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ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PRACTICES REGARDING ORAL CANCER AWARENESS AMONG DENTISTS IN PESHAWAR PAKISTAN

Kainat Khan Durrani
Student at City University of Science and Information Technology
Ishmal Jameel
Student at City University of Science and Information Technology
Faiqa Ajmal
Student at City University of Science and Information Technology
Eisa Khan
Student at City University of Science and Information Technology
Khadija Rehman
Lecturer at City University of Science and Information Technology
Dr. Ruqia Hayat
Lecturer at City University of Science and Information Technology

Author Details

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Corresponding E-mails & Authors*:
Dr. Ruqia Hayat
ruqiahayat48@gmail.com

Abstract

Introduction

Globally, oral cancer is emerging as an essential health issue for the public.It‘s a crippling illness that can significantly impair a quality of life for patients by affecting it’s emotional, functional, and economical well-being.Oral cancer is the 13th most common disease globally, with estimated 377,713 new cases and 177,757 fatalities in 2020.

Objective

To assess the level of Knowledge, Attitude, and Practices Regarding Oral Cancer Awareness among Dentists in Peshawar Pakistan.

Material and Methods

A cross-sectional Descriptive study has been applied among Dentists in different teaching hospitals in Peshawar pakistan. The survey was answered by a total of 235 dentists. The

predesigned questionnaire was used for this study.The data were analyzed using IBM SPSS version 24.

Result

Although 99.1% being aware of oral cancer, only 64.3% accurately determined that it might emerge without any initial symptoms, indicating a severe knowledge gap in early detection. Only 61.7% of participants said they routinely checked patients for symptoms of oral cancer. In linear regression analysis years of experience were found to substantially predict higher knowledge scores ($\beta = 2.073$, $p < 0.001$), showing the importance of practical exposure in raising awareness of oral cancer.

Conclusion

The finding showed that dentists with two years of experience displayed much greater knowledge and confidence than those with only one year. Attitudes toward diagnosing oral cancer were moderate, while preventive practices, such as routine oral cancer screening and lymph node check, were not universally followed, with approximately 38% of respondents failing to take these critical steps, indicating a knowledge-practice gap.

INTRODUCTION

The term "oral cancer" describes malignant neoplasms that arise in the mouth, which includes the mucous membrane of the cheek cavity, the front two-thirds of the tongue, the lip, palate, vestibule, alveolus, floor of the mouth, and gums. Oral cancer is becoming a major healthcare issue on a global scale. Because it affects a patient's feelings, functional, and financial well-being, it is a debilitating illness that can drastically lower their quality of life. In 2020, there had been an estimated 377,713 new cases. of oral cancer and 177,757 deaths, ranking it the 13th most frequent disease globally. This particular kind of cancer can grow to many different areas of the mouth. It starts as for white, pain free lesion that swells, turns red, as well as becomes ulcerative. It usually manifests on the lips as a chronic, non-healing ulcer that progressively gets bigger gradually. Oral cancer symptoms include lip numbness, neck swelling, odynophagia, and dysphagia. For the best treatment success and early detection, it is imperative to recognize these indications.

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According to data from the International Agency for Research on Cancer, lip and oral cavity cancer ranks 16th in terms of incidence and mortality worldwide.On an annual basis, some 400,000 new cases of OC are discovered worldwide, with an excessively high proportion of these cases occurring in Asian nations. Nearly two out of three, these take place in Asia's south and east, particularly in Bangladesh, India, Pakistan, Sri Lanka, and Indonesia, according to the World Health Organization (WHO). Most often, oral squamous cell carcinoma (OSCC) appears over floor of the mouth (30%) or the tongue's lateral border (40%) and the lower lip (30%) may be impacted. Oral cavity cancer (OCC) is a crippling condition that is comparatively common and deadly in low- and middle-income countries like Pakistan. The most recent worldwide estimates indicate that in 2022 alone, there were 389,485 new cases and 188,230 deaths. By 2040, it is projected that these numbers will only rise as the incidence rises by as much as 40%. Chewing betel quid and tobacco in the form of "Ghutka" is a common practice in Pakistan.According to a research study performed in Karachi, Pakistan, the greatest instances of OCC consisted of male patients in their forties from a low socioeconomic status with a history of tobacco-using habits.

