

## A Study on Knowledge Related to Oral Cancer and Attitude towards Screening among Patients Attending a Rural Hospital in West Bengal

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### Abstract:


**Introduction:** Oral cancer is a major public health problem in India. Screening of the disease has an important role in early detection resulting in improved patient outcomes with reduced mortality and morbidity. The present study was undertaken to assess the awareness about oral cancer and attitude towards screening among patients attending a rural hospital in West Bengal and elicit its associated factors if any. **Method:** This cross-sectional study was conducted from September to December 2020 among 244 adults attending the Dental OPD of Amtala Rural Hospital, South 24 Parganas, West Bengal. Data collection was done via face-to-face interview using a pre-tested structured questionnaire. Knowledge regarding oral cancer and attitude towards screening was assessed using an 18-item and 8-item questionnaire respectively. Logistic regression analysis was done to find out the factors associated with satisfactory knowledge and favourable attitude. **Results:** Satisfactory knowledge of oral cancer was observed among 26.6%, while favourable attitude towards screening among 29.9% of the participants. Younger age, educational level above secondary and non-usage of smokeless tobacco were significantly associated with satisfactory knowledge of the disease. Educational level above secondary, nuclear family members and smokers had a significant association with favourable attitude towards screening. **Conclusion:** There was a lack of awareness about oral cancer and an unfavourable attitude towards screening among a significant proportion of the participants. Intensive health education for increasing community-level awareness about the disease and benefits of routine screening would help in the reduction of the burden of oral cancer in the future.

**Keywords:** Attitude, Knowledge, Oral cancer, Screening

### Introduction:

Oral cancer has emerged as a leading public health problem in India. Globally, the incidence of oral cancer has been estimated to be about 4 cases per 1 lakh population while in some Asia-Pacific countries, it ranks among the top three cancers.<sup>[1]</sup>

However, the situation in India is rather worrisome as oral cancer ranks number one in terms of incidence among men and third among women and is responsible for approximately 52000 deaths per year.<sup>[2,3]</sup> However, the disease prognosis mainly depends upon the stage of the tumour at the time of

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diagnosis. The five-year survival rate of stage I cancer, irrespective of its sub-sites approximately 80%, while the same with advanced disease (stages III/IV) is approximately only 20%.<sup>[4]</sup> In addition to the mortality, oral cancer is significantly associated with significant morbidity not only due to the disease process itself but also due to the treatment procedures rendered to combat it which can lead to increased out of pocket expenditure due to frequent hospitalizations.

Numerous etiological factors are associated with the development of oral cancer among which the major modifiable risk factors are tobacco and alcohol consumption (often having a synergistic effect among themselves).<sup>[5]</sup> However, the major silver lining is that oral cancer is largely preventable which can be achieved by eliminating the major risk factors (primordial prevention) while early diagnosis of the disease by screening (primary prevention) can halt its progression to late stages, thereby increasing the chances of survival among patients.

Government of India launched the National Programme for Prevention and Control of Cancer, Diabetes, Cardio Vascular Diseases and Stroke (NPCDCS) in October 2010.<sup>[6]</sup> Under this program, opportunistic population-based screening of individuals at risk of selected non-communicable diseases (including oral cancer) is being conducted at the primary healthcare level to facilitate early diagnosis and management of the disease. However, these services have been found to be largely unutilized which is evident as per NFHS-5 data in rural West Bengal.<sup>[7]</sup>

Studies across the globe and in India have demonstrated a varying proportion of participants having poor knowledge related to oral cancer and unfavorable attitude towards screening.<sup>[8-11]</sup> Lack of awareness related to risk factors, signs, and symptoms of oral cancer as well as negative attitude towards screening for the disease may pose a great challenge for the clinicians as well as policymakers to control the growing burden of oral cancer in the

Indian society. Thus, the present study was undertaken to find out the level of awareness about oral cancer and assess the attitude towards availing screening facilities for the disease among patients attending dental out-patient department (OPD) at Amtala Rural Hospital in South 24 Parganas district, West Bengal.

#### **Method:**

This cross-sectional study was conducted from September to December 2020 among adult patients attending a dental OPD of Amtala Rural Hospital situated in South 24 Parganas district, West Bengal. Participants who did not give written informed consent, or had severe speech and hearing impairment were excluded from the study.

