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Evaluating Tobacco Cessation Readiness in OPMD Patients Using the Transtheoretical Model in a tertiary care setting in Northeast India

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KEYWORDS	ABSTRACT
Oral Potentially Malignant Disorder, Oral Cancer, Tobacco, Transtheoretical model.	**Background:** Oropharyngeal cancers pose significant global health challenges and addressing public awareness, early symptoms, and risk factors, alongside promoting tobacco cessation among individuals with potentially malignant oral disorders, is crucial for reducing the disease burden. **Objective:** Evaluating the degree of public knowledge of oral malignancy & OPMD, initial signs & risk factors amongst patients going to a dental college in North East India, as well as readiness to quit tobacco amongst OPMD patient. **Methods:** This cross-sectional investigation was undertaken at the Department of Public Health Dentistry, Tertiary care Hospital in Guwahati. 200 participants aged 15-65 years who consented were surveyed using a self-administered questionnaire. Collected data underwent thorough checks for completeness and accuracy. To determine the odd's ratio (OR) and to summarise the data, descriptive & inferential statistics were used. To test the relationship, data were dichotomised. Oral lesions present or absent; behavioural phases were divided into two categories: (preparation + action) & (precontemplation + contemplation). P < 0.05 was used as the statistical significance threshold. **Results:** Most participants were in the contemplation stage regarding tobacco's risks, neglecting other risk factors like alcohol & inadequate dental hygiene for oral malignancy/OPMD development. **Conclusions:** The lack of knowledge of oral malignancy & potentially malignant disorders (OPMDs) amongst North Eastern Indian communities, underscores the immediate demand for targeted education and health promotion campaigns. Emphasizing early symptom recognition, risk factors, and prevention measures, tailored to diverse communication preferences, is crucial.

1. Introduction and Background

Oral & pharyngeal malignancies are the leading contributing factors to morbidity and mortality with a yearly global estimated incidence of about 3,77,713 for oral & 98,412 for pharyngeal malignancies, causing 1,77,757 deaths in 2020; excluding salivary neoplasms, malignant neoplasms of the nasopharynx & of the pyriform sinus: developing countries account for two-thirds of all cancer cases.[1]

In 2003, the incidence of oropharyngeal & oral cancer in India was 12.6 per 100,000, based on the global standard population.[2] Despite the fact that oral cancer ranks third among cancers in India (across all genders) and the sixth most common cancer worldwide, there is still a deficit in public knowledge of both this serious cancer & the wide spectrum of oral potentially malignant disorders (OPMD) that commonly precede it, notably in the Indian subcontinent & its diaspora. This is true for understanding of the well acknowledged risk factors as well as for developed countries. [3]

The public has to be made aware of oral cancer's early indicators & risk factors in order to decrease the disease's morbidity & mortality rate. Publicly available information on awareness among people in the Northeast is, however, limited. The delay in diagnosing potentially malignant oral disorders is thought to be caused by a lack of understanding among healthcare practitioners regarding early detection techniques and a lack of public awareness of the signs, symptoms, and risk factors. Regular dental screening is crucial for early identification of oral cancer since the majority of cases originate from premalignant lesions, which are typically asymptomatic.

In order to determine the degree of public knowledge of oral cancer and OPMD, as well as the signs and symptoms and risk factors associated with them, this study examined patients attending a dentistry college in north-eastern India.

Additionally, less data exists about the correlation between behavioural stages & tobacco cessation readiness. The current research evaluated tobacco quit-readiness among dental college patients with OPMDs. Our hypothesis was that patients' readiness to give up tobacco use would be impacted if they have OPMDs.

2. Materials and Methods

The deficit in knowledge on oral malignancy and OPMD amongst the indigenous populations necessitated a pilot research in areas similar to, but distinct from those being evaluated for the main research. The primary goal of this was to provide estimates of the nonresponse rate, risk variables, and disease prevalence in order to calculate the appropriate sample size and statistical power for the primary research. Based on the outcomes of this pilot project, which reported a prevalence of oral malignancy of 12.6 % & a non-response rate of 10%. For a 95% confidence interval, 200 participants were a part of the study.

The research was conducted in the Department of Public Health Dentistry, Tertiary care Hospital, Guwahati. It is a cross-sectional study with patients reported from the OPD, patients referred from camps conducted in rural parts of Assam & also from the district hospitals. Patients belonging to the age group of 15-65 years, who gave consent were invited to be a part of the study. Ethics Review Board, granted ethical clearance (reference number: RDC/29/2011/1556) for human research participants. The research was carried out in line with the ethical principles of Helsinki declaration as revised in 2013.

