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Factors Associating With Oral Health Status among the Youth in Igembe Sub-County, MERU County

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Abstract
Background: *Oral health is an essential and integral part of overall health throughout human life. The mouth is the mirror that reflects human's health and well-being. Poor oral health has negative consequences on individuals' behaviours, which may affect an individual's performance at school, home and work as well as the individual's concentration and self-esteem. Individuals cannot enjoy their food and are shy to laugh and are unable to socialize. Sometimes they feel neglected and inferior to other healthy people (BMC Oral Health, 2013).*
Materials and Methods:*This was a cross-sectional study to determine the oral health status and its associated factors among the youth in Igembe sub-county, Meru County. Data was collected through a questionnaire which was adopted from the WHO Oral Survey Handbook. Oral diagnosis was done by two dental examiners. The World Oral Health assessment form was also used. Data was analyzed using SPSS window version 25 and Epi Info. Descriptive statistics such as frequencies and percentages were used to analyze categorical data. Inferential statistics by use of Chi-square test were used to determine the interactions between the independent variables and the dependent variable. Data was presented inform of tables, charts, frequencies and percentages.*
Results:*Age, gender, level of education, income and health care insurance were found to be significantly associated with the prevalence dental caries and periodontal diseases among the study population. Smoking, alcoholism and Miraa chewing were found to be significantly associated with the prevalence of dental caries and periodontal diseases among the study population. Many of the study respondents claimed to brush their teeth but this was not reflected in the teeth mortality as it was very high. It can be concluded that teeth brushing was not done effectively.*
Conclusion:*Many of the study respondents claimed to brush their teeth but this was not reflected in the teeth mortality as it was very high. It can be concluded that teeth brushing was not done effectively.*
Key words: *Poor oral health, Smoking, alcohol, Miraa (khat)*

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I. Introduction

Oral health is one of the most neglected areas in the global health, yet 90% of people have had dental problems or toothache caused by caries and severe periodontitis which affect up to 15% of the worldwide population (Beaglehole R, 2012). Awareness, attitudes and commitment of individuals to effective oral health practices are very important for decent oral health and absence of any of these three factors results in poor oral health. The latter inclines the people to oral diseases which cause loss of teeth if not managed appropriately. Loss of teeth is detrimental to the quality of life: Physically, socially as well as psychologically.

Alcoholism has been defined by World Health Organization "a term of long-standing use and variable meaning, generally taken to refer to chronic continual drinking, frequent episodes of intoxication, and preoccupation with alcohol and the use of alcohol despite adverse consequences". According to a study conducted by Mahesh *et al.*, 2017 India, alcohol addiction not only affects health of the entire body but also the oral health of an individual. Alcoholics are at high risk of developing dental caries, gingival diseases and may suffer from oropharyngeal cancers. The risk of oral cancer further increases when alcohol is consumed along with cigarette (Mahesh *et al.*, 2017).

A number of clinical studies and regional health surveys have found an association between smoking and poor oral health. According to a report by World Health Organization, 90% of individuals with malignancy

of the mouth, lips, tongue and throat use tobacco, and the risk of developing these cancers rise with the amount smoked or chewed and the extent of the habit. Smokers are six times more probable than non-smokers to develop these cancers. A report by CDC revealed that, 16% of smokers have poor oral health, four times the rate of people who have never smoked (CDC, 2017).

In Kenya, Meru County, Igembe sub-county in addition to tobacco usage, the Ameru people extensively use alcohol and Miraa, which is popular because of its socio-cultural values in this community. This ethnic group is ranked high among communities most affected by both oral and nasopharyngeal carcinomas (Carrier N., *et al* 2014). The success of oral health in this region will depend on the enhanced understanding of the prevalence and identification of potential risk factors involved. This study therefore sought to determine the factors associated with oral status among the youth in Igembe sub-county, Meru County.

Specific objectives

1. To determine the socio-demographic and socio-economic factors associated with oral health status among the youth in Igembe constituency, Meru County.
2. To determine the lifestyle factors associated with oral health status among the youth in Igembe constituency, Meru County.

II. Materials And Methods

A cross-sectional study to determine the factors associated with oral health status among the youth in Igembe sub-county, Meru County. The study population were the youth (persons aged 18-35 years) residing in Igembe sub-county, Meru County. A sample size of 340 respondents was obtained using the Cochran (1998) statistical formula.Stratified random sampling was used to select the respondents.