#### **Sampling**

A study was done in a rural area of Karnataka (India) by Vishma BK et al which demonstrated 39.5% of their participants had no knowledge regarding symptoms of oral cancer.<sup>[12]</sup> Considering  $P=0.395$ ,  $Z_{1-\alpha}=1.96$ ; relative error (L) = 20% in the formula  $(Z_{1-\alpha})^2 \times (P \times Q / L^2)$ , the calculated sample size arrived at 147. As simple random sampling was not done, after adding a 1.5 design effect and a 10% non-response rate, the final sample size came to be 244.

We viewed the patient register for the past 3 months and noted the information regarding the average footfall of patients daily in the dental OPD. It was observed that on average, 50 patients attended the dental OPD daily for getting treatment. Since we visited the health facility twice per week for data collection for a period of 4 months and interview of the participants took approximately 20 mins, we decided that we will interview 5 patients per day. Since on an average, 50 patients visited the health facility and 5 participants were needed to be interviewed per day, participants were selected by systematic random sampling wherein every 10<sup>th</sup> patient was chosen from those who attended the dental OPD on the days of data collection (sampling interval=50/5=10).

### **Data Collection**

The study was conducted via face-to-face interview using a pre-designed pre-tested structured questionnaire translated into the local language (Bengali). It encompassed the following domains:

- (a) Socio-demographic characteristics and substance use pattern of the study participants
- (b) Knowledge related to oral cancer was assessed by an 18-item questionnaire prepared after an extensive literature review.<sup>[13]</sup> It comprised of three domains: general awareness regarding oral cancer (5 items), signs and symptoms of oral cancer (8 items) and risk factors of oral cancer (5 items). Pretesting was done among 40 patients in a different setting who were not included in the study. [Cronbach's alpha=0.72] Response categories for each of the questions were 'yes', 'no', and 'don't know'. Each question answered correctly received a score of 1 and each answer marked incorrectly or as 'Don't know' received a score of 0. The maximum attainable score was 18 and the minimum attainable score was 0. The cut-off for satisfactory knowledge was taken to 9 or more (50% of the attainable total scores).
- (c) Attitude towards oral cancer screening was assessed by an eight-item questionnaire (Cronbach's alpha= 0.67). Response categories for each of the questions were 'Disagree', 'Neither agree nor disagree', and 'Agree' which were given a score of 0, 1, 2 respectively. The maximum attainable score came to 16 and the minimum attainable score was 0. An attitude score  $\geq 12$  (75% of the maximum attainable scores) was considered as having favorable attitude towards screening for oral cancer among the study participants.

### **Statistical Analysis**

Data were analyzed using Microsoft Excel 2016 and Statistical Package for Social Sciences (SPSS version 16.0, SPSS Inc., Chicago, USA) software.

Appropriate descriptive statistics were used to denote the outcome variables and the predictor variables. Variance Inflation Factor (VIF $>5$ ) was calculated to exclude multicollinearity among the variables. Factors associated with knowledge regarding oral cancer and attitude towards its screening were analyzed using a test of significance ( $p$ -value $<0.05$ ) at a 95% confidence interval via univariate binary logistic regression analysis. All the biologically variables having significant  $p$ -value ( $<0.05$ ) were included in the final multivariable model.

### **Ethical issues**

After getting institutional ethical clearance, participants were requested to provide written informed consent before participating in the survey.

### **Results:**

#### **Socio-demographic characteristics of the study participants**

The median age of the study participants was 42 years (Inter Quartile Range (IQR) = 29-55 years). Around 54.1% of the participants were males while 61.9% were Hindu by religion. Almost 53% of the participants had secondary level of education or above. According to B.G. Prasad's socio-economic scale 2020, 52.9% of them belonged to the Class IV or below socio-economic status.<sup>[14]</sup> Most of the study participants had joint family status (75.4%).

