

Original Article

**ASSESSMENT OF AWARENESS
ON EARLY DETECTION OF
ORAL PREMALIGNANCIES
AND ORAL CANCER AMONG
THE GENERAL POPULATION
IN TELANGANA- A CROSS
SECTIONAL STUDY**

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ABSTRACT

Context: Oral cancer, a formidable global health challenge, is a complex and multifaceted malignancy.

Aim: To analyze the awareness on premalignant lesions and oral cancer among general population using KAP questionnaire.

Materials and Method: This cross-sectional study used a 34-item questionnaire designed based on previous literature, with a pilot study conducted among 30 participants in a government dental hospital. Data was collected from approximately 419 patients using snowball sampling, and the findings were analyzed using SPSS 24.0. Tables and graphs were generated using Microsoft Word.

Results: A study of 419 participants found that 91% had no alcohol history, no smoking, and no dental problems. Most had good knowledge about oral cancer, with 33.6% aware of its causes and 62.1% aware of regular dental checkups for early detection. Most agreed that ulcers

persisting over 2 weeks may cause oral cancer, and habit cessation can prevent it. Most participants felt there was a need for media campaigns and awareness programs.

Conclusion: Early diagnosis of oral cancer is significantly reduced due to poor knowledge about risk factors and early detection. The study found that 62.1% knew regular dental checkups help, but 64% had poor knowledge about tobacco and alcohol consumption. Negative attitudes can hinder timely diagnosis. Henceforth focus on targeted awareness campaigns and educational interventions is the need of the hour for early detection of oral cancer and thereby improving the quality of life of the patients.

Keywords: Awareness, early detection, oral premalignancies, oral cancer, population

INTRODUCTION

Oral cancer, a formidable global health challenge, is a complex and multifaceted malignancy that affects the

oral cavity, encompassing the lips, tongue, cheeks, floor of the mouth, hard and soft palate, and throat. It is more prevalent in men than women. The incidence of its occurrence increases with age and more commonly seen in people of 5th -6th decade, however cases are increasing even in younger age group people. Its significance lies not only in its increasing prevalence and substantial impact on public health but also in the profound physical, psychological, and socioeconomic repercussions it imposes on individuals and societies alike. The incidence of oral cancer has been steadily rising, making it a critical issue for both healthcare professionals and the general population. Early detection and accurate diagnosis are pivotal for effective treatment and improved patient outcomes. This necessitates a comprehensive understanding of oral cancer's risk factors, clinical presentations, and diagnostic modalities.^[1]

Oral cancer's impact is far-reaching, with more than 350,000 new cases

diagnosed annually worldwide, two-thirds of these cancers occur in Asian countries, such as India, Bangladesh, Sri Lanka, Pakistan, and Indonesia. It ranks among the top ten most common cancers, contributing to significant mortality and morbidity rates. The distribution of oral cancer exhibits notable geographic variation, with higher incidence rates in regions characterized by specific risk factors, including tobacco and alcohol consumption, betel nut chewing, and poor oral hygiene.^[2]

The etiology of oral cancer is multifactorial, involving a complex interplay of genetic predisposition, environmental exposures, lifestyle choices, and viral infections. Tobacco use, whether in smoked or smokeless forms, remains a paramount risk factor. When compared to non-smokers, the risk of developing oral cancer is 3 times higher in smokers. Benzopyrenes, nitrosamines and aromatic amines are present in smoke which contribute for risk of developing cancer, therefore called as pre-carcinogens.

Combined with excessive alcohol consumption, the synergistic effect further amplifies the risk of developing oral cancer. In addition, the human papillomavirus (HPV), particularly HPV-16, has emerged as a critical etiological agent in a subset of oral cancers, especially those affecting the oropharynx. Genetic alterations, including mutations in tumor suppressor genes (e.g., TP53) and oncogenes (e.g. EGFR), play pivotal roles in initiating and driving malignant transformation. Presence of underlying genetic disorders in which there will be a defect in DNA damage repair mechanisms such as ataxia-telangiectasia, Xeroderma pigmentosum and Fanconi's anaemia, there will be increased risk of occurrence.^[3]

In Initial stages, many of them are asymptomatic as a result of which most of these cancers are diagnosed in advanced stages. Lesions may manifest as persistent ulcers, white or red patches, or unexplained pain. If cancer is diagnosed in early stages, the survival rate can be improved to 70-