Study Design

Stratified random sampling was used to select the respondents, where the area was divided into four locations (stratum) as shown in the table 1 below. Listing of persons in the target population was first done in the stratum. Hence, from each stratum simple random sampling was done to come up with the desired sample size of 340 respondents.

Table 1: Stratified random sampling of study participants

Location(stratum)	Population
Maua	107
Maili tatu	62
Kangeta	77
Laare	94
Total	**340**

Study Location

This was at Igembe sub-county in Meru County. Several factors led to the choice of this location. First, the area is ranked high among areas most affected by oral diseases in Kenya, with the youth being the most affected (Carrier N, Journal of African Cultural Studies, 2014). Secondly, the area is the largest Miraa growing region in the county. Finally, Miraa has been in the headlines after being related to causing oral harm.

Study Duration: April 2019 to June 2019
Sample Size: 340 respondents
Sample Size Calculation: A sample size of 340 respondents was obtained using the Cochran (1998) statistical formula.
Inclusion Criteria:

- All the youths who consented to take part in the study.

Exclusion Criteria:

- Individuals below 18 years of age.
- Individual who did consent to be part of the study.
- Mentally challenged individuals.

Data Collection Tools:

A questionnaire adopted from the WHO Oral Survey Handbook was used to collect data from the selected sample. The questionnaire entailed all aspects taking into account the socio-demographic and socio-economic factors and all other variables in the study were incorporated in the questionnaire. Oral examination instruments included; mouth mirror, explorer and probe.

Statistical Analysis:

The questionnaire was checked manually for completeness and consistencies, and then coded, entered, and analyzed using SPSS window version 25. Descriptive statistics such as frequencies and percentages were used to analyze categorical data. Inferential statistics by use of Chi-square test was used to determine the associations between the independent variables and the dependent variable (P=<0.001).

III. Results

Distribution of study respondents by age

The mean age of study respondents was 27(±3) years. Majority, 52% of the study respondents were aged 23-27 years,

Table 1 Distribution of study respondents by age

Age	Frequency	Percentage
18-22 years	34	10%
23-27 years	177	52%
28-32 years	102	30%
33-35 years	27	8%
Total	**340**	**100%**

Distribution of study respondents by gender

Majority, 54% of the study respondents were male,

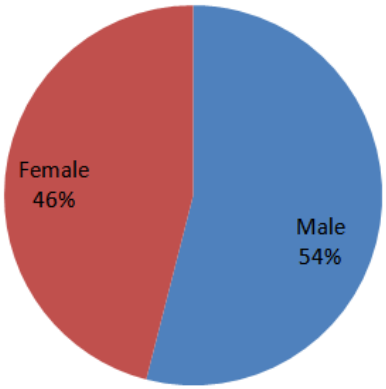

Figure 1 Distribution of study respondents by gender

Distribution of study respondents by smoking status

In this study, 26% of the study respondents were current smokers while 8% were former smokers,

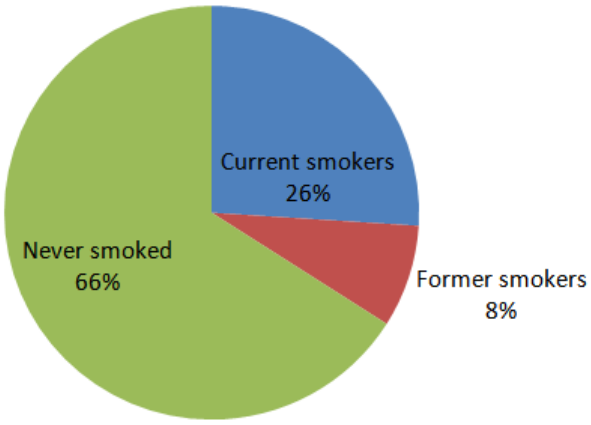

Figure 2 Distribution of respondents by smoking status

Distribution of study respondents by type of tobacco used

Majority, 52% of the study respondents used kuber (smokeless tobacco), 23% smoked cigarettes while 19% smoked hand rolled cigarettes,