The aim of the study is to assess the knowledge attitude and practices regarding oral cancer in dentists of Peshawar, Pakistan. there is an increase in oral cancer cases and despite the burden the healthcare force is limited in the prevention of new cases.

METHODS AND METHODOLOGY

A cross-sectional Descriptive study has been applied among Dentists in different teaching hospitals in Peshawar pakistan. A Non-probability convenience sampling is a method of selecting participants based on their ease of access and convenience rather than at random. Participants were chosen based on their availability and accessibility and those were included who gave verbal consent.Verbal consent has been approved by the Ethical Committee.The survey was answered by a total of 235 dentists. The predesigned questionnaire was used for this study.The data were analyzed using IBM SPSS version 24.The chi square test was used to analyzed the difference in

oral cancer awareness between newly graduated Dentists of one year of practice and two years of practice.

QUESTIONNAIRE

The Questionnaire has been made by modifying Questions from Gunjal and shilpa et al.The Questionnaire was written in English language and consisted of total of 24 questions.The questionnaire was divided into five sections, which included participants'demographics (age ,gender,and year of practice), and questions related to knowledge (six items),sign and symptoms (eight items), attitude (five items) and practice (five items). responses were given as yes , no , and do not know.

Statistical Analysis

The statistical analysis has been conducted using SPSS version 24 program. The numerical variables like age were represented by mean and standard deviation. While catagorical variables like gender, year of practice, knowledge, attitude, and practices were represented by frequiences and percentages. Each correct response has been assigned a "one" value, whilst each erroneous response has been granted a "zero" score for the questions in the survey. Ultimately, the proportion of correct responses to any given question affected both group and individual outcomes. The Chi-square test was applied between categorical variables like year of practice to different questions in the questionnaire. Linear regression was used to predict the variables like knowledge and attitude and practices. A p-value of 0.05 and less is considered significant.

RESULTS

Among 235 participants, there were different age groups (22-29) participated in the survey,in which the most frequent age group was 25 (23.0%) and minimum age group was 22 (3.8%)and maximum age group was 29.A total 235 participants, there were (50.2%) of the males contributed and (49.4%) of females contributed in this survey.Out of 235 participants, there were 113(48.1%) with one year of practice and 122(51.9%) with two years of practice. Based on the results obtained, dentists with two years of practice had a greater degree of awareness, knowledge, attitude, and

practices addressing oral cancer compared to dentists with one year of practice.The value of mean is (25.34) .

Table 1 General characteristics of the participants

Table 1 General characteristics of the participants		
Characteristics	**Participants n (%)**	**Percentages**
Age		
22	9	3.8%
23	25	10.6%
24	48	20.4%
25	54	23.0%
26	38	16.2%
27	27	11.5%
28	22	9.4%
29	12	5.1%
Gender		
Male	119	50.6%
Female	116	49.4%
Year of practice		
1 year of practice	113	48.1
2 year of practice	122	51.9%

Oral cancer awareness was high among both groups, with almost 99% of 1- and 2-year dentists having heard of it (p-value = 1.000). There was no significant difference in understanding of prevention (93%) and therapy (91% versus 93%) (p = 1.000 and 0.529, respectively). Dentists with 2 years of experience were more likely to realize that oral cancer risk increases with age (76.2 % vs 63.7%; p = 0.450). However, this difference was not statistically significant. However, large gaps (p < 0.001) found in: Recognition of oral cancer's spread (87.7% vs 64.6%). Two-year dentists identified white lesions at a considerably higher rate (95.9% vs 85.0%; p = 0.010).

There were no significant differences in the recognition of red lesions (p = 0.228), mixed white-red ulcers (p = 0.125), swelling, non-healing ulcers > 2 weeks (p = 0.070), or numbness (p = 0.136). These p-values exceed the standard criterion of p < 0.05, indicating no statistical difference between groups.

In standard hypothesis testing, a p-value below 0.05 indicates that the observed difference is unlikely attributable to chance, implying a true difference, whereas values above this fail to reject the null hypothesis of no group difference.

