Cross-Sectional Study

COGNIZANCE OF ORAL CANCER AMONGST MEDICAL STUDENTS IN MAHARASHTRA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Oral cancer is predicted to rank sixth globally in terms of cancer incidence, impacting nearly all homes and contributing to one in six fatalities. Physician knowledge of need to conduct proper oral exams is first line of defense against the development of this condition and its consequent cancers. Purpose of the present investigation is to assess medical students' awareness and general understanding of OC at rural hospital in central Maharashtra, India. 310 participants—including medical and dentistry students from all years—were sent invitation message that contained a URL link to the online survey. Cronbach's alpha value of 0.80 indicated that it had concept validity and internal consistency reliability. The demographic characteristics of age and gender were used to categorize respondents. Among the participants, 74.4% were female and 25.6% were male. Additionally, participants were examined across various age groups. The difference in opinions of responses was evaluated statistically for awareness among those posted in clinics as well as in preclinics. According to our survey, around 39% of respondents were vaccinated for HPV, and more females were aware of vaccination. In order to influence future work habits, this important training must begin in medical school. Research shows that because of a self-reported ignorance, majority of physicians do not regularly discuss HPV-positive HNC. It's also critical to look at how we are teaching the next generation of physicians about this pandemic. In order to diagnose, treat, and prevent OC, medical students pursuing separate specialization must be aware of and informed about disorder.

Key words: Oral cancer, Human papillomavirus, Squamous cell carcinoma, Medical professionals, Incidence

Introduction

About one out of every six fatalities worldwide is due to cancer, which also affects almost every family. Oral cancer is the sixth most common kind of cancer worldwide, with an estimated 9.7 million cancer-related deaths and 20 million new cases in 2022 [1]. It often appears as a new, unexplained sore or growth in the oral cavity, which includes the lips, sinuses, cheeks, tongue, palate, base of the mouth, and oropharynx [2]. An estimated 77,000 incident cases and 52,000 deaths from oral cancer occur in India each year, making up more than one-fourth of all cases worldwide [3].

Since oral cancer is one of the most prevalent illnesses in the nation, its increasing prevalence presents serious health risks to the populace. Oral cancer has a 68% five-year relative survival rate in developed countries [4]. On the other hand, it is much lower in India than in many wealthy countries, at about 50% after surgery and radiation therapy [5]. Despite making up just 0.32% of all cancer deaths globally, lip and oral cavity malignancies cause a broad range of survival rates, and those who survive frequently have major reductions in their quality of life [6]. Over the past thirty years, there has been a substantial shift in the disease burden of oral cancer. While the disease burden has decreased in high-income countries [7], it continues to be greater in low- and middle-income countries (LMICs) [8]. With one-third of all cases globally, India has the highest rate of oral cancer [9].

Incidence and death rates show significant regional variation. Tobacco, alcohol, and betel quid use are recognized risk factors for oral malignancies [10, 11], and the probability of developing the disease increases with exposure level and duration [12, 13]. Furthermore, especially in some parts of the world, human papillomavirus (HPV) infection was linked to an elevated danger of malignancies of the tonsil, oropharynx, and oral cavity [14]. In countries going through economic transformations, oral cancer also poses a serious public health danger [2], with socioeconomic status having a major impact on the disease load. Similar to lifestyle-related risk factors, lower socioeconomic levels might increase the incidence of oral cancer [15]. Patients' quality of life may be considerably reduced by the clinical signs and therapies of oral cancer. Despite the high prevalence of oral cancer in India, comprehensive data about the distribution and trends of risk factors at the federal and state levels is still noticeably lacking. A thorough and current assessment of the oral cancer burden is provided by the Global Burden of Disease (GBD) 2021 study, which uses information from vital registration systems and national and regional cancer registries. To customize health planning and set priorities for upcoming clinical treatment and research, it is necessary

to track the magnitude of this load and its demographic, regional, and temporal variations.