#### **Substance use pattern of the study participants**

Usage of tobacco for smoking purposes was found among 78 (32%) study participants. Among them, 15.6% used to smoke daily. Almost (75.1%) smokers started smoking when they were  $\leq 30$  years of age and 35.7% started smoking when they were  $\leq 10$  years of age. 34.2% of the participants wanted to quit smoking. Usage of smokeless tobacco was present among 110 study participants (45.1%) among which 38.1% used smokeless tobacco daily. Almost (76.4%) of smokeless tobacco users had their initiation at age  $\leq 30$  years whereas 56.8% of them started using it at  $\leq 10$  years of age. Participants who

wanted to quit using smokeless tobacco comprised 62.8% of the participants. Participants using betel quid were found to be 167 (68.4%) and among them, 56.9% used it occasionally. The majority of users (95.5%) started to use it when they were  $\leq 30$  years of age and 42.8% used it when they were  $\leq 10$  years of age. Participants who wanted to quit using betel quid were found to be 61%. Around 58 (23.8%) participants were found to be alcoholic among which 44.5% used it occasionally. Most alcoholics (88.4%) wanted to quit drinking.

### Knowledge related to Oral cancer

Overall satisfactory knowledge of oral cancer was observed among 65 (26.6%) study subjects. All the study participants (n=244) had heard about oral cancer. A total of 88 (36.1%) participants believed that the prevention of oral cancer was not possible. Most of the participants (76.2%) knew that oral cancer is a life-threatening condition. Only 87 (35.7%) of the study participants knew that oral cancer is treatable. Most of the subjects 197 (72.9%) did not know that oral cancer is non-contagious while 42.2% believed that the risk of oral cancer increases with age. Among the 244 study subjects, 42.5% did not know any of the signs and symptoms of oral cancer. 139 study participants (57%) knew that a non-healing wound in the mouth is a probable sign of oral cancer. About half (49.6%) knew that the growth of abnormal tissue in the mouth is a sign of oral cancer. Certain signs/symptoms of oral cancer were found to be not known by the majority of the study participants such as white or red spots in the mouth (82.3%), reduction in mouth opening (86.1%), undue falling of teeth (82.4%), difficulty in swallowing (84.4%), burning sensation during eating (68.4%) and continuous pain in mouth (55.9%). Majority of the study participants (70.1%) knew that smokeless tobacco is a risk factor for oral cancer. Only 32.8% and 12.3% of the participants considered smoking and alcohol as risk factors of oral cancer respectively. About one-fourth of study subjects knew that betel quid is a risk factor for oral cancer. [Table 1]

### Attitude towards oral cancer screening

Overall favorable attitude towards getting screened for oral cancer was observed among 29.9% of study participants. The majority of the study participants (93.4%) have not undergone screening for oral cancer in their lifetime. However, most of the study participants (70.9%) agreed that doctors can diagnose oral cancer early. While 72% of study participants agreed that a doctor can help them in reducing the risk of getting oral cancer. Only 36.9% of the study participants agreed with the statement that a doctor examining his/her oral cavity for signs of cancer will not be a waste of time. Only 26.2% of study subjects agreed that a doctor examining their oral cavity for any signs of cancer will not give them discomfort. [Table 2]

### Factors associated with satisfactory knowledge related to oral cancer

Univariate binary logistic regression analysis showed that satisfactory oral cancer knowledge was significantly associated with age, education, socio-economic status, usage of smokeless tobacco and betel nut. All these variables were included in the final multivariable model. In the final model factors significantly associated with satisfactory knowledge were decreasing age [AOR=1.08, 95% CI=1.04-1.11], educational status as Secondary and above [AOR=11.51, 95% CI=4.12-18.31], nonuser of smokeless tobacco [AOR=2.32, 95% CI=1.18-7.62]. The non-significant Hosmer-Lemeshow test of significance (p-value > 0.05) indicated the goodness of fit of the model while 29-42% of the variance of the dependent variable could be explained by this multivariable model. [Cox and Snell's  $R^2=0.29$  and Nagelkerke's  $R^2=0.423$ ]. [Table 3]

### Factors associated with favorable attitude towards screening for oral cancer

Univariate logistic regression showed that a favorable attitude towards oral cancer screening was significantly associated with religion, educational status, socio-economic status, type of family and usage of tobacco for smoking purposes. Multi variable logistic regression analysis showed that