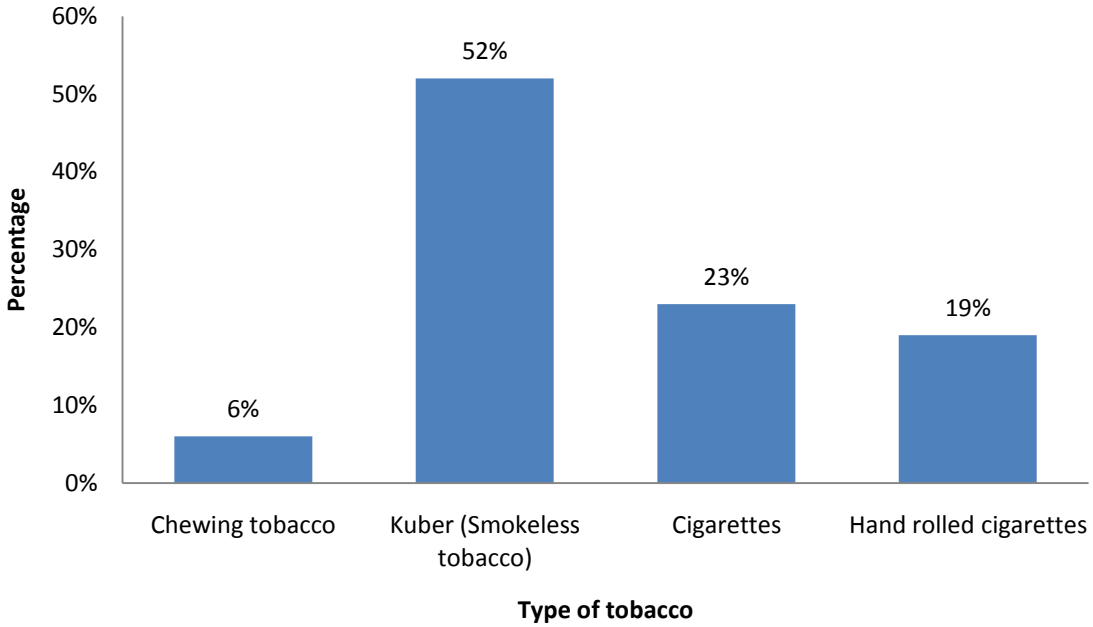

Figure 3 Distribution of study respondents by type of tobacco used

Distribution of study respondents by alcohol consumption status

In this study, 56% of the study respondents were current alcohol consumers while 7% were former alcohol consumers,

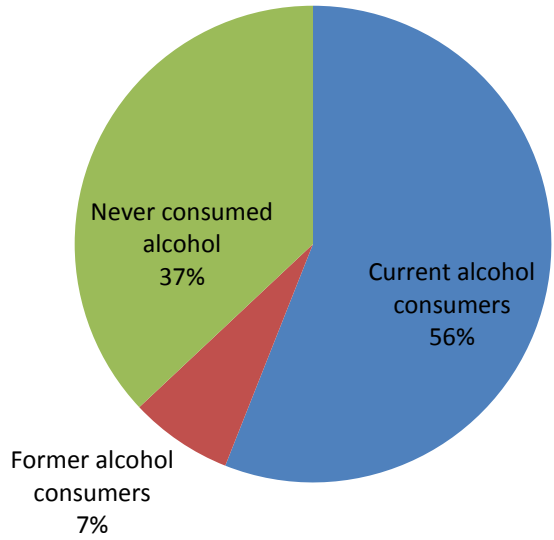

Figure 4 Distribution of respondents by alcohol consumption status

Distribution of study respondents by type of alcohol consumed

In this study, 47% of the study respondents consumed spirits and gins, 34% consumed beer, and 10% consumed whisky while 9% consumed traditional alcoholic drinks, (figure 4.12)