80%, and if it's diagnosed in later stages, it has poor prognosis and the survival rate reduces to 5%. As most of the patients are not symptomatic in initial stages and do not need any medical help until symptoms start appearing such as development of ulcers, pain, bleeding. In majority of cases, the patients will be responsible for delay in the diagnostic procedure due to lack of awareness; the other reasons for the delay could be the result of an incorrect medical approach by not suspecting an oral malignancy and not diagnosing and treating it promptly and adequately.^[4]

Potentially malignant disorders (PMD's) are a group of lesions and conditions which have ability to turn into oral cancer. They include a group of clinically suspect mucosal lesions such as leukoplakia, erythroplakia, submucosal fibrosis, and lichen planus in oral cavity. The presence of dysplasia is major indicator that helps in detecting the possible malignant transformation in these lesions. Dysplasia is defined as change in

architectural characteristics in oral mucosa which can be graded as mild, moderate and severe based on involvement of epithelium thickness. Early detection and treatment of PMD's is of prior importance which helps in reducing the mortality rate.^[5]

The current research was done to analyze the awareness on premalignant lesions and oral cancer among general population using KAP questionnaire.

METHODOLOGY

A cross-sectional study was conducted about the general population's knowledge, attitude and practice on early detection of oral premalignant lesions and oral cancer in Hyderabad.

Questionnaire formulation: The investigator formulated the questionnaire to evaluate dental professionals' knowledge, attitude and practice on early detection of oral premalignant lesions and oral cancer.

The questionnaire comprised four components: Demographic details (11), knowledge component (9), attitude (8) and

practices (6). The original version of the questionnaire was English and consisted of 39 close-ended questions. The responses of the questionnaire were rated on a 2-point Dichotomous scale ranging from yes and no. Participants self-administered the questionnaire for collection of data. Participants were asked to answer the questionnaire anonymously.

Details of the pilot study

A pilot study was conducted among 30 participants in Panineeya Dental college and hospital patients. The pilot study was done to check the feasibility of the study and to note any difficulties encountered during the study. A 39-item self-administrated questionnaire was designed based on the literature review and objectives of the study. The investigator formulated the questionnaire under the guidance of the Head of the Department and Senior staff members of the Department of Oral Medicine and Maxillofacial Radiology, Panineeya Dental college, Hyderabad. The face validity was

established by giving the questionnaire to five dental practitioners and having them evaluate if the questions were understood and interpreted correctly. The content validity was checked by giving the questionnaire to five experts who were professors of their respective departments and dentists who are active in clinical practice for a few years related to the topic of this study and having them evaluate if the questions effectively related and answered the objectives of the study under investigation. The participants filled out a questionnaire, and the suggestions given by them were noted down. Any ambiguity and inadequacies detected were rectified. A final 34-item questionnaire was developed, and internal consistency was assessed as Cronbach's $\alpha = 0.79$.

Sample size estimation: The sample size was estimated based on the pilot study; the sample size was determined using the formula,

$$N \geq \left(\frac{z_{1-\alpha} + z_{1-\beta}}{\frac{\Delta}{\sqrt{p(1-p)}}} \right)^2$$

The calculated value was 419.

Sampling procedure: A snowball sampling technique was used. Participants who filled out the form were included. Participants who did not respond back and who responded incompletely to the questionnaire were excluded from the study. The ethical clearance was obtained from the Institutional Review Board of Saveetha Dental College, Chennai, Tamil Nadu. (IHEC/SDC/OMED-1608/22/332). Informed consent was obtained from the participants present on the survey day after discussing in detail the purpose of the study. The study was systematically scheduled to spread over a period of two months, from October 2022 to November 2022.

Data collection

A Snowball sampling technique was used, and the formulated digital questionnaire was sent to patients visiting a few dental clinics. They were asked to

distribute the questionnaire among their circle till the desired sample size was achieved. The participants were given sufficient time to complete the questionnaire of about a week. The questionnaire was sent to about 460 patients.

Statistical analysis

The data collected was compiled and checked for completeness. The findings obtained were coded and entered into Microsoft Excel 2016. The analysis was done using Statistical Package for Social Sciences (SPSS 24.0 version). Descriptive statistics and frequency distribution were done to determine the mean values. Chi-square analysis was done to declare the association factor between different variables with knowledge, attitude and practice. The significant value was set at $P < 0.05$. Tables and graphs were generated using Microsoft Word.