**Table 1: Responses of the study participants on the 18-item questionnaire for assessing knowledge related to oral cancer [N=244]**

Questions	Yes n (%)	No n (%)	Don't know n (%)
<b>General awareness oral cancer</b>			
Is prevention of Oral cancer [OC] possible	88(36.1)	64(26.2)	92(37.7)
Is the treatment of OC possible	87(35.7)	87(35.6)	70(28.7)
Is OC contagious	47(19.3)	66(27.1)	131(53.6)
Does the risk of OC increase with age	103(42.2)	47(19.3)	94(38.5)
Is OC life-threatening	186(76.2)	23(9.5)	35(14.3)
<b>Knowledge of signs/Symptoms of Oral Cancer</b>			
Growth of abnormal tissue	121(49.6)	43(17.6)	80(32.8)
Non-healing wound	139(57)	38(15.5)	67(27.5)
White or red spot	48(19.7)	58(23.7)	138(56.6)
Reduced mouth opening	34(13.9)	90(36.9)	120(49.2)
Undue falling of teeth	43(17.6)	95(38.9)	106(43.5)
Continuous pain in the mouth	110(45.1)	62(25.4)	72(29.5)
Difficulty in swallowing	38(15.6)	138(56.5)	68(27.9)
Burning sensation during eating	77(31.6)	70(28.6)	97(39.8)
<b>Knowledge regarding risk factors of oral cancer</b>			
Smoking	80(32.8)	96(39.3)	68(27.9)
Smokeless tobacco	171(70.1)	11(4.5)	62(25.4)
Alcohol	30(12.3)	140(57.4)	74(30.3)
Betel quid	52(23)	38(15.6)	158(61.4)
Family history of oral cancer	61(25)	71(31.6)	106(43.4)

\*OC= Oral Cancer

educational status of secondary level and above [AOR=2.01, 95%CI=1.32-5.58] nuclear family [AOR=2.26, 95%CI=1.15-4.41] and usage of tobacco for smoking [AOR=6.98, 95%CI=2.44-14.14] to be significantly associated with favorable attitude towards screening. The final multivariable model had good fitness (Hosmer-Lemeshow test of significance=0.363) while 34-49% of the variance of the favorable attitude could be explained by the model [Cox & Snell R<sup>2</sup>=0.34 & Nagelkerke R<sup>2</sup>= 0.49]. [Table 4]

**Discussion:**

The proportion of participants having overall satisfactory knowledge concerning oral cancer was observed to be 26.6% in the current study while 73.4% of the participants had poor knowledge. This finding was quite similar to a study conducted by Awojobi O et al in London who found that 77% of their participants had very little knowledge related to oral cancer.<sup>[10]</sup> A study was conducted in Mandya, Karnataka in 2015 by Vishma BK et al which showed that 39.5% of their participants did not know the

**Table 2: Responses of the study participants on the 8-item questionnaire for assessing attitude towards screening for oral cancer [N=244]**

Questions	Agree n (%)	Disagree n (%)	Neither agree nor disagree n (%)
It is easy to visit a doctor for screening of oral cancer	85(34.8)	71(29.1)	88(36.1)
It is easy to allow a doctor for examining my oral cavity for signs of cancer	173(70.9)	9(3.6)	62(25.5)
A doctor can help me to reduce the risk of oral cancer	174(71.3)	18(7.4)	52(21.3)
Examination of my oral cavity by a doctor will not be a waste of time	90(36.9)	96(39.3)	58(23.8)
Examination of my oral cavity will lead to early diagnosis of any cancer signs	124(50.8)	45(18.5)	75(30.7)
Examination of the oral cavity will not give me discomfort	64(26.2)	92(37.7)	88(36.1)
Regular examination of the oral cavity should be done five-yearly.	21(8.6)	121(49.6)	102(41.8)
Regular examination of the oral cavity reassures me that everything is alright	126(51.6)	46(18.8)	72(29.6)

signs and symptoms of oral cancer, while 36.7% believed that oral cancer is preventable.<sup>[12]</sup> Our study also found quite a similar finding as 42.5% of the study participants did not know any of the signs and symptoms of oral cancer while 36.1% believed that oral cancer is preventable.