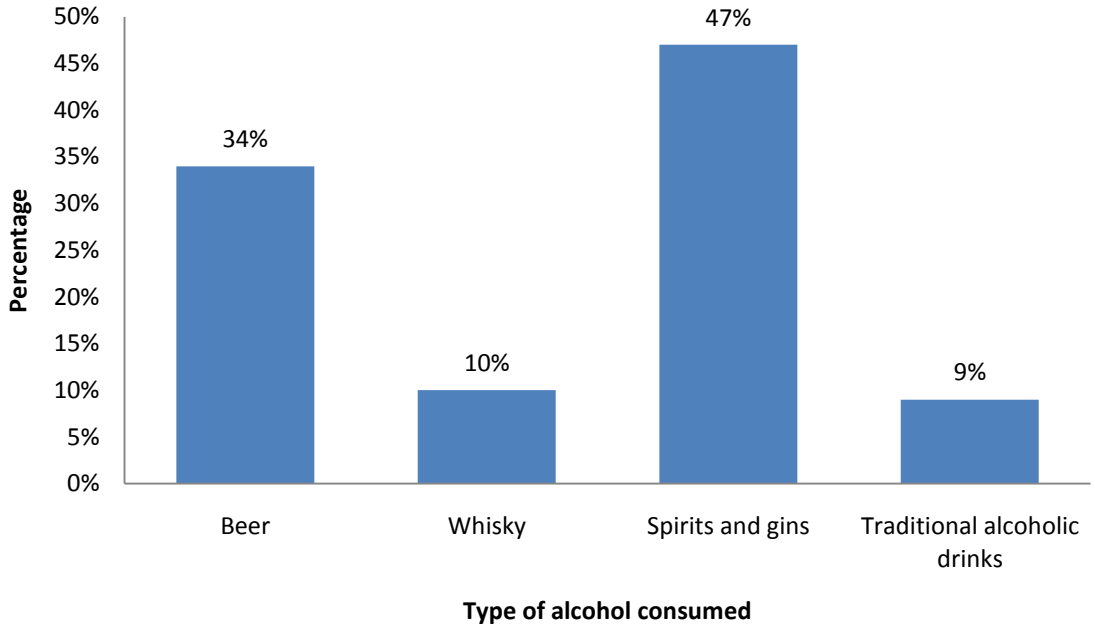

Figure 5 Distribution of study respondents by type of alcohol consumed

Distribution of respondents by Miraa (khat) chewing
Majority, 88% of the study respondents chewed Miraa,

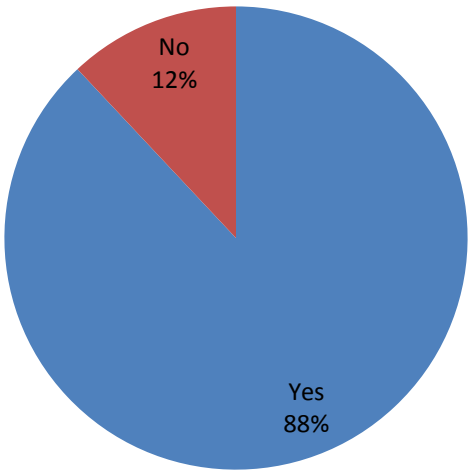

Figure 6Distribution of respondents by Miraa chewing

Substances used to chew Miraa with
In this study, 34% chewed Miraa with sweets (candy), 30% chewed with sugary tea/coffee and 20% chewed with soda/soft drinks,