Significant differences in the trends of oral cancer were discovered between Indian states between 1990 and 2022, indicating the intricate interaction of socioeconomic and lifestyle variables. The age-standardized incidence rate increased by 31%, while the age-standardized death rate increased by 11.18%. These are noteworthy findings. This increasing tendency is associated with long-term high-risk activities including chewing betel quid, drinking alcohol, and using tobacco. Putting into practice strategies to lower prevalent risk, can be achieved by educating young medical and dental professionals who can aid in patient prevention and early diagnosis. They can also raise awareness among themselves about the importance of getting vaccinated against HPV, this increases the danger of mouth cancer in dentistry students and other health care workers.

Background

Oral cancer incidence by age, race, and sex

From the middle of the 2000s to the most recent National Cancer Institute study (2015–2019), the incidence rates of oral cancer for both sexes increased slightly but significantly. Over the past three decades, oral cancer incidence rates have dramatically declined among Black people of both sexes, particularly among males. The age-adjusted incidence rate for Black males (including Hispanics) has decreased from a peak of 31.5 cases (per 100,000) in 1987 to a low of 12.8 cases, but the rate for Black women (including Hispanics) has decreased from a peak of 12.8 cases (per 100,000) to 4.9 cases. However, according to the most recent projections (2015–2019), it rose from 10.6 in 2004 to 18.4 for Whites (including Hispanics) [16, 17]. Rates of oral cancer in adults of all ages, both male and female, as well as for certain racial and ethnic groupings, are shown in **Table 1**.

Oral cancer incidence

- Overall, 11.5 adults per 100,000 will develop oral cancer.
- Males are roughly three times more likely than females to get oral cancer at any age, making the incidence rate for males much higher than that of girls.
- White guys are more likely than Black and Hispanic males to develop oral cancer.
- As people age, mouth cancer becomes more common. After age 50, the rise picks up speed, especially for those 65 and older.

Table 1. Oral Cavity and Pharynx Cancer 5-year Incidence Rates by Age, Race, and Sex

Age-adjusted incidence rates of oral cancer in cases per 100,000, by selected characteristics, 2015–2019							
Race	**Sex**	**All Ages**	**<15 year**	**15-39 years**	**40-64 years**	**65-74 years**	**75+ years**
All Races	All	11.5	0.1	1.4	17.8	43.7	44.8
All Races	Male	17.4	0.1	1.6	27.1	68.9	67.3
All Races	Female	6.4	0.2	1.3	8.9	21.9	29.0
Non-Hispanic White	All	13.4	0.2	1.5	21.5	49.9	50.1
Non-Hispanic White	Male	20.3	0.1	1.7	33.0	78.1	74.9
Non-Hispanic White	Female	7.2	0.2	1.3	10.2	24.5	32.3
Non-Hispanic Black	All	8.6	0.2	1.3	14.1	31.7	27.5
Non-Hispanic Black	Male	13.2	0.2	1.4	21.2	52.9	45.0
Non-Hispanic Black	Female	5.0	-	1.2	8.1	16.1	17.4
Hispanic	All	7.1	0.1	0.9	9.5	28.1	32.4
Hispanic	Male	10.4	0.1	0.9	13.9	43.8	48.4
Hispanic	Female	4.3	0.2	0.9	5.3	15.1	21.6
Asian/Pacific Islander	All	8.6	-	2.2	14.0	26.8	29.5
Asian/Pacific Islander	Male	12.2	-	2.7	20.1	39.5	40.7
Asian/Pacific Islander	Female	5.7	-	1.8	8.7	16.5	21.4
American Indian/Alaska Native	All	11.0	0.0	1.6	1.2	39.4	33.3
American Indian/Alaska Native	Male	17.7	0.0	-	31.5	67.9	48.8
American Indian/Alaska Native	Female	5.4	0.0	-	8.1	16.5	22.7
White, includes Hispanic	All	12.1	0.1	1.3	18.7	46.7	47.8
White, includes Hispanic	Male	18.4	0.1	1.4	28.6	73.3	71.3

White, includes Hispanic	Female	6.6	0.2	1.2	9.0	23.0	30.9
Black, including Hispanic	All	8.3	0.2	1.3	13.6	31.1	27.2
Black, including Hispanic	Male	12.8	0.2	1.3	20.4	51.7	44.5
Black, including Hispanic	Female	4.9	-	1.2	7.8	15.8	17.2