Table 2 General Knowledge of the respondents regarding signs and symptoms of oral cancer

Table 2	**1 Year of Practice**		**2 Years of Practice**		
	No (%)	**Yes (%)**	**No (%)**	**Yes (%)**	**P-Value**
Have you heard of oral cancer?	1(0.8%)	112(99.11%)	1(0.8%)	121(99.1%)	1.000
Is oral cancer preventable?	8(7.0%)	105(92.9%)	8(6.5%)	114(93.4%)	1.000
Is oral cancer treatable?	9(7.96%)	103(91.1%)	8(6.5%)	114(93.4%)	0.529
Does oral cancer with	41(36.2%)	72(63.7%)	29(23.7%)	93(76.2%)	0.045

age?					
Does oral cancer spread to other parts of the body?	40(35.3%)	73(64.6%)	15(12.2%)	107(87.7%)	0.000
Do you know the various ways of detecting oral cancer?	34(30.0%)	79(69.9%)	17(13.9%)	105(86.0%)	0.004
Can oral cancer manifest without initial symptoms?	59(52.2%)	54(47.7%)	25(9.8%)	97(79.5%)	0.000
Can oral cancer appear as red lesion?	16(14.1%)	97(85.8%)	11(9.0%)	111(90.9%)	0.228
Can oral cancer appear as white lesion?	16(14.1%)	97(85%)	5(4.0%)	117(95.9%)	0.010
Can oral cancer appear as a mixture of white and red lesions?	8(72.0%)	105(92.9%)	3(2.4%)	119(97.5%)	0.125
Is swelling a sign or symptom of oral cancer?	21(18.5%)	92((81.4%)	19(15.5%)	103(84.4%)	0.604
Is an ulcer that does not heal for more than 2 weeks a sign of oral cancer?	28(24.7%)	85(75.2%)	18(14.7%)	104(85.2%)	0.070
Is numbness of the	34(30.0%)	79(69.9%)	26(21.3%)	96(78.6%)	0.136

tongue or other mouth areas a sign of oral cancer?					

When we asked about the have you heard the hazardous factors of OC from 1year of practice they responded as tobacco use 20(17.6%);alcohal consumption 16(14.1%);betal quid chewing 6(5.3%);human papilloma virus 2(1.7%);poor oral hygiene 15(13.2%);exposure of sunlight 8(7.0%); all of them 46(40.7)When we asked about the have you heard the dangerous factors of OC from 2 year of practice they responded as tobacco use 14(11.4%);alcohal consumption 11(9.0%);betal quid chewing 8(6.55%);human papilloma virus 8(6.55%);poor oral hygiene 3(2.4%);exposure of sunlight 13(10.6%); all of them 65(53.2%).

Table 3 Knowledge of the respondents regarding risk factors of oral cancer are the following risk factors for oral cancer?

Table 3 Risk Factors		**1 Year of Practice**	**2 Years of Practice**	**P-Value**
Have you heard of oral cancer?	Tobacco use	20(17.6%)	14(11.4%)	0.006
	Alcohol consumption	16(14.1%)	11(9.0%)	
	Betel quid chewing	6(5.3%)	8(6.55%)	
	Human papilloma Virus	2(1.7%)	8(6.55%)	
	Poor oral hygiene	15(13.2%)	3(2.4%)	
	Exposure of sunlight	8(7.0%)	13(10.6%)	
	All of them	46(40.7%)	65(53.2%)	

When we asked about do you feel competent to detect oral cancer the 1year of practice responded as 40(35.3%) No, and 73(64.6%) Yes , and 2 year of practice responded as 35(28.6%) No,and 85(69.6%) Yes.When we asked about will you seek an OC screening

your self the first year practice responded as 27(23.8%) No,and 86(76.1%) Yes and 2 year of practice responded as 25(20.4%) No,and 97(79.5%)as Yes. When we asked about would you recommend family and friends for routine oral cancer screening the 1 year of practice responded as 16(14.1%) No, and 97(85.8%) Yes and the 2 year of practice responded as 12(9.8%) no, and 110(90.1%) yesWhen we asked about do you feel oral cancer awareness campaign are effective the 1year of practice they responded as 3(2.6%) No, and 110(97.3%) Yes and 2 year of practice they responded as 5(4.0%) No, and 117(95.9%) Yes.When we asked about would you believe that additional OC awareness programs should be conducted the 1 year of practice they responded as 7(6.1%) No,106(93.8%) as Yes and the 2 year of practice they responded as 9(7.3%) No,and 113 (92.6%) Yes.