Awareness regarding curability and treatment of oral cancer was present among 35.7% of the participants which was found quite similar to the study conducted by Ravoori S et al in Guntur city of Hyderabad, India.<sup>[15]</sup> Regarding signs and symptoms, approximately half of the participants were aware that growth of abnormal tissue was a common symptom of oral cancer while 57% of them knew the dangers of having a non-healing wound. This finding was similar to the study conducted by Konduru et al in Tamil Nadu (India).<sup>[16]</sup> With regards to quitting substance use, nearly 33% wanted to quit smoking while 63% wanted to quit using smokeless tobacco in the current study. This was found to be slightly in contrast to data as per Global Adult Tobacco Survey 2 (2016-2017) were 55.4% of smokers and 49.6% of

smokeless tobacco users wanted to quit substance use.<sup>[17]</sup>

Younger age was found to be significantly associated with satisfactory knowledge related to Oral Cancer which was found similar to a study done by Agarwal M. et.al.<sup>[13]</sup> Higher education level was significantly associated with satisfactory knowledge among the participants. Participants with education above secondary level showed higher chances of having satisfactory knowledge compared to those who had secondary education or below. This finding was similar to the study conducted by Ravoori S. et al where the level of knowledge regarding oral cancer increased with an increase in the educational level.<sup>[15]</sup>

With regards to attitude for screening for oral cancer, approximately 30% of the participants had a favourable attitude. The majority have not undergone oral cavity examination for screening purposes which was found similar to a study conducted by Vishma BK et al.<sup>[12]</sup> Participants with educational status above secondary level showed higher chances of having a favourable attitude

**Table 3: Factors associated with satisfactory knowledge related to oral cancer among the study participants : Logistic Regression Analysis [N=244]**

Variables	Total N (%)	Satisfactory knowledge n (%)	Unadjusted OR (95% CI)+	Adjusted OR (95% CI)+
<b>Decreasing Age (in years) **</b>			<b>1.11(1.08-1.15)*</b>	<b>1.08(1.04-1.11)*</b>
<b>Gender</b>				
Male	132(54.1)	39(29.5)	1.39(0.88-2.53)	
Female	112(45.9)	26(23.2)	1(Reference)	
<b>Religion</b>				
Hindu	151(61.9)	48(24.6)	2.08(0.82-4.12)	
Muslim	93(38.1)	17(17.6)	1(Reference)	
<b>Educational status</b>				
Secondary and above	130(53.3)	59(45.4)	<b>14.96(5.86-22.98)</b>	<b>11.51(4.12-18.31)*</b>
Below secondary	114(46.7)	6(5.3)	1(Reference)	1(Reference)
<b>Type of family</b>				
Nuclear	60(24.6)	23(38.3)	2.10(0.72-3.15)	
Joint	184(75.4)	42(22.8)	1(Reference)	
<b>Socio-economic status</b>				
Class IV or below	129(52.9)	22(17.1)	1(Reference)	1(Reference)
Above Class IV	115(47.1)	43(37.4)	<b>2.90(1.81-6.82)*</b>	1.9(0.8-4.7)
<b>Smoking status</b>				
Smoker	78(32)	18(23.1)	1(Reference)	
Non-smoker	166(68)	47(28.3)	1.32(0.71-2.54)	
<b>Drinking status</b>				
Alcoholic	58(23.8)	18(31)	1.33(0.56-2.38)	
Non-alcoholic	186(76.2)	47(25.3)	1(Reference)	
<b>Usage of Smokeless tobacco</b>				
User	110(45.1)	16(14.5)	1(Reference)	1(Reference)
Nonuser	134(54.9)	39(36.6)	<b>2.41(1.61-7.88)*</b>	<b>2.32(1.18-7.62)*</b>
<b>Usage of Betel quid</b>				
User	167(68.4)	34(20.4)	1(Reference)	
Nonuser	77(31.6)	31(40.3)	<b>2.63(1.61-5.84)*</b>	1.1(0.41-2.83)

\*significant p value (<0.05), \*\*continuous variables # only variables which have come significant in the univariate analysis have been included in the final multivariable model. +OR= Odds ratio, CI= Confidence interval Hosmer-Lemeshow's test of statistical significance=0.787, Cox & Snell R<sup>2</sup>=0.290 & Nagelkerke R<sup>2</sup>= 0.423