Oral cancer and oropharyngeal cancers

There are two main subtypes of oral cancer (OC) and oropharyngeal cancer (OPC): HPV-positive OC and OPC, which result from an oral HPV STI, and HPV-negative OC and OPC, which are mostly linked to alcohol and tobacco use. OC and OPC, which comprise malignant neoplasms of the lips, oral cavity, and pharynx, are causing health systems worldwide to become more and more concerned [1, 2]. OPC and OC are among the top 10 malignancies in the globe [3]. Screening programs can identify most OCs in their early stages, which lowers treatment costs, improves quality of life, and lowers rates of morbidity and death [10].

Thus, the first line of defense in stopping the spread of this illness and its sequelae must be raising awareness among doctors and patients. One strategy to achieve this objective and enhance prediction is to increase the number of medical students so that they can do precise oral examinations. If future professional behaviors are to be changed, this crucial training must begin in medical school. Research indicates that the majority of doctors do not frequently talk about HPV-positive HNC because they self-report not knowing enough about it [13]. Examining how we are educating the next generation of doctors about this epidemic is also crucial. The diagnosis, treatment, and prevention of OC depend heavily on medical students' knowledge and comprehension of the disorder, especially those who will be dealing with it in a different specialty.

Thus, the purpose of the present investigation is to assess medical students' awareness and general understanding of OC at a rural hospital in central Maharashtra, India; observe how clinical years have impacted the students' understanding; pinpoint the awareness gap among medical students; and offer remedies.

Materials and Methods

Study design, setting, and participants

The Rural Dental College in Loni, Pravara Institute of Medical Sciences, conducted a descriptive, exploratory, anonymous cross-sectional survey with voluntary participation from medical and dental professionals. The information was gathered during March and April of 2025. Participants were free to leave the research at any moment.

To calculate the sample size, an online tool was utilized (https://epitools.ausvet.com.au/oneproportion). 300 students with a 95% confidence level and a 5% target precision was the optimal sample size. To make sure the necessary number of students were reached, the questionnaire was distributed by URL link to 600 randomly selected students. A total of 310 participants were medical and dentistry students from all years who were employed in pre-clinics and clinics at medical institutions in the Indian state of Maharashtra.

Age and gender were the demographic factors used to categorize the individuals. Of the participants, 25.6% were men and 74.4% were women. Additionally, the individuals were examined in three age groups: young people (22.20%), those aged 21–25 (70%), and those aged 26 and older (7.8%).

Participants received an invitation message that included a URL link to the online survey. The rate of reaction to the feedback was automatically recorded. Every response was anonymous. It took four to five minutes to complete the questionnaire. The survey's objective was described. During the survey's introduction, written informed consent was acquired; participation was completely optional, and participant confidentiality was maintained. In order to protect the privacy and identity of the participants, questionnaires were not sent to personal email addresses. The questionnaire was self-administered. A Cronbach's alpha value of 0.80 was used to assess its concept validity and internal consistency reliability. The current research satisfies all of the requirements of STROCSS 2021.

Tools of study

The English-language, structured self-administered survey. A professional evaluated the questionnaire, which was created utilizing questions from earlier research publications. Age, gender, education, preclinical or clinical posts, and smoking habits were among the " demographic questions" in the initial portion of the questionnaire. Five structured assessment items and "oral cancer basic knowledge" were included in the survey's second portion. There were three questions in the third segment, "risk factors," and five questions in the fourth section, "knowledge of the relation between HPV and OC." Participants were given a variety of alternatives to select from for every question.

The proportion of points earned by each student was used to compute their knowledge scores, with 100% representing the highest possible score.

By taking the average of each individual result, mean knowledge scores were determined. The Pravara Institute of Medical Sciences (Loni) Institutional Review Board (IRB) granted ethical permission for the study, and the number is PIMS/RDC/DR/25-0098.

