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SMOKING AND ORAL PATHOLOGIES IN 4 MILITARY ESTABLISHMENTS IN MADAGASCAR

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Abstract

This is an epidemiological study of the cross-sectional analytical type carried out on 926 subjects: military smokers and non-smokers with different socio-demographic characteristics. It was undertaken with the aim of describing the effects of tobacco on oral health.
In this study, over half the population were smokers (54.5%). They were all male (100%), predominantly in the 17-24 age group (35.2%), dominated by male troopers (60.5%). The majority of smokers had poor oral hygiene (46.5%). The most common oral pathologies in smokers were extrinsic tooth discoloration (59.6% in the anteroinferior region), gingivitis (22.5%), gingival recession (43.6% in the anteroinferior region), tooth mobility (12.6% in the anteroinferior region) and periodontitis (44.9). Pre-cancerous tumor lesions and oral cancers were more prevalent in smokers.
This study was corroborated by a number of earlier studies, most of which indicated that smoking has considerable adverse effects on oral tissues. The severity of the pathology depends on the duration of tobacco consumption and an individual's oral hygiene.
Tobacco alters oral hygiene, facilitating the onset of oral, periodontal and oral mucosal disease.

Key words :lesions,military, oral mucosa, periodontal disease,tobacco.

INTRODUCTION

In Madagascar, the country was encouraged to start growing tobacco, a practice still in force today. Tobacco soon became one of the means of communication for integrating into a group of young people, within a community sharing the same way of life, as in regiments or military premises. However, tobacco is primarily of interest to the oral cavity through which it passes, since it is currently recognized as a risk factor for periodontal disease and cancers of the oral cavity [1].
The general aim of the present study was to determine the oral cavity pathologies associated with smoking in military personnel.

METHODS

Our study was carried out in 3 military Regiments : at the Corps d'Administration des Personnels des Services Administratifs et Techniques (CAPSAT) in Sonierana Antananarivo, at the Premier Régiment de Transmission et de Service (1erRTS) in Fiadanana Antananarivo

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which is a regiment responsible for the Malagasy Army's communication and transmission, at the DeuxièmeRégiment de la RégionMilitairenuméro 4 at Mahajamba 402 (2/RM4), which is responsible for agriculture, and at the Centre Hospitalier de Soavinandriana (CENHOSOA) in Antananarivo, which is a university hospital for all military personnel and civilians requiring medical treatment and care.

This is an epidemiological, analytical and cross-sectional study with a study period of 8 years (February 2006 - December 2014) and a study duration of 13 months (September 2020 - October 2021). Our observations were made on military volunteers coming for consultation, regardless of gender or rank, smoker or non-smoker. We included in the study all military personnel who presented themselves voluntarily for the survey. Convenience sampling was used for the 4 study sites, and exhaustive sampling for the study population. Our sample size was 926.

The variables studied were socio-demographic characteristics, oral hygiene practices, smoking habits and oral pathologies.

A complete odontostomatological examination, radiological examinations and histological analyses for certain pathologies to determine their nature were carried out.

RESULTS

Characteristics of the study population

Our study was 98% male, with a sex ratio of 0.01.

The most represented age group was 17 to 24, with a rate of 33.7%. Among the military personnel studied, 54.5% were smokers. The majority of smokers in the 17 to 24 age group were military personnel, with a rate of 35.2%, especially men (60.5%)

Oral hygiene

All military personnel surveyed brushed their teeth with a toothbrush, and 97% used toothpaste as a cleaning product. However, we found that 46.5% of smokers had poor oral hygiene compared with 26.6% of non-smokers, and halitosis was observed in 54% of smokers and 24.4% of non-smokers (p=0.018). The presence of extrinsic dental staining in the antero-inferior area was 59.6% of smokers and 12.5% of non-smokers.

Periodontal condition

Bleeding was found to be 13% in non-smoking subjects versus 8.6% in smoking subjects. Periodontal pocket depths of 4-5mm were 16.3% in smokers versus 12.7% in non-smokers.

Inflamed gingiva was observed in 11.9% of smokers and 16.3% of non-smokers. Gingival pigmentation was found in 46.7% of smokers and 16.3% of non-smokers. Gingival recession was more marked in the mandibular dental region of the subjects examined, more specifically in the anteroinferior dental region: 43.6% of smokers and 29.3% of non-smokers showed gingival recession.