RESULTS

The study had a response rate of 91%. Table 1 shows the frequency distribution of the details of the habitual history of the patients. Among 419 participants, alcohol habit was present among 26.1% (n-110) participants and majority of them 73.2% (n-309) participants had no alcohol history. Majority of the participants 95.2% (n-399) had no smoking and smokeless tobacco habit and 4.8% (n-20) participants had history of tobacco intake in smoke and smokeless forms. Ulcers were present in 86.3% (n-364) participants with complaint of burning sensation in only 7.2% (n-30) participants. All the participants 100% (n-419) had no persistent burning sensation. COVID19 was positive in 38.2% (n-160) participants and 61.4% (n-259) participants were not affected with COVID 19. Dental problems post COVID19 was detected in 11.9% (n-50) and not detected in 88.1% (n-369) participants respectively.

Table 2 shows the gender distribution of participants. More than half

of the participants 56.1% (n-235) were males and 43.9% (n-184) were females.

Table 3 shows the good knowledge among the participants. Out of 419 participants, 33.6% (n-142) have heard about or seen the patients of oral cancer. About 44.5% (n-188) participants were aware about the causes of oral cancer and 62.1% (n-262) participants know that regular dental checkup or screening of mouth can help in early detection of oral cancer. Only 8.3% (n-35) participants have an idea of how a pre cancer (condition that might develop into cancer) looks like. Only 21.7% (n-89) participants assume that oral cancer and pre cancer is always associated with pain and 31% (n-131) participants agreed that red/white patches or ulcers in mouth may lead to oral cancer. More than half of the participants 51.2% (n-216) believe that oral cancer occurs in only those with family history (hereditary). Majority participants 83.4% (n-365) participants know how oral pre cancer and cancer is diagnosed (detected) at early stages and few

participants 12.1% (n-51) knows that a sharp tooth might cause oral cancer.

Fig 1 shows the percentage distribution of knowledge among participants. Only 36% participants had good knowledge and the remaining 64% participants had poor knowledge.

Table 4 shows the frequency of good attitude. More than half participants 60% (n-253) agreed that an ulcer persisting more than 2 weeks may cause oral cancer and 71.6% (n-302) participants were aware that habit cessation can prevent oral pre-cancer and oral cancer. About 82.2% (n-347) participants knows that dentist can detect pre-cancer or early stages of oral cancer and 76.3% (n-322) agreed that detection of oral cancer improves the survival rate of the patient.

Out of 419 participants, 72.7% (n-307) participants are willing to know about the risk factors, causes, signs and symptoms of oral cancer and 85.8% (n-362) feel that there is a need for media campaigns/ oral

cancer awareness programmes related to diagnosis of oral cancer. Almost 65.6% participants are willing to attend any awareness programmes on oral cancer and 76.3% (n-322) participants think that there is a need for habit de-addiction campaigns.

Fig 2 shows the percentage distribution of attitude. Among 419 participants, 80.5% had good attitude and 19.5% had poor attitude.

Table 5 shows the frequency of good practice among participants. About 48.1% participants (n-203) checks mouth regularly for any red/white patches and ulcers and 66.4% (n-280) had visited dentist and only 41.2% (n-174) participants informed that dentist asked about the habits like smoking, gutka/pan/tobacco chewing. Only 24.4% (n-103) participants often visits dentist for their oral health checkup, 7.1% (n-30) participants had attended oral health screening (check up) camps/programmes ever and 4.7% (n-20) participants had attended any oral cancer awareness/education programmes.

Fig 3 depicts the information about practice among participants. Among 419 participants, 55% participants had poor practice and 45% had good practice.

Table 6 shows the comparison of knowledge, attitude, and practice among demographic variables. There was statistically significant difference in knowledge and attitude among participants when gender was compared. In age and alcohol habit, knowledge, attitude and practice was found to be statistically significant. In smoking habit, statistically significant difference was found in only knowledge among them. In tobacco history, attitude and practice showed statistically significant difference. Knowledge and attitude showed statistically significant

difference in history of ulcers, burning sensation and covid positive. Knowledge regarding dental problems after covid 19 infection was found to be statistically significant $p < 0.05$.