Data was collected with the help of a self-administered questionnaire which comprised of 3 segments: sociodemographic details, questions on risk factors, behaviour change and type 3 inspection was conducted for the presence or absence of a lesion/ OPMD. Proforma were reviewed for mistakes, omissions, incompleteness, and irrelevance following data collection. After transferring the data to Microsoft Excel, SPSS version 23 (IBM Corporation, SPSS Inc., Chicago, IL, USA) was used for analysis. Both quantitative and qualitative data were summarised using descriptive statistics. Odd's ratio (OR) was computed and the Chi-square test was utilised for inferential statistics to examine the associations between two categorical variables. Data were divided into two categories: oral lesions present or absent; behavioural phases were divided into two categories: preparation + action and precontemplation + contemplation. This was done to test the connection between the two categories. $P < 0.05$ was used as the statistical significance threshold.

3. Results

Table 1: Distribution of sociodemographic details

Level of Education	Male	Female
illiterate	20 (16.9%)	12 (14.6%)
Primary school	52 (44.0%)	24 (29.2%)
Middle School	12 (10.1%)	20 (24.3%)
High School	6 (5.08%)	12 (14.6%)
Diploma	18 (15.2%)	8 (9.75%)
Graduate	10 (8.47%)	6 (7.31%)
Total	118	82

Table 2: Distribution of participants based on Awareness of tobacco related risk of oral cancer & OPMDs and transtheoretical model behavioural stages

Behavioural Stage	Aware	Unaware	Total
Precontemplation	28 (14%)	13 (6.5%)	41 (20.5%)
Contemplation	70 (35%)	12 (6%)	82 (41%)
Preparation	56 (28%)	10 (5%)	66 (33%)
Action	11 (5.5%)	0	11 (5.5%)

Table 3: Association between presence of OPMDs and transtheoretical model behavioural stages

OPMD	Preparation +Action	Precontemplation + Contemplation	OR	P	Chi-Square
Present	34	27			
Absent	43	96	2.81	0.0009*	11.0146

Table 4: Distribution of Knowledge of tobacco associated risk of development of oral cancer and OPMD

Awareness of RiskFactors	Not Aware	Aware about onlyOral cancer	Aware about Oral Cancer and OPMDs
Betel Quid chewing	32	58	10
Smoking	64	29	7
Alcohol	82	14	4
NutritionalDeficiency	84	12	4
Poor Oral Hygiene	80	16	4
Tobacco	23	68	9
Awareness ofSymptoms	84	13	3

The study consisted of 200 participants of which 118 (59%) were males & 82 (41%) were females. Most of the participants were educated upto primary school, 44% and 29.2% respectively. Among the subjects, 32 participants reported to have had no formal education. (Table 1)

Out of the 200 participants, 64 (32%) (49 males and 15 females) had some oral lesion related to tobacco use. The lesions diagnosed were leukoplakia, tobacco pouch keratosis, erythroplakia, oral submucous fibrosis, & smoker's palate. The prevalence of tobacco usage across all age groups was significantly greater among participants aged 25 to 44. The study found that the age at which tobacco use began and the number of years exposed to it varied from 10 to 52 years (Mean age 25.42 ± 6.34 years) & 1 to 45 years (Mean age 12.19 ± 10.68 years), respectively. Of all the participants, 82 (41%) were in the contemplation stage, and just 11 (5.5%) were in the action stage.

Among the 82 participants, 70 (35%) were aware of the risk factors associated with development of oral malignancy and/or OPMDs. (Table 2). There was a noteworthy correlation seen between the phases of the transtheoretical model (TTM) and the existence of oral lesions (OR = 2.81, P < 0.05). The preparation and action stages were more prevalent in those with tobacco-related oral lesions. (Table 3). Amongst the participants, majority were only aware about tobacco and quid chewing habit as a risk factor for the development of oral malignancy. The majority of them neglected the fact that alcohol, malnutrition & poor oral hygiene are important risk factor for the development of OPMDs/ oral cancer. (Table 4)

4. Discussion

Our study suggests that the delay in recognising potentially malignant oral disorders may be due to a lack of public knowledge of the indications, symptoms, & risk factors. In order to maximise survival and minimise morbidity, disfigurement, length of treatment, and related expenses, early detection of oral cancer is imperative. In the recent past, it has been speculated that a delay in diagnosis is a major factor that impairs the result of medical treatment and reduces survival. Time elapsed from the onset of the first symptom or sign to the establishment of the final diagnosis has been interpreted as the diagnostic delay. This covers two types of delays: (i) patient delay, which is the interval between the patient's initial observation of a sign or symptom and their initial consultation with a healthcare professional; and (ii) professional delay, which is the interval between the patient's initial consultation with the healthcare professional & the moment the final diagnosis is made.[4]

