0.532
Western	4.4		6.1	
Eastern	5.6		6.0	
North	4.8		7.2	
South	7.0		9.9	
<i>Education</i>				
Diploma and below	4.3	0.544	6.4	0.817
Bachelor degree and higher	4.8		6.6	

HPV: human papilloma virus

HNCs are prevalent, such as India and Sri Lanka.^{12,13} It is plausible that the low level of knowledge and awareness in Saudi Arabia is due to the relative rarity of HNCs as well as insufficient public health education.¹⁴

Notably, our analysis revealed that 57.8% of study respondents incorrectly stated that headaches are not a symptom of HNCs, and only 19.4% appropriately recognize their pain and sore throat as symptoms. In 2015, a similar study showed that Saudi people have very low knowledge concerning identification of clinical features of HNCs.¹⁴ The authors deduced that less than 25% recognized red or white patches as early signs of oral cancer, while only 30% were aware that a non-healing ulcer was a symptom of cancer.¹⁴ Interestingly, similar findings have been observed in other countries, which indicates a lack of information provided by healthcare professionals.^{13,15,16} Of note, the lack of general recognition of the early signs of HNCs could prevent disease diagnosis and affect overall survival. Therefore, enhancing the general public's education and sensibility towards HNCs will allow for prompt diagnosis and effective management.¹⁷

Our study revealed that there was insufficient knowledge concerning HNC risk factors. Alcohol and tobacco use were identified as potential risk factors by most of the study participants, while a smaller

percentage were aware of the risks of HPV and sun exposure. This is consistent with a similar study that was conducted in Saudi Arabia, wherein 80% of the respondents recognized tobacco use as a risk factor, and only a small number were aware of the risk of old age, alcohol consumption, and sun exposure.¹⁴ Similarly, previous reports have shown that there is a higher general knowledge of tobacco as a risk factor in comparison with other possible risk factors.^{11,13} We hypothesize that the greater knowledge of tobacco use as a risk factor could be attributed to campaigns warning of the various dangers of smoking. This may support the promising role of similar campaigns to raise awareness of other potential negligent risk factors.

Several baseline demographics may affect the general knowledge and awareness of HNCs. In our study, older respondents were more aware of tobacco use and alcohol consumption as potential risk factors of HNCs. In addition, males had greater knowledge regarding tobacco use and excessive alcohol use as risk factors, while females were more knowledgeable of HPV infection as a possible risk factor. It has been reported by multiple studies that the level of knowledge on HNCs was affected by age and gender.^{11,14,18} However, in a published study, the authors reported no significant differences in the knowledge level between

different age groups.¹⁴ Furthermore, participants with a diploma had greater knowledge regarding tobacco and excessive alcohol use as a potential risk factor. Similarly, in a Saudi study, there was a significant association between the level of knowledge and education status ($p < 0.01$). Participants who had completed high school or university had the greatest knowledge levels, while illiterate respondents had the lowest knowledge scores.¹⁴ In addition, these findings were supported by the results of different studies.^{11,13,18} While this study included a large number of respondents, future large-scale studies are recommended to allow for further generalizability and reliability of our findings. Another limitation that may manipulate the study results was the format of the questions; different word selection may alter the meaning. Nonetheless, this study highlighted and provided basic data for one of the major public health concerns.

In conclusion, this study revealed that there was a lack of knowledge and awareness of the clinical features and risk factors of HNCs among the Saudi population. Thus, public health authorities are urged to introduce prompt preventive measures, such as periodic screening programs for HNCs. In addition, public educational campaigns would aid in enhancing knowledge and understanding of HNCs among the Saudi population.

Further and more importantly, mass media educational programs should promote public awareness of HNCs through television, radio, and newspapers. Such recommendations could assure earlier identification of HNCs among the general population as well as improve disease survival and treatment outcomes.

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