Table 7 shows the gender distribution among variables. Among 55.7% male participants (n-235), mean values of alcohol, smoking, tobacco, ulcers, burning, covid positive and dental problem post covid was 1.49, 1.08, 1.06, 1.14, 1.05, 1.40 and 1.06 respectively. The mean values of alcohol, smoking, tobacco, ulcers, burning, covid positive and dental problem post covid was found as 1.00, 1.00, 1.02, 1.15, 1.11, 1.28 and 1.16 respectively among 42.4% (n-184) female participants.

TABLE 1. Frequency distribution of the history of the patients

| VARIABLES | Frequency | | Percentage | |
|-----------|-----------|-----|------------|------|
| | NO | YES | NO | YES |
| ALCOHOL | 309 | 110 | 73.2 | 26.1 |
| SMOKING | 399 | 20 | 95.2 | 4.8 |

| | | | | |
|---------------------------------|-----|-----|-------|------|
| SMOKELESS TOBACCO | 399 | 20 | 95.2 | 4.8 |
| ULCERS | 55 | 364 | 13.0 | 86.3 |
| BURNING SENSATION | 389 | 30 | 92.8 | 7.2 |
| BURNING SENSATION PERSIST | 419 | 00 | 100.0 | |
| COVID POSITIVE | 259 | 160 | 61.4 | 38.2 |
| DENTAL POST COVID | 369 | 50 | 88.1 | 11.9 |

TABLE 2. Gender Frequency distribution of the patients

| Gender | Frequency | Valid |
|--------|-----------|---------|
| | | Percent |
| MALE | 235 | 56.1 |
| FEMALE | 184 | 43.9 |
| Total | 419 | 100.0 |

Table 3: Frequency of good Knowledge

| Questions | Mean value ± S.D. | Frequency Total= 419 | Percentage |
|-----------|----------------------|-------------------------|------------|
| | | | |

| | | | |
|-------|--------------|-----|------|
| 1 | 1.32 ±.469 | 142 | 33.6 |
| 2 | 1.44 ±.498 | 188 | 44.5 |
| 3 | 1.63 ±.482 | 262 | 62.1 |
| 4 | 1.07 ±.263 | 35 | 8.3 |
| 5 | 1.20 ±.401 | 89 | 21.7 |
| 6 | 1.30 ±.459 | 131 | 31.0 |
| 7 | 1.52 ±.500 | 216 | 51.2 |
| 8 | 1.15 ±.361 | 65 | 83.4 |
| 9 | 1.12 ±.328 | 51 | 12.1 |
| TOTAL | 11.74 ± 1.98 | | |
| Mean | | | |