Statistical analysis
SPSS Inc.'s Statistical Package for Social Sciences, version 25.0 (Chicago, IL, United States), was used to analyze the data. For categorical data, the data were displayed as frequencies and percentages; for continuous variables, the means, medians, and standard deviations (SD) were displayed. The Pearson chi-square test and the independent samples t-test were employed to evaluate the association between independent factors and mean knowledge scores. Statistical significance was determined by using P-values below 0.05.

Results and Discussion

Demographic characteristics
The present study was conducted for participants, pursuing a degree in medicine, comprised 42% while the other group was pursuing a degree in bachelor of dentistry which comprised 58%; within the age range of 18 to 30 years comprising both genders. The student's responses were evaluated for those who were posted in pre-clinics (comprised 49.7%) and those posted in the clinics (comprised 50.3%). The respondents were 70.9% in the age group 20 to 25 years, and 22.4 % were below the age of 20 years, the rest were above 25 years. The gender distribution was that 74.5% were females and 25.5% were males. Among these respondents, 87% were non-smokers.

Oral cancer basic knowledge
The second set of questionnaires involved basic knowledge about oral cancer among participants. The following set of 5 questions was asked and their responses were gathered detailed in **Table 2**.

Table 2. Responses for Oral Cancer Basic Knowledge Amongst Students Posted in Pre-Clinics and Clinics

Q1. Which Is the Most Common Form of Oral Cancer?		**Lymphoma**	**Sarcoma**	**Squamous cell carcinoma**	**Verrucous carcinoma**	**Total**	**P value**
Clinics	%	0.0%	1.2%	96.4%	2.4%	100.0%	0.025 Significant
Preclinical	%	4.9%	8.5%	84.1%	2.4%	100.0%	
Q2. Which Is the Most Common Site of Cancer?		**Buccal mucosa**	**Lower Lip**	**Palate**	**Tongue and floor of mouth**	**Total**	**P value**
Clinics	%	42.2%	3.6%	1.2%	53.0%	100.0%	0.532 Non-significant
Preclinical	%	43.9%	7.3%	0.0%	48.8%	100.0%	
Q3. Do you screen oral mucosa on OPD chairs if risk factors are associated?		**No**		**Yes**		**Total**	**P value**
Clinics	%	20.5%		79.5%		100.0%	0.011 Significant
Preclinical	%	42.7%		57.3%		100.0%	
Q4. Do you feel that early diagnosis can help in the prevention of cancer		**No**		**Yes**		**Total**	0.011
Clinics	%	0.0%		100.0%		100.0%	0.120 Not Significant
Preclinical	%	3.7%		96.3%		100.0%	

Which is the most common form of oral cancer?
90.3% of participants rightly answered that squamous cell carcinoma was the most prevalent kind of oral cancer **(Figure 1)**. **Table 2** depicts that the responses were right for 96.4% and those posted in the clinics; 84.1% gave the right answer for those posted in pre-clinics and the results were statistically significant (p=0.025).

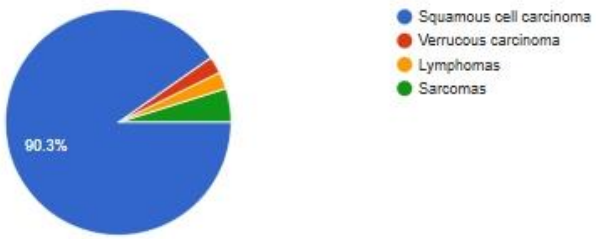

Figure 1. Responses for the most common form of oral cancer

Which is the most common site of cancer?
The tongue and floor of the mouth were accurately

recognized by 50.9% of respondents as the most common sites for cancer **(Figure 2)**. While, others answered that the site could be buccal mucosa (43%), lower lip, and palate as well. **Table 2** depicts that 53% of responses were right for the most frequent location for cancer for those posted in the clinics while 48.8% of responses were correct for those who were posted in preclinics and the results were statistically non-significant. (P=0.532)

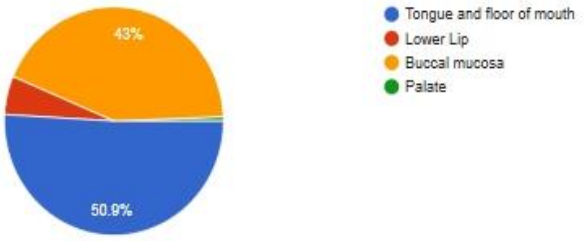

Figure 2. Responses for the most common site of cancer

Do you screen oral mucosa on OPD chairs if risk factors are associated?