63.9% of smokers and 89% of non-smokers had no tooth mobility. As regards tooth mobility in the mandibular dental region, the most marked area was the anteroinferior region: 12.6% of smokers and 4.2% of non-smokers had tooth mobility. Among smokers, 44.9% showed periodontitis and 22.5% gingivitis.

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Oral mucosa pathologies

Dry mouth was 58.8% in smokers versus 19.4% in non-smokers. Only 26.1% of smokers and 55.8% of non-smokers had no oral mucosal pathology. Precancerous tumours were observed, with smokers being the most affected.

Malignant tumours were observed only in smokers. This difference is statistically significant (p=0.022).

Table I : Distribution of subjects examined by gender, age range, smoking habit and smokers (N=926)

Gender	Number	%
Male	908	98
Female	18	2
Age range		
[17 - 24 years [	294	31,7
[25 - 34 years [	311	33,7
[35 - 44 years [	169	18,2
> 45 years	152	16,4
Smoking habit		
Smokers	505	54,5
Non-smokers	421	45,5
Smokers		
Male	505	100
Female	0	0

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Table II : Distribution of smokers and non-smokers by age group (N=926)

Age Range	Subjects			
	Smokers N=505		Non-Smokers N= 421	
	N	%	N	%
[17 - 24 years [	178	35,2	116	27,5
[25 - 34 years [	161	31,8	150	35,6
[35 - 44 years [	130	25,7	22	5,2
> 45 years	36	7,2	133	31,6
Hierarchicalcategory				
Trooper	306	60,5	111	26,4
Non-commissionedofficer	124	24,5	190	45,1
Officer	75	14,8	120	28,5

Age range : $^{*}p = 0,036 (< 0,05)$ hierarchical category : $^{*}p = 0,037 (< 0,05)$

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Table III : Distribution of subjects examined according to periodontal examination, attached gingiva condition, dental mobility stage and smoking habit

CPI Max	Subjects			
	Fumeurs N= 505		Non-fumeurs N= 421	
	N	%	N	%
Healthy	6	1	17	4,5
Bleeding	43	8,6	54	13
Tartar dental	335	66,3	252	60
Periodontalpocket : 4-5mm	82	16,3	53	12,7
Periodontalpocket : 6mm	39	7,7	34	8,1
Others	0	0	11	2,7
Attachedgingiva condition				
Pink	209	41,3	283	67,2
Inflamed	60	11,9	69	16,3
Pigmentation	236	46,7	69	16,3
Dental mobility stage				
Class 0	323	63,9	375	89,0
Class 1	109	21,7	23	5,4
Class 2	58	11,3	15	3,6
Class 3	15	3,0	8	1,9

CPI Max : $^{*}p = 0,066$ (>0,05) attached gingiva condition : $^{*}p = 0,022$ (< 0,05)

Dental mobility stage : $^{*}p = 0,028$ (< 0,05)

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Table IV : Distribution by mandibular dental sector of subjects examined according to gingival recession and smoking habit

Dental mandibularsector		Subjects			
		Fumeurs N= 505		Fumeurs N= 505	
		N	N	N	N
Antero-inferior	Gingival recession	220	43,6	123	29,3
	Healthygingiva	285	56,3	298	70,6
Right postero-inferior	Gingival recession	59	11,8	27	6,5
	Healthygingiva	446	88,1	394	93,4
Leftpostero-inferior	Gingival recession	43	8,6	34	8,1
	Healthygingiva	462	91,3	387	91,8

*p = 0,048(< 0,05)

Table V : Distribution by mandibular dental sector of subjects examined according to dental mobility and smoking habit

Dental mandibularsector		Subjects			
		Fumeurs N= 505		Fumeurs N= 505	
		N	N	N	N
Antero-inferior dental mobility	Dental mobility	64	12,6	18	4,2
	No dental mobility	441	87,3	403	95,7
Right postero-inferior dental mobility	Dental mobility	23	4,5	2	0,5
	No dental mobility	482	95,4	419	99,5

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Left postero-inferior dental mobility	Dental mobility	33	3,5	12	2,8
	No dental mobility	472	93,4	409	97,1