Fig 1: percentage distribution of knowledge

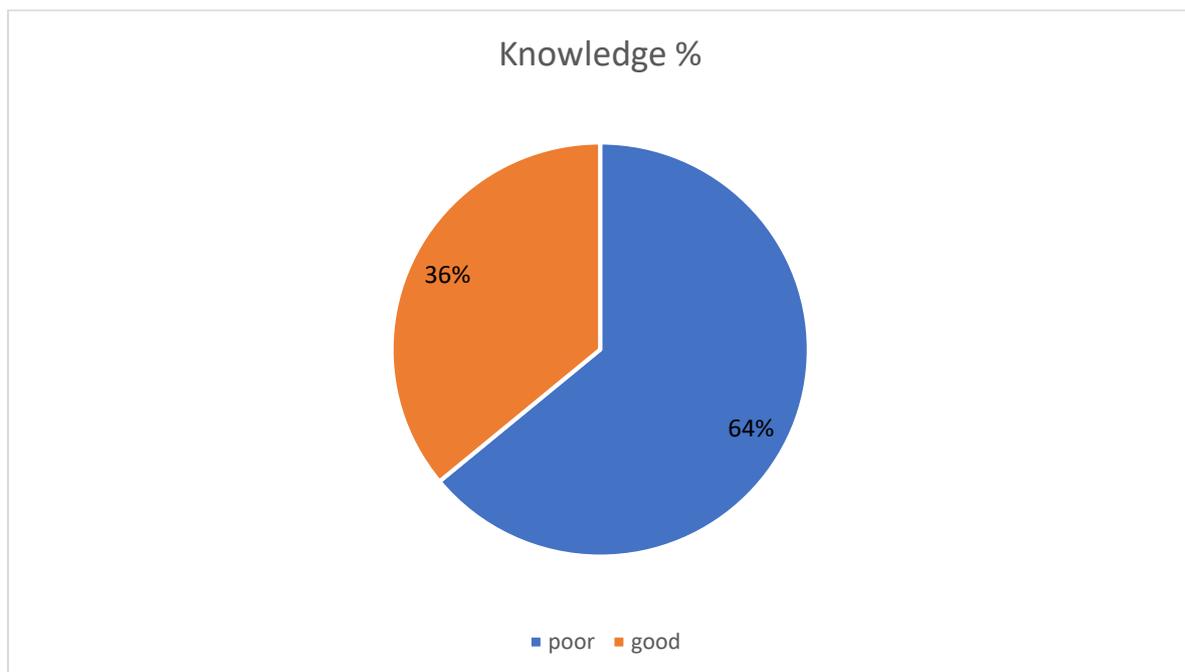


Table 4: Frequency of good Attitude

| Questions | Mean value | | Frequency | Percentage |
|------------|--------------|-------|------------|------------|
| | | | Total= 419 | |
| 10 | 1.59 | 0.491 | 253 | 60.0 |
| 11 | 1.71 | 0.451 | 302 | 71.6 |
| 12 | 1.85 | 0.353 | 347 | 82.2 |
| 13 | 1.76 | 0.427 | 322 | 76.3 |
| 14 | 1.74 | 0.438 | 307 | 72.7 |
| 15 | 1.86 | 0.341 | 362 | 85.8 |
| 16 | 1.65 | 0.477 | 277 | 65.6 |
| 17 | 1.76 | 0.422 | 322 | 76.3 |
| Total mean | 13.95 ± 1.91 | | | |

Fig 2: Attitude

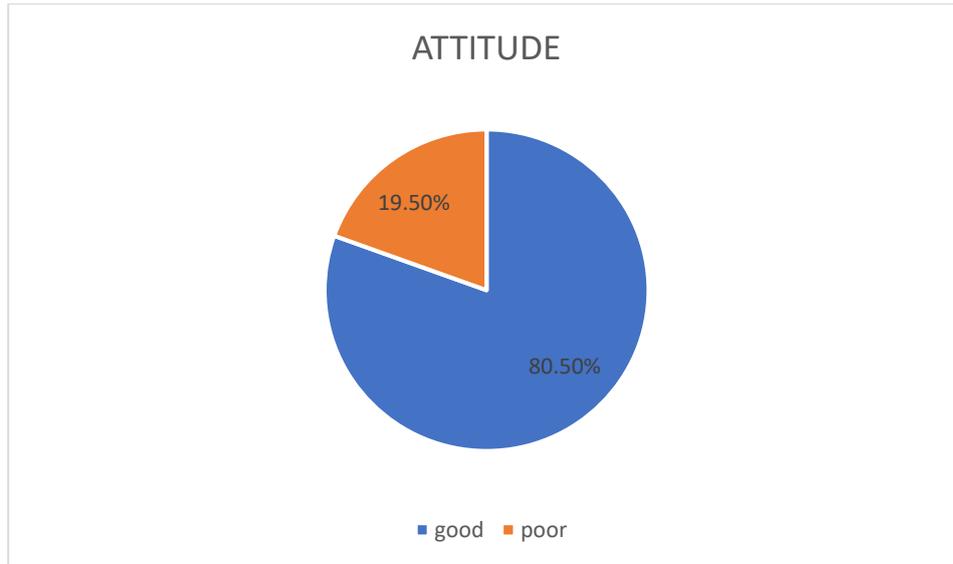


Table 5: frequency of good Practice

| Questions | Mean value | S.D. | Frequency Total= 419 | Percentage |
|------------|-------------|------|-------------------------|------------|
| 18 | 1.47 | .500 | 203 | 48.1 |
| 19 | 1.65 | .476 | 280 | 66.4 |
| 20 | 1.40 | .491 | 174 | 41.2 |
| 21 | 1.58 | .771 | 103 | 24.4 |
| 22 | 1.07 | .255 | 30 | 7.1 |
| 23 | 1.04 | .198 | 20 | 4.7 |
| Total Mean | 8.23 ± 1.64 | | | |