The responses for the students on whether they screen oral mucosa on OPD chairs if risk factors were associated was yes for 57.9%, those who answered no 30.9% and not posted yet were the rest of the respondents. Among those posted in clinics, 79.5% answered yes, while, 57.3% answered yes amongst the preclinics posted students. The results were statistically significant (p=0.011) depicted in **Table 2**.

Do you feel that early diagnosis can help in the prevention of cancer?

Early diagnosis can help in the prevention of oral cancers in 98.2% of respondents. While those students who were posted in the clinics responded 100%. However, 96.3% of posts in preclinics answered yes. The results were statistically non-significant with p=0.12 **(Table 2)**.

Do you think is there a need to include oral cancer education in the medical curriculum

84.8% responded that there is a need, while 9.1% said it's already included the remaining 6.1% said that there is no need and few were not sure.

Oral cancer risk factors

The third section of the questionnaire involved knowledge among medical professionals on danger aspects of oral cancer. For the responses to oral cancer risk factors, the participants selected more than one answer. The 99.4% had the opinion that the major factor causing oral cancer is smoking, followed by alcohol, genetics, hot and spicy food, viral infections, stress, sunlight, low fiber diet, and old age**.** They were asked to enumerate the lesions of the oral cavity and they named both the benign as well the malignant lesions of the oral cavity like leukoplakia, erythroplakia, candidiasis, mouth ulcers, lichen plannus, lymphomas, etc. They were interrogated about the specialty referral to the doctor if suspected that the lesion was malignant, the responses received are graphically represented in a pie chart **(Figure 3)**. The majority mentioned that referral will be for an oncologist (47.9%) followed by oral and maxillofacial surgeon referral (41.8%). The rest of the responses were for dentists (7.3%) and the least responses were for general surgeons and otolaryngologists.

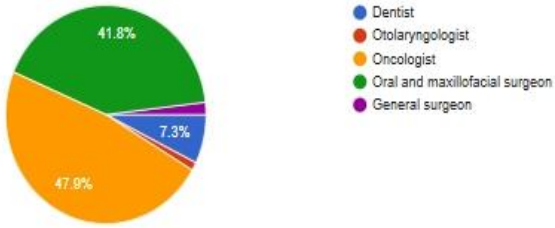

Figure 3. The awareness of lesions of the oral cavity among the respondents

Knowledge about the Relation between HPV and oral cancer

The fourth section of the questionnaire involved knowledge about the connection between HPV and Oral Cancer. The set of five questions and responses were collected. **Table 3** lists the answers to the issue of whether HPV infection is one of the most frequent reasons why oral cancer develops.

Table 3. Discusses the knowledge about the relationship between HPV and Oral cancer among students and their responses.

Section IV: Knowledge about the relation between HPV and Oral cancer	Response Yes	Response No
Are infections with HPV among the most frequent causes of OC?	83.6%	16.4
Oral intercourse is one way that HPV is spread.	83%	17%
It is possible for HPV to spread during dental procedures.	78.2%	21.8%
Is there a vaccine for HPV	94.5%	5.5%
Are you vaccinated?	39.4%	60.6%

The assessment of the disparity in replies between pre-clinic and clinic respondents about their understanding of the connection between HPV and oral cancer. Of those who were placed in clinics, 87.9% of respondents accurately identified HPV infection as one of the most frequent causes of mouth cancer. Only 81.7% of respondents correctly answered the questions for those placed in preclinics, but the findings were still statistically insignificant (p=0.50).