Table 4 Attitude of the respondenters towards oral cancer

Table 4	**1 Year of Practice**		**2 Years of Practice**		
	No (%)	**Yes (%)**	**No (%)**	**Yes (%)**	**P-Value**
Do you feel competent to detect oral cancer?	40(35.3%)	73(64.6%)	35(28.6%)	85(69.6%)	0.327
Would you go for a screening for oral cancer yourself?	27(23.8%)	86(76.1%)	25(20.4%)	97(79.5%)	0.535
Would you recommend family and friends for routine oral cancer screening?	16(14.1%)	97(85.8%)	12(9.8%)	110(90.1%)	0.322

Do you feel oral cancer awareness campaigns are effective?	3(2.6%)	110(97.3%)	5(4.0%)	117(95.9%)	0.723
Do you believe more oral cancer awareness campaigns should be carried out?	7(6.1%)	106(93.8%)	9(7.3%)	113(92.6%)	0.799

When we asked about do you examine patients for sign of oral cancer from 1 year of practice they responded as 45(39.8%) No and as 68(60.1%) Yes we asked this question from 2 year of practice they responded as 45(36.8%) No and as 77% Yes with p-value(.688) when we asked you do record the patient tobacco or alcohal use in their history from 1 year of practice they responded as 12(10.6%) No and 101(89.3%) Yes and wehen we asked from 2 year of practice they responded as 10(8.1%) No and 111(90.9%) Yes. When we asked you have ever informed patient about risk factor of oral cancer from 1year of practice they responded as 9(7.9%) No and 104(92.0%) Yes. When we asked from 2 year of practice they responded as 16(13.1%) No and 106(86.8%) Yes. When we asked you advised patient to avoid these risk factors from 1year of practice they responded as 5(4.42%) No and as 108(95.5%) Yes. And when we asked from 2 year of practice they responded as 11(9.0%) No and as 111(90.9%) Yes. When we asked about would you inspect the head and neck lymph nodes for suspicious cases from 1 year of practice they responded as 10(8.8%) No and 103(91.1%) Yes and when we asked fron 2 year of practice they responded as 6(4.9%) No and 116(95.08%) Yes.

Table 5 Practices of the respondents towards oral cancer

Table 5	**1 Year of Practice**		**2 Years of Practice**		
	No (%)	**Yes (%)**	**No %(%)**	**Yes (%)**	**P-Value**

Do you routinely examine patients for signs of oral cancer?	45(39.8%)	68(60.1%)	45(36.8%)	77(%)	0.688
Do you record patient's tobacco or alcohol use in their history?	12(10.6%)	101(89.3%)	10(8.1%)	111(90.9%)	0.519
Have you ever informed patients about the risk factor for oral cancer?	9(7.9%)	104(92.0%)	16(13.1%)	106(86.8%)	0.213
Have you advised patients to avoid these risk factor?	5(4.42%)	108(95.5%)	11(9.0%)	111(90.9%)	0.200
Do you examine head and neck lymph nodes for suspicious cases?	10(8.8%)	103(91.1%)	6(4.9%)	116(95.08%)	0.302

Knowledge and age are significantly correlated negatively (p =0.001). Knowledge tends to slightly decline with age.Our sample's knowledge is not significantly predicted by this variable.Years of Experience: Significantly improves knowledge (p =0.000). Higher knowledge is correlated with more years of experience.