In line with a study conducted in North Queensland, Australia, by Formosa et al., ours revealed an alarming lack of awareness for potentially malignant oral disorders, with over half of the patients knowing about oropharyngeal cancer.[5] Alarmingly low public awareness of oral cancer was noted by Warnakulasuriya et al. in the UK [6] and Amarasinghe HK [7] in Sri Lanka. The most susceptible age group to begin tobacco use is children and teenagers.[8,9–12] The mean onset age was 25.42 ± 6.34 years, which is higher than the 17.8 years described in the Indian report [13] and Khan NR.[14] In our study, around 4/5th of the total subjects began using tobacco ahead of reaching their third decade of life. The GATS 2 survey is consistent with the majority of subjects who consumes tobacco between the ages of 25 and 44.[15]

Regardless of the kind of tobacco use, one of the most significant known predictors of tobacco use is education.[16-18] Early initiation of tobacco consumption can be explained by a lack of awareness, peer pressure, and a lower educational attainment. A significant percentage of research participants had lower levels of educational achievement. The percentage of subjects who were illiterate was approximately 16%The contemplation stage was occupied by around 1 in 2 participants, and was followed by the precontemplation, preparation, and action stages. Ambivalence is common throughout the precontemplation and contemplation phases of transformation. During these phases, people are either unaware of the detrimental habit or reluctant to

alter their behaviour. They lack the self-confidence to alter their conduct.[18]

People who are in the preparation phase are more motivated to give up because they see more negative effects of their habit than positive ones.[18] It is commonly known that those in the precontemplation or contemplation stages of quitting need a different kind of help than those who are in the preparation & action stages.[18] There was a significant correlation found between TTM behavioural phases and OPMDs. Compared to precontemplation and contemplation stages, participants with OPMDs had a 2.81 times higher likelihood to progress into the preparation & action stages. Based on the results, it is evident that people are more motivated to give up tobacco use when they are aware of the existence and potential consequences of malignant illnesses.

5. Strength, Limitations and scope for further research

The study, which had an observational design, focused on patients receiving treatment at the dental college. As a result, its generalisability is limited. Data gathering proforma may be subject to memory or recollection bias, reporting bias, or social desirability bias. Given that patients from all across Assam come to the Regional Dental College in Guwahati, assumptions about the present tobacco usage pattern in the state may be made within the study's constraints. Given that it was the state's only dental college from 1982 to 2018, the study population is fairly representative of Assam. Nonetheless, this study provides an intriguing look at the strong correlation between OPMD risk variables and TTM behavioural phases.

In order to overcome these constraints, more research is required. When it comes to tobacco control, policymakers should take socioeconomic patterns of tobacco use into account. It is necessary to concentrate on the teenage demographic in order to prevent them from engaging in harmful behaviours and assist them in overcoming peer pressure. Since no, one healthcare professional has reach to all tobacco users & potential users in the future, it is critical that all health providers—including dental professionals—actively participate in the fight against tobacco.

6. Conclusion

In conclusion, there is a deficit of knowledge about oral malignancy & OPMD in the northeastern regions of India. This finding is consistent with several research carried out worldwide, especially when it comes to early symptoms, indicators, risk factors, and preventative measures. Those who are most at risk need to have their awareness raised. In India, there is an immediate need to maintain national health education & promotion efforts that emphasise oral cancer while integrating it with broader health messaging & use an integrated risk factor approach. These must take into account the disparities in knowledge as well as the accessible or preferred forms of communication among the various groups.

The current study found that there is an inadequate level of awareness regarding oral potentially malignant diseases, with the majority of individuals not knowing about the risk factors or the clinical signs and symptoms. The best way to increase survivability and decrease morbidity, deformity, duration of treatment, and associated expenses is to detect oral cancer early. The delay in diagnosing PMDs is caused by the general lack of knowledge of the conditions' warning signs, symptoms, and risk factors. Screening and identifying these OPMDs early on can, not only lower the incidence of oral cancer but also increase the prognosis of those who get it.

Between the existence of OPMDs and TTM behavioural phases, a strong correlation was found. There is a noticeable rise in OPMD patients' readiness to give up tobacco. A better understanding of behavioural stages in TTM as well as the variables connected with tobacco use will aid dental practitioners to move ahead towards the cessation of this deleterious habit of tobacco use. Dental practitioners will be better equipped to help patients stop using tobacco by having a deeper comprehension of the behavioural phases in tobacco use disorder (TTM) and the reasons related to tobacco use.

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