An assessment of the disparity in replies between males and females on their understanding of the connection between HPV and oral cancer was conducted. Regarding the inquiry, oral sex is one way that HPV may be spread, females responded 85.3% correctly as yes, while, males whose response was correct was only 78.6%, but the difference was statistically non-significant (p =0.175). For HPV could be transmitted through dental treatment females' responses were correct (84.6%), while males correctly responded 76.2% though the difference was clinically significant statistically it was non-significant. Females had more knowledge about the availability of vaccines against HPV and also were vaccinated more than males, though the differences were statistically non-significant **(Table 4)**.

Table 4. Evaluation of the difference in opinion of responses among males and females for knowledge about the relation between HPV and Oral cancer.

Q2. HPV can be transmitted through oral sex		**Female**	**Male**	**Total**	**P value**
No	%	14.7	21.4	100.0%	0.175 Not Significant
Yes	%	85.3	78.6	100.0%	
Q3. HPV can be transmitted through dental treatment needs		Female	Male	Total	P value
No	%	15.4%	23.8%	100.0%	0.146 Not Significant
Yes	%	84.6%	76.2%	100.0%	
Q4. Is there a vaccine for HPV		Female	Male	Total	P value
No	%	5.7%	7.1%	100.0%	0.225
Yes	%	94.3%	92.9%	100.0%	Not Significant
Q5. Are you vaccinated?		Female	Male	Total	P value
No	%	60.2%	64.2%	100.0%	0.214
Yes	%	39.8%	35.8%	100.0%	Not Significant

Among mouth cancers, oral squamous cell carcinoma is the most prevalent kindClinical students in the current study had a considerably higher mean knowledge score in the area of OC when compared to preclinical students. The results were statistically significant, with 96.4% of those posted in clinics receiving the correct response and 84.1% of those placed in pre-clinics receiving the correct response. (p = 0.025). Compared to preclinical students, clinical students possess a greater comprehension of OC since they have already attended lectures and completed clinical rotations in oral and maxillofacial surgery and otorhinolaryngology.

As SCC was thought to be the most prevalent kind of OC, the majority of clinical students gave significantly accurate answers (p-value=0.025). Our findings concur with those of several other related investigations. The bulk of respondents (72.7%) were clinical students, and 49.8% of medical students in South Carolina said that SCC was the most prevalent form of OC. Eighty-three percent of medical students at Midwestern University, eighty percent of whom are in their clinical years, believe that SCC is the primary form of OC. According to Chicago research, just 27.5% of preclinical students were aware that SCC is the most prevalent form of OC, although 87.5% [18-21]. Our results are in line with those of previous research projects carried out in South Carolina, Nepal, and Sri Lanka [18, 22-25].

Thirteen percent of the students in our research said they smoked. This figure is less than that of a prior survey that showed that 24.7% of Syrian university students smoke cigarettes [7, 26, 27].

The tongue and oral cavity are the most often affected areas for cancer which was answered correctly by 50.9% of respondents. In total, 53% of responses were right for the most common site of cancer for those posted in the clinics, while, 48.8% of responses were correct for those who were posted in preclinics and the results were statistically non-significant. The tongue and the floor of the mouth are the most common anatomical sites of OC, as more than half of study respondents knew. This indicates that our students had a good understanding of these areas. Conversely, medical students at OC in South Carolina, Chicago, and Midwestern University had a knowledge gap since they only knew 18%, 21%, and 31.6% of the anatomical areas, respectively [18-20, 28, 29]. The difference in results might be because our sample comprised dental students as well, while the difference in sample population could be one of the probable reasons.

OC still has low survival rates despite significant advancements in cancer detection and therapy, mostly as a result of presentation delays. This is demonstrated by the 5-year survival rates for late-stage OC, which, with the exception of the finest treatment facilities, do not surpass 50%.

However, research indicates that early detection and treatment can improve these outcomes. Healthy People 2010: Understanding and Improving Health and Objectives

for Improving Health is a public health campaign that claims," the survival rate for OC should rise from 33% to 51% with early identification. 98.2% of the students in our research knew this knowledge. By contrast, only 38% of medical students in Malaysia (38%) believed that early detection of oral cancer may result in its treatment [30-32]. Due in part to inadequate training on how to do a comprehensive oral examination, healthcare professionals do not often evaluate the oral cavity.