Table 6 Linear Regression towards knowladge

MODEL	B	P-VALUE	95.0%CI
CONSTANT	25.404	0.000	18.405 to 32.403

AGE	-.479	0.001	-.755 to -.203
GENDER	**-.**366	0.459	-1.339 to .606
YEAR OF PRACTICE	2.073	0.000	1.093 to 3.052

Age (p =0.056, B = -0.068).Interpretation: Keeping all other factors equal, it is projected that attitude will drop by 0.068 units for every year that age increases.**:** This is near (p =0.056) but marginally non-significant at the p <.05 level. It might point to a pattern older people might be a little less optimistic but it's not definitive.Gender (p =0.147, B = 0.182)Interpretation**:** The expected attitude score rises by 0.182 units in comparison to the reference gender, which is probably either male or female based on coding.Not significant**:** Gender does not seem to be a major predictor of attitude in this model, as this effect is not statistically significant (p =0.147).Years of practice (B = 0.134, p =.289).Interpretation**:** After adjusting for age and gender, there is a 0.134 unit rise in attitude score for every extra year of practice.This effect is not statistically significant, as indicated by p =0.289.

Table 7 Linear regression toward attitude

MODEL	B	P-VALUE	95.0%CI
CONSTANT	5.486	0.000	3.714 to 7.258
AGE	-.068	0.056	-.138 to .002
GENDER	.182	0.147	-.064 to .428
YEAR OF PRACTICE	.134	0.289	-.114 to .382

Age (p =.809, B = -0.011)

Interpretation**:** Keeping all other factors equal, the expected Practices score falls by 0.011 for every extra year of age. Not significant in terms of statistics (p =0.809). Practices are not strongly predicted by age. Gender (p =0.384, B = -0.134). The Practices score is 0.134 lower than the reference gender, which is often either male or female depending on the coding. Not significant in terms of statistics (p =.384). Practices are not strongly predicted by gender. Practice Years (B = 0.096, p =0.537). The Practices score rises by 0.096 for every extra year of practice. Not significant in terms of statistics (p =0.537). Practices are not greatly impacted by this prediction.

Table 8 Linear Regression Towards Practice

MODEL	B	P-VALUE	95.0%CI
CONSTANT	4.647	0.000	2.462 to 6.833
AGE	-.011	0.809	-.097 to .076
GENDER	-.134	0.384	-.438 to .169
YEAR OF PRACTICE	.096	0.537	-.210 to .402

DISCUSSION

Oral cancer is among the most frequent diseases of the mouth, this particular kind of cancer can grow into many different areas of the mouth. It starts with a white, harmless ulcer which swells, turns red and then becomes ulcerative .it usually manifests on the lips as a chronic , non-healing ulcer which swells,turns red and become ulcerative.It usually manifests on the lips as a chronic ,non healing ulcer that progressively get bigger gradually.

This is cross-sectional descriptive study was undertaken among freshly graduated dentists with one and two years of experiences of different teaching hospitals in peshawar like Sardar Begum Dental College , Khyber College of Dentistry , and Rehman College of Dentistry.

This study explored dental practitioners' knowledge, attitudes, and practices (KAP) associated to OC. The results of the survey show that participants have a generally significant amount of knowledge; yet, some gaps remain, such as clinical practice and a better grasp of risk factors and symptoms.

The study population included 235 dentists, most of them (23.0%) were under the age of 25, and their age group was equally divided. More than half (57%) had two years of clinical experience. Particularly, individuals with two years of experience showed higher levels of knowledge, awareness, and positive attitudes related to oral cancer, showing that clinical exposure supports proficiency in cancer diagnosis and treatment.

In our study over 90% of dental practitioners acknowledged oral cancer as preventable and treatable, with approximately 78% understanding several methods of detection.While a similar study found out Kuwait's recently graduated dentists revealed high levels of awareness , with 95.8% recognizing tobacco and alcohol are significant hazards, Primary care dentists also shown practically universal recognition of risk factors.

In our study when we questioned concerning danger indicators for OC from dental practitioners the responses has been ;34% of participants gave a positive responding se for tobacco usage ;27% of alcohol consumption ;18% poor oral hygiene ;14% betel quid chewing ;10% human papilloma virus, Similar to previous studies conducted in marmara university (Wimardhani et al., 2021)this study and over study risk factors are same but the percentages are different ;tobacco (98.8%) ;alcohol usage (91.2%) ;betal quid chewing (80.6%) ;viral infection(90.0%).