Fig 3: Practice

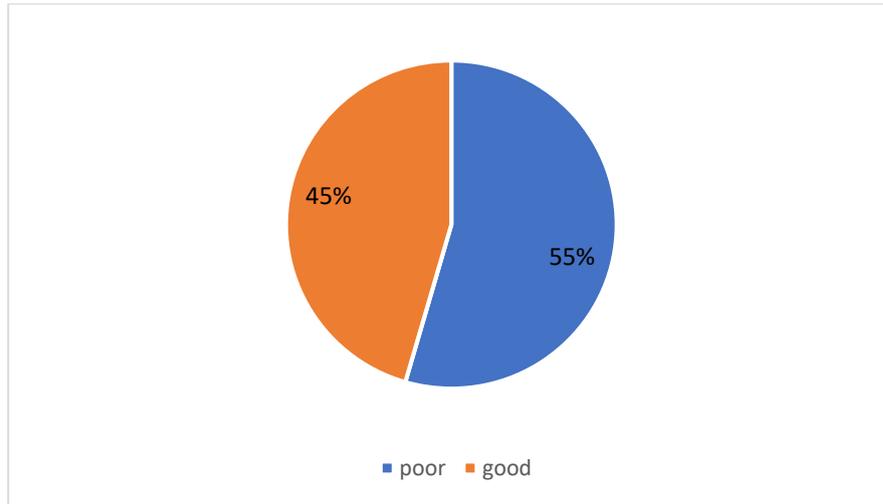


Table 6: Knowledge, attitude, and practice among different variables.

| Variable | | Knowledge P value | Attitude P value | Practice P value |
|--------------------------|--------|-------------------|------------------|------------------|
| Gender | Male | 0.042* | 0.001* | 0.109 |
| | Female | | | |
| Age | <35 | 0.001* | 0.001* | 0.001* |
| | >35 | | | |
| Alcohol | | 0.007* | 0.001* | 0.001* |
| Smoking | | 0.027* | 0.164 | 0.384 |
| Tobacco | | 0.359 | 0.001* | 0.001* |
| Ulcers | | 0.001* | 0.043* | 0.561 |
| Burning | | 0.001* | 0.001* | 0.062 |
| Covid positive | | 0.001* | 0.001* | 0.141 |
| Dental post covid | | 0.004* | 0.248 | 0.042 |

*statistical significant difference $p < 0.05$

Table 7: Gender distribution among variables

| GENDER | | ALCOHO | SMOKI | TOBACC | ULCE | BURNI | COVID | DENTAL |
|--------|--------------|--------|-------|--------|------|-------|----------|-----------|
| | | L | NG | O | RS | NG | POSITIVE | POSTCOVID |
| Male | Mean | 1.49 | 1.08 | 1.06 | 1.14 | 1.05 | 1.40 | 1.0606 |
| | N | 235 | | | | | | |
| | % of Total N | 55.7% | | | | | | |
| Female | Mean | 1.00 | 1.00 | 1.02 | 1.15 | 1.11 | 1.28 | 1.16 |
| | N | 184 | | | | | | |
| | % of Total N | 42.4% | | | | | | |

DISCUSSION

Among head and neck cancers, oral cancer is most common occurring malignancy. Due to poor knowledge, lack of awareness about the risk factors, diagnosis in the early stages, the survival rate is reduced drastically.

The present study was done to evaluate the knowledge, attitude and practices among the individuals. Among the

demographic data, our findings showed that out of 419 members, 110 individuals (26.1%) had alcohol habit, 20 people (4.8%) had smoking habit and 20 members (4.8%) had a habit of consuming smokeless form of tobacco. Majority of the individuals (86.3%) experienced ulcer formation and only 7.2% people experienced burning sensation when questioned about signs and symptoms. About 160 people (38.2%) were

affected with covid and 50 members (11.9%) experienced dental problems post covid. The level of knowledge among the general population regarding oral cancer varies significantly across different regions and socio-economic backgrounds. Several studies have highlighted a lack of awareness about risk factors, symptoms, and the significance of early detection.