**Table 4: Factors associated with favourable attitude towards screening for oral cancer among the study participants: Logistic Regression Analysis [N=244]**

Variables	Total N (%)	Favorable attitude n(%)	Unadjusted OR (95% CI)+	Adjusted OR (95% CI)+
<b>Decreasing Age (in years) **</b>			0.98(0.97-1.01)	
<b>Gender</b>				
Male	132(54.1)	42(31.8)	1.22(0.72-2.18)	
Female	112(45.9)	31(27.7)	1(Reference)	
<b>Religion</b>				
Hindu	151(61.9)	54(35.8)	<b>2.23(1.22-3.91)*</b>	1.91(0.97-3.72)
Muslim	93(38.1)	19(20.4)	1(Reference)	1(Reference)
<b>Educational status</b>				
Secondary and above	130(53.3)	54(41.5)	<b>2.17(1.91-6.53)</b>	<b>2.01(1.32-5.58)*</b>
Below secondary	114(46.7)	19(16.7)	1(Reference)	1(Reference)
<b>Type of family</b>				
Nuclear	60(24.6)	28(46.7)	<b>2.70(1.51-4.92)*</b>	<b>2.26(1.15-4.41)*</b>
Joint	184(75.4)	45(24.5)	1(Reference)	1(Reference)
<b>Socio-economic status</b>				
Class IV or below	129(52.9)	30(23.3)	1(Reference)	1(Reference)
Above Class IV	115(47.1)	43(37.4)	<b>1.97 (1.12-3.45)*</b>	1.32 (0.61-2.82)
<b>Smoking status</b>				
Smoker	78(32)	47(60.2)	<b>8.16(3.66-26.28)*</b>	<b>6.98(2.44-14.14)*</b>
Non-smoker	166(68)	26(15.6)	1(Reference)	1 (Reference)
<b>Drinking status</b>				
Alcoholic	58(23.8)	17(29.3)	1(Reference)	
Non-alcoholic	186(76.2)	56(30.1)	1.04(0.51-1.98)	
<b>Usage of Smokeless tobacco</b>				
User	110(45.1)	31(28.2)	1(Reference)	
Nonuser	134(54.9)	42(31.3)	1.2 (0.75-2.18)	
<b>Betel quid</b>				
User	167(68.4)	48(28.7)	1(Reference)	
Nonuser	77(31.6)	25(32.5)	1.2(0.72-2.17)	

\*significant p value (<0.05), \*\*continuous variables # only variables which have come significant in the univariate analysis have been included in the final multivariable model.+OR= Odds ratio, CI= Confidence interval Hosmer-Lemeshow's test of statistical significance=0.363, Cox & Snell R<sup>2</sup>=0.34 & Nagelkerke R<sup>2</sup>= 0.49



towards oral cancer screening than the rest and this relationship was found to be statistically significant. Smokers showed significantly higher odds towards favourable attitude compared to non-smokers This finding was similar to a study done by Awojobi O. et. al. where an increased level of education was found to be associated with a positive attitude. Their study also demonstrated smokers and alcoholics having a more favorable attitude for getting screened for oral cancer.<sup>[10]</sup>

#### **Limitations of the study:**

Since this study was conducted as a cross-sectional interview, hence the causal association between knowledge of oral cancer and attitude towards screening with the independent variables could not be determined.

#### **Conclusion:**

The findings of the present study showed that there was a lack of awareness about oral cancer and an unfavorable attitude towards its screening among a significant proportion of the participants. Intensive awareness campaigns at the community level for increasing population-level awareness about oral cancer and its related risk factors as well as motivation and counselling for availing the screening services should be undertaken as a part of the national programme dedicated for non-communicable diseases (NPCDCS). This in turn will help in early detection and treatment of the disease thereby reducing the morbidity and mortality burden in the long run. Moreover, de-addiction programmes at the community level should also be undertaken as a sizable proportion of the study participants in the current study was detected who wanted to quit substance use.

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#### **Declaration:**

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Conflict of interest: Nil

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