In our study we asked about various ways of early detection most of dentist do not know about various ways of early detection they responses has been ;(4.7%) similar to previous study but their percentages are different from our study that was conducted in jakarta indonesia (Wimardhani et al., 2021) this study assessed initial identification of OC is;(10%) initial prevention of OC is an important factor in assessing the illness outcome and dentists have a greater likelihood identifying it.it is cruical for dentist to have strong understanding attitude and practice foe early detection for OC.

Although 47.2% of the dentists noticed each of the six primary risk factors, others identified them in varying degrees. These results are congruent with research in Turkey and Palestine, where awareness of tobacco/alcohol was high (about 85-94%), but other variables including sun exposure and HPV were lower recognized.

In our study when we asked about OC expanded to other areas of the body (metastasis) they response has been (13.2%) according to previous study conducted in jakarta Indonesia half of the dentist had no knowledge about the sign of OC spread to other parts of the body(metastasis).

In our study when the dental practitoners asked about Precancerous lesions (such as red and white lesions) about they converted into cancer while dentists show positive response 88.5% red lesion , 90.6% white lesions and 95.3% mixture of red and white lesions while similar study found out that there dentists did not know about these lesions 30.1% that study was conducted in jakarta Indonesia.**Error! Bookmark not defined.** Having the capacity to identify OC lesions at an early stage will aid in avoiding specialist delays. A large proportion of responders correctly detected red/white lesions, mixed lesions, edema, non-healing ulcers, and numbness (74-95%). while similar study found out data from Turkey, where most dentists correctly detected non-healing ulcers and mixed red/white lesions, and Egypt, where more than 82% recognized common malignant lesions.

Perspectives were extremely positive, with 68% considered competent, 78% agreeing to be screened, and more than 93% recommending screening and awareness efforts. Screening intentions were much higher ($p = .026$), reflecting the expressive attitude reported in Kuwait, where 81% would frequently identify suspected cases. Elderly students in Palestine likewise shown excellent understanding of the need of earlier identification.

In our study found out that two-year experienced dentists perform better than their one-year colleagues , supported by larger research: Yemeni 5th-year students outperformed 4th-year pupils, while Egypt demonstrated a correlation between experience, knowledge, and practice.

In our study most of the responses from dentists is significant ; .004% as OC travels to other regions of body ; .000% as many forms of oral OC , 001% as swelling as sign or symptom of oral cancer; .018% as a wound that fails to subside after more than two weeks is an indication of OC ; .004% as paresthesia or other oral area is a manifestation of oral cancer .In this study dental

professionals were lacking adequate level of understanding about the above mentioned variables which are the most important factors that every dental practioners should know about , as dental practitoners play important role in our routinely dental check ups so they must have enough amount of knowledge and awareness about these factors and also they should educate the patients about these factors and should provide adaquate level of awareness to their patients to detect and diagnose oral cancer at earlier stage and prevented oral cancer at initial stage.

CONCLUSION

This study investigated the degree of knowledge, attitude, and practices (KAP) about oral cancer awareness among freshly graduated dentists in Peshawar. The findings show that, while public awareness of oral cancer is high, there is significant variance based on clinical experience. Dentists with two years of experience displayed much greater knowledge and confidence than those with only one year. Although a high degree of awareness, noticeable limitations exist in certain knowledge areas such as early indications (e.g., non-healing ulcers, numbness) and risk factors (e.g., HPV, poor dental hygiene), particular among dentists with only one year of experience. Attitudes toward diagnosing oral cancer were moderate, with only roughly two-thirds of respondents feeling competent, emphasizing the necessity for additional clinical training throughout early career phases. Preventive practices, such as routine oral cancer screening and lymph node check, were not universally followed, with approximately 38% of respondents failing to take these critical steps, indicating a knowledge-practice gap. Regression analysis revealed a statistically significant positive relationship between years of experience and knowledge ratings, verifying clinical exposure's impact on oral cancer awareness.

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