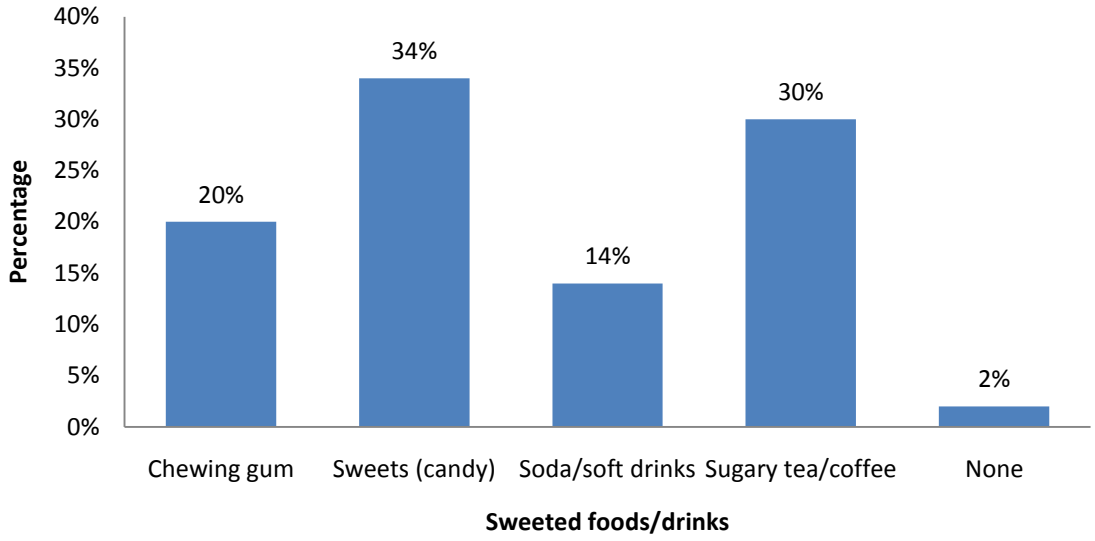

Figure 7 Substances used to chew Miraa with

Distribution of respondents by frequency of teeth cleaning

Majority, 51% of the respondents cleaned their teeth sometimes while 11% had never cleaned their teeth,

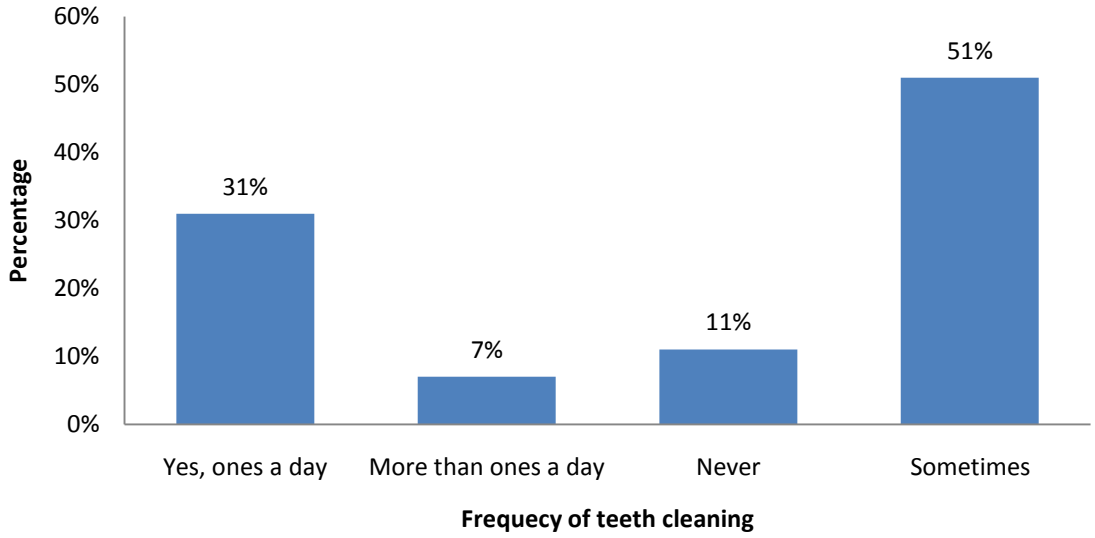

Figure 8 Distribution of respondents by frequency of teeth cleaning

Distribution of respondents by oral hygiene aids

Forty seven percent of the study respondents used toothbrush for teeth cleaning while 12% used charcoal for teeth cleaning,