Among the knowledge questionnaire, 62.1% population had knowledge that regular dental checkup helps in early detection of oral cancer where as 64% of study population had poor knowledge over association of occurrence of oral cancer and usage of tobacco and alcohol consumption which is in accordance with a study done by Reddy et al. [7] where he found that a substantial portion of individuals lacked knowledge about the risk of occurrence of oral cancer and correlation between tobacco and alcohol use. Additionally, there was limited awareness about the signs and symptoms of

oral cancer, leading to delayed diagnosis. In studies done by Shodan et al [8] and Razavi et al. [9], they observed that more than half of the general public lack awareness and knowledge about oral cancer which is homogeneous with our study. Minimum of 8% of the study population were aware about the precancerous conditions in our current study, this is in accordance with results revealed by Selvakumar^[10] and Dhivya et al^[11], in which they concluded that the Narikuravar population lacked knowledge about precancerous lesions but is inconsistent with study results of Sivaramakrishnan M et al ^[12] where 47% of study population were aware of precancerous conditions. Total of 86.3% of our study population reported that occurrence of ulcers in oral cavity might be related to cancer and 7.2% thought burning sensation could be a sign a cancer. Almost 100% did not think that persistent burning sensation could be sign for oral cancer.

In current study, 85.8% people think that conducting oral cancer awareness programmes and health campaigns will help in diagnosing the oral cancer at early stages as a result of which it can improve the survival rate of patient which is in accordance with study done by Anirudh P B et al. [13] Most 72.7% people showed interest to know about the risk factors, signs and symptoms of the oral cancer. Overall, the attitude of the study population was found to be 80.50% which is positive. Attitudes towards oral cancer and its early detection can influence behaviours such as seeking regular dental check-ups and adopting healthier lifestyles. Positive attitudes towards early detection are often associated with increased awareness and knowledge. However, negative attitudes such as fear or reluctance to acknowledge potential symptoms can hinder timely diagnosis.[13] A study by Gupta et al.[14] revealed that fear of pain and discomfort during screening procedures discouraged individuals from undergoing oral cancer

screenings, emphasizing the need for addressing these concerns through educational campaigns.

Among the frequency of practice in current study, more than half 66.4% people showed a positive response on visiting dentists regularly which is in contrary with survey conducted by Khan et al.[15] where he demonstrated that a significant percentage of participants did not regularly visit dentists for check-ups and only 4.7% of study population showed least interest in attending the oral cancer awareness campaigns Only 7.1% of study population has attended the oral health checkups and screenings previously thus reflecting a gap between awareness and practice. The same study also highlighted a lack of self-examination routines among participants. In our current study, only 48% population stated that they check for the occurrence of ulcers and red or white lesions in the oral cavity. This shows that nearing half of the study population are aware about the oral

lesions, but however there is need to create awareness about precancerous lesions, its diagnosis in the early stages to prevent it from converting to oral cancer.^[16]

Targeted awareness campaigns and educational interventions are essential to bridge the gap between knowledge, attitude, and practice. These initiatives should focus on increasing knowledge about risk factors, promoting positive attitudes towards early detection, and encouraging regular dental visits and self-examinations. Educational materials can be disseminated through various channels, including schools, workplaces, community centres, and social media platforms. Collaboration between healthcare professionals, policymakers, and non-governmental organisations is crucial in designing effective campaigns.

The limitations of the study -the sample included both educated and uneducated people from urban and rural areas. Exclusive rural and uneducated

patients taken in the sample could have affected the knowledge, attitude and practice percentages. More studies are recommended in rural areas as they are more unaware of the lesions comparatively.

Future prospects: Oral cancer awareness campaigns, oral health education activities at rural level importantly are the need of the hour to reduce the delayed diagnosis of oral premalignancies and oral cancer. Building up positive attitude towards early detection of oral cancer among general population can definitely contribute to a bigger change in the society in decreasing the mortality rate.

CONCLUSION

To conclude, Oral cancer, the most common head and neck cancer, is significantly reduced due to poor knowledge and awareness about risk factors and early detection. The study found that 62.1% of the population knew regular dental checkups help in early detection, while 64% had poor knowledge about the

association between oral cancer and tobacco and alcohol consumption. The majority (86.3%) experienced ulcer formation, while only 7.2% experienced burning sensation. COVID-19 affected 38.2% of the population, and 11.9% experienced dental problems post-COVID. Attitudes towards oral cancer and early detection can influence behaviors, but negative attitudes can hinder timely diagnosis. To bridge the gap, targeted awareness campaigns and educational interventions should focus on increasing knowledge about risk factors, promoting positive attitudes towards early detection, and encouraging regular dental visits and self-examinations.

Availability of data and materials

The datasets analysed in this study are freely provided.

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