*p = 0,031 (< 0,05)

Table VI : Distribution of subjects examined according to dry mouth findings and smoking habit

Dry mouth	Subjects			
	Fumeurs N= 505		Fumeurs N= 505	
	N	N	N	N
Dry mouth	297	58,8	82	19,4
Other pathologies				
Keratoses	7	1,3	0	0
Lichen planus	2	0,3	0	0
Leukoplakia	1	0,1	0	0
Papillomas	1	0,1	0	0
Candidiasis	5	0,9	2	0,4
Gingivitis	114	22,5	75	17,8
GUN	1	0,1	0	0
Periodontitis	227	44,9	82	19,4
Squamouscellcarcinoma	2	0,3	0	0
Verrucouscarcinoma	1	0,1	0	0
Others	12	2,3	27	6,4

Dry mouth : **p = 0,007 (< 0,01) Other pathologies : *p = 0,022 (< 0,05)

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DISCUSSION

Young men under the age of 25 are the most frequent tobacco users. This observation is similar to that of a study carried out on a population of 240 smokers in the town of Ambositra, Madagascar, which revealed that tobacco consumption was affecting younger subjects: 65.8% of the population studied were in the 19 to 34 age brackets[2].

The data provided by this study suggest that the effect of tobacco on the periodontium is direct and not solely caused by plaque accumulation due to hygienic neglect.

A large number of epidemiological studies have shown a very strong association between tobacco use and the degree of severity of periodontal and oral mucosal diseases [3]. Already confirmed, our study found a clear link between smoking and oral disease.

We have observed a higher rate of periodontal disease in smokers, with a more marked decrease in periodontal bone height than in non-smokers. Longitudinal studies have shown that smokers are 2 to 3 times more likely to develop periodontal disease than non-smokers, and that the disease progresses more rapidly in smokers [4].

Djouadi-Arama et al [5] also found an association between smoking and gingival recession. In this study, smokers were most affected by periodontal disease, and similarly for gingival recession. These pathologies are generally found in the anteroinferior and all posterior areas.

Periodontal pocket depth, tooth mobility, gingivitis and gingival pigmentation were observed to be of great importance in smokers. This corroborates with Underner's 2011 study [6] in his conclusion that the severitý of periodontitis can be assessed by periodontal pocket depth, periodontal attachment loss, alveolar bone loss, gingival recession and dental mobilitý. And he evoked a 52.8% prevalence of periodontitis attributable to smoking. Whereas in our study periodontitis was 43.9% in smoking subjects versus only 19.6% in non-smoking subjects. Smokers were about four times more likely to develop periodontitis than people who had never smoked [7]. While smoking can mask the early signs of periodontal damage by depressing the gingival inflammatory response. Periodontal disease is less severe in former smokers, but the surgical response is particularly disappointing due to poor healing, with frequent recurrence of the disease [8].

In our study, dryness and oral tumors, especially precancerous tumors were the most encountered, and that smoking subjects were the most affected, a situation similar to that of Mibrod [3] who noteď that 83% of subjects with precancerous tumors of the oral cavity were smokers. It was noticeable that malignant tumors were observed only in smokers. The position of several groups, such as the American Cancer Society, is that smoking was one of the risk factors most associated with intraoral cancers [9]. The Indiana University school reviewing over 800 articles concluded that tobacco use was strongly associated with several dental and oral mucosal pathologies, and may contribute to other diseases. In October 2004, on behalf of the International Agency for Research on Cancer (IARC), 19 researchers from 7 countries presented the current state of knowledge on the cancer risks of oral tobacco products. The IARC-mandated working group camé to the conclusion that consumption of such products leads to oral cancers [10]

CONCLUSION

The present study shows that the prevalence of smoking among military personnel is high at 54.5%, with a predominance of young military personnel in the 17 to 24 age brackets.

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From this study, we were able to say that halitosis, dry mouth and extrinsic dental discoloration are the systematic and permanent consequences of smoking, the appearance of which depends on the smoker's oral hygiene and the duration of tobacco consumption.

Periodontal disease has been promoted, complicated and aggravated.

Benign or malignant oral tumors have been observed after a period of tobacco consumption of varying degrees of severity.

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