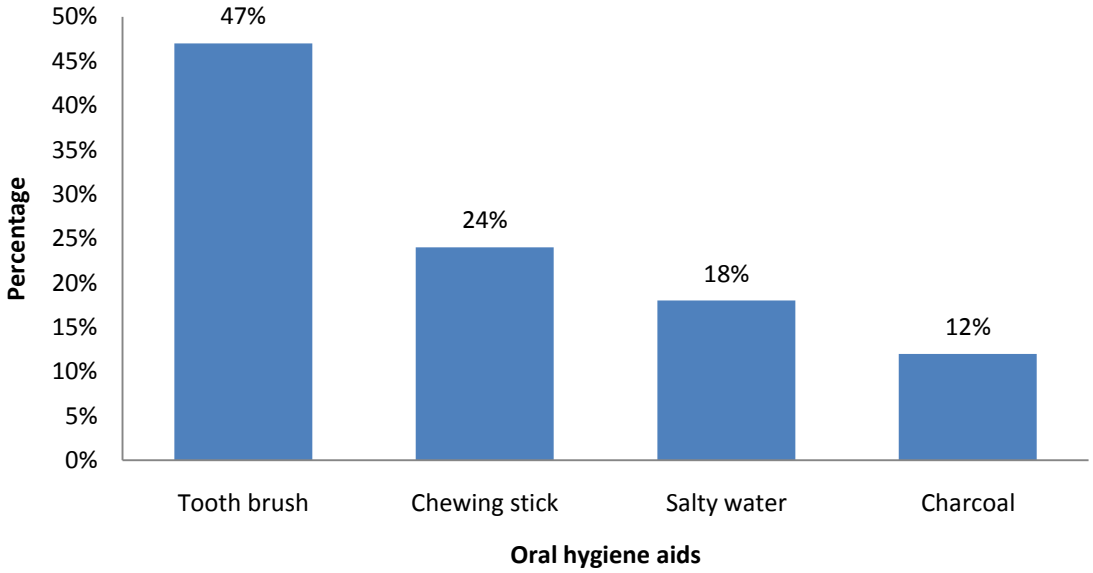

Figure 9Distribution of respondents by oral hygiene aids

Distribution of respondents by visit to the dentist within last 12 months
Majority, 62% of the study respondents had not visited the dentist within the last 12 months,

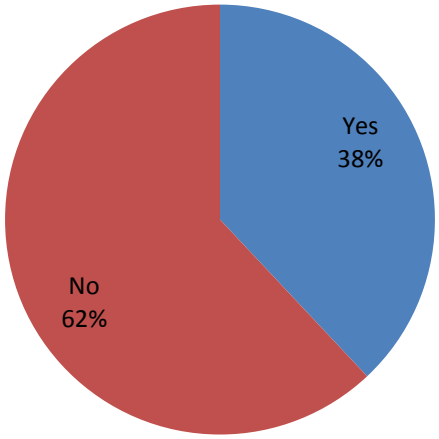

Figure 10 Distribution of respondents by visit to the dentist within the last 12 months

Distribution of respondents by frequency of consuming cariogenic foods
Majority, 54% of the respondents consumed sugary tea/coffee on daily basis and then followed by cakes/biscuits,

Table 2 Distribution of respondents by frequency of consuming cariogenic foods

Food/drink	Daily	3-6 times a week	Less than twice a week	Never
Sweets (candy)	22%	18%	10%	50%
Cakes/biscuits	31%	38%	24%	7%
Chewing gum	14%	20%	32%	34%
Chocolate	-	27%	19%	54%
Soda or other soft drink	11%	42%	47%	-
Sugary tea/coffee	54%	22%	20%	4%

Measures of association

Factors associating with Dental caries

From the table 3 below, it can be seen that the factors which had a significant association (P<0.001) with the prevalence of dental caries include; age, gender, tobacco smoking, alcoholism and Miraa chewing.

Factor	With Dental caries	Caries free	P-value
Age			0.004
18-22 years	21(6.1%)	13(3.9%)	
23-27 years	149(43.9%)	27(8.1%)	
28-32 years	32(9.4%)	70(20.6%)	
33-35 years	9(2.8%)	17(5%)	
Gender			0.002
Male	136(40%)	48(14%)	
Female	75(22%)	82(24%)	
Tobacco smoking			<0.001
Yes	111(32.6%)	6(1.8%)	
No	100(29.4%)	125(36.7%)	
Alcoholism			<0.001
Yes	147(43.3%)	66(19.4%)	
No	64(18.9%)	62(18.3%)	
Miraa Chewing			<0.001
Chewing Miraa with sweeteners	174(51.1%)	11(3.3%)	
Chewing Miraa with no sweeteners	23(6.7%)	91(26.7%)	
Did not chew Miraa	15(4.4%)	26(7.8%)	

Factors associating with Periodontal disease

From the table 4 below, it can be seen that the factors which significant association (P<0.001) with the prevalence of periodontal disease (gum disease) include the following; age, gender, level of education, income, smoking, alcoholism and Miraa chewing.