According to our survey, 57.9% of participants will inspect their oral mucosa on OPD chairs. However, 67.9% of students would test high-risk patients for oral cancer, which is greater than the percentages seen in Malaysia (60.6%) and the UK (28%), according to research [32-35].

In our study, students most frequently recommended patients with suspicions of OC to oral and maxillofacial surgeons and oncologists. However, in Malaysia and Midwestern University, respectively, maxillofacial surgeons and otolaryngologists were favored [18, 32, 36, 37].

Medical students' high degree of understanding of the hazards associated with alcohol addiction, cigarette and tobacco smoking, and other health issues is a necessary precondition for any community-based tobacco and alcohol cessation programs.

The participants identified oral candidiasis, leukoplakia, and erythroplakia as the main precancerous diseases observed in the oral cavity in relation to the alterations in OC. According to studies conducted at Midwestern University, Malaysia, and America, 19.6%, 24.5%, and 27.5% of medical students, respectively, knew that erythroplakia was an indication of OC. Furthermore, leukoplakia is linked to OC, as reported by 35.4%, 33.8%, and 28.5% of individuals, respectively [19, 32, 38, 39].

One of the deadliest outcomes of HPV infection is oropharyngeal cancer (OPC), which, globally, is the most common infection transferred via sexual contact. Taking the aforementioned into consideration, we assessed how well men and women pupils understood the link between HPV infection and OC, and we saw no significant distinction between the two groups.

According to our survey, 83.6% of participants knew that HPV infections can lead to the development of OC. Similarly, Malaysia (53.7%) and Nepal (83.5%) have greater levels of awareness [23, 32]. Only 30% of respondents to the Health Information National Trends Survey acknowledged the link between HPV and OC, indicating a lack of knowledge about this relationship. HPV is spread through sexual contact, such as oral sex and intense kissing. Oral HPV infection risk is strongly correlated with the number of sexual partners and the age at which sexual activity is initiated. Particularly in a current war situation, assessments to identify high-risk populations and educational interventions on safe-sex practices are critical components of primary preventive methods.

According to our survey, around 39% of respondents were vaccinated, and more women were aware of the vaccination. Vaccination was used in additional Polish research (50%) and a Chinese study (17.5%) [33, 40-42]. Countries that have adopted HPV vaccination programs as a main preventative measure have shown a notable decrease in HPV infections [43-45].

The HPV vaccine has not yet been incorporated into India's national immunization program. Being a developing nation, managing the additional costs of this integration might have an impact on our economy, which is the main cause of this delay. Even though the HPV vaccine was originally suggested to be included in the Universal Immunization Program by the National Technical Advisory Group on Immunization (NTAGI) (UIP) [46, 47].

The World Health Organization says that in nations where a nationwide immunization program cannot be implemented due to operational or financial limitations, staggered introductions of the HPV vaccine can be an option. Populations with high-risk groups and In this case, priority should be given to restricted accessibility to screening programs [48]. More focus should be placed on educating people about early cancer detection and how to prevent delayed and inaccurate cancer test results. Medical experts reported that patients who sought medical assistance promptly had a lower chance of developing cancer as a result of continuous medical education (CME). The way general practitioners saw their accountability for early diagnosis and knowledge of severe disease was also marginally affected, however, neither physicians' self-assessed competence to examine nor their attitudes regarding emergency consultation procedures were impacted by CME. A systematic CME practice may enhance physician attitudes and views, particularly those pertaining to risk assessment, which might lead to improved therapeutic outcomes [49, 50]. Finally, we encountered problems with the student response rate since the results would have been affected if certain final-year medical students had not participated. Some poll questions could have been limiting.

Conclusion

This study found that clinical students knew more about OC than pre-clinical students did. Given medical students' low understanding of mouth cancer, the curriculum and instructional methods need to be changed in order to improve oral cancer practices. Medical professionals must prevent and discover oral malignancies early to enhance the overall prognosis due to the rising occurrence of these diseases worldwide.

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Ethics statement: The study was initiated after getting the institutional ethical clearance from IEC of Pravara institute of medical sciences.

Prior to completing the survey, each participant gave their informed consent.

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