Factor	With Periodontal disease	No Periodontal disease	P-value
Age			0.004
18-22 years	17(5%)	17(5%)	
23-27 years	96(28.3%)	81(23.9%)	
28-32 years	34(10%)	68(20%)	
33-35 years	13(3.9%)	13(3.9%)	
Gender			0.002
Male	117(34.4%)	66(19.4%)	
Female	43(12.8%)	113(33.3%)	
Tobacco smoking			<0.001
Yes	100(29.4%)	15(4.4%)	
No	60(17.8%)	164(48.3%)	
Alcoholism			<0.001
Yes	94(27.8%)	58(17.2%)	
No	66(19.4%)	121(35.6%)	
Miraa chewing			<0.001
Chewing Miraa with sweeteners	115(33.9%)	45(13.3%)	
Chewing Miraa with no sweeteners	34(10%)	55(16.1%)	
Did not chew Miraa	11(3.3%)	38(11.1%)	

IV. Discussion

In this study, 26% of the study respondents were current smokers while 8% were former smokers. Kuber was the most common type of tobacco used by the study respondents. This was a smokeless form of tobacco which was abused by placing it under the lower lip.Kuber is alleged to contain more nicotine content than cigarette (NACADA report, 2019). There was strong significant association (P<0.001) between smoking and poor oral health among the study respondents. These finding was in consent with a study by WHO which revealed that 90% of individuals with malignancy of the mouth, lips, gum , tongue and throat use tobacco, and the risk of developing these cancers rise with the amount smoked or chewed and the extent of the habit. Furthermore, it was revealed that the respondents who smoked were more prone to periodontal disease (gum disease). This finding was in concordant with a study conducted by CDC which revealed that individuals who smoke less than 10 cigarettes per day are two times more likely to develop gum disease (CDC, 2017). In this study, 56% of the study respondents were current alcohol consumers while 7% were former alcohol consumers. The researcher further discovered that the risk of oral diseases increased when alcohol was consumed along with cigarettes. This was in agreement with a study conducted byMahesh *et al.*, 2017which revealed that alcoholics are at high risk of developing dental caries, gingival diseases and may suffer from oropharyngeal cancers (Mahesh *et al.,* 2017). In this study, 88% of the study respondents chewed Miraa (khat) while 12% did not. Respondents who chewed Miraa with no cariogenic foods and regularly brushed teeth were found to have a

better oral health as compared to the respondents who chewed Miraa with cariogenic foods. The fluoride content in Miraa did not have any link with the dental caries. This finding concurred by a study conducted by El-Wajeh *et al.,* 2009 which revealed that Khat in itself is considered to be non-cariogenic and the way it is used is suggested to have a cleansing effect on the teeth with a potential to lower dental caries rate among users (El-Wajeh *et al.,* 2009). However in this study, the high prevalence of dental caries and periodontal diseases among the khat users could be explained by the fact that majority of the respondents 51.1% with dental caries and 33.9% with gum diseases among the khat chewers used sweeteners (cariogenic foods) to chew Miraa with so as to counteract the bitter taste of Miraa in the mouth during chewing. Furthermore majority of the youths kept khat bolus in the mouth throughout the day and night since most of them were in the khat business. Brushing of teeth among the study respondents was very rare since most of them were in a 24-hour khat business which they gave more attention as compared to their oral health. In this study, 87% of the khat chewers had dental staining whereas no staining was noted among the non-chewers, indicating a significant association between the khat chewing and staining of teeth. Moreover, the observed dental staining among the Miraa chewers was found to be independent of the habit of smoking tobacco.

V. Conclusion

Smoking, alcoholism and Miraa chewing were found to be significantly associated with the prevalence of dental caries and periodontal diseases among the study population.

Many of the study respondents claimed to brush their teeth but this was not reflected in the teeth mortality as it was very high. It can be concluded that teeth brushing was not done effectively.

Lack or breakdown of facilities for dental procedures in most public hospitals contributed to poor oral health status among the study respondents.

VI. Recommendations

- The youths should be encouraged on brushing teeth at least twice a day, avoiding risk factors such as tobacco, alcoholism and chewing Miraa with cariogenic foods. Brushing of teeth should highly be recommended among the Miraa chewers especially at night to avoid keeping of khat bolus.
- The County Government in collaboration with the Public Health department should create awareness among the youths on the importance of regular dental check-ups as part of preventive measures and teaching good habit on oral hygiene.
- The County Government should carry out oral health promotion in the rural areas.
- The County Government to adopt a health systems approach that focuses on promoting and integrating clinical best practices (behavioural and pharmacological) which help tobacco dependent consumers increase their chance of quitting successfully.
- The County Government in collaboration with the National Government to create jobs among the youths so as to reduce Miraa dependency and also reduce school drop outs.

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