

# Periodontal status of Tibetan refugees residing in Shimla, Himachal Pradesh, India

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## ABSTRACT

**Objective:** Oral health is an integral part of the general health, however, oral health has been given lower priority than other health problems especially among the underprivileged refugee population. Out of total refugees in the world, 70% of the refugees belong to Tibet. This study was taken up to assess the periodontal status and treatment needs of Tibetans residing in Shimla, Himachal Pradesh, India and to explore and suggest better oral health care delivery to them. **Materials and Methods:** Tibetans above the age of 12 years were included in this cross-sectional study. American Dental Association (ADA) Type-3 examination was conducted. Data regarding demography and oral health practices was recorded on a structured format. For recording periodontal status and treatment need index was used. The data was analyzed using the SPSS statistical software. **Results:** A total of 550 subjects were examined for CPITN. Maximum subjects 266 (48.3%) had a CPITN score of 2 (Calculus and other plaque retentive factors). 27% (149) subjects had healthy periodontium. Female periodontal status was worse than males. It was also found that mean number of healthy sextants was higher in subjects who brush twice a day (3.5) when compared to those who brush once a day (2.4). **Conclusion:** The study revealed poor periodontal status among Tibetans and dental treatment requirement steadily increased with the advancement of age and was also related to other factors like poverty, education, and their tough life where oral health is given no priority.

## Key words

Tibetan, refugee, periodontal status, Himachal, treatment needs

## INTRODUCTION

Periodontal disease refers to conditions affecting the supporting structures of the teeth, i.e., the alveolar bone, cementum and the periodontal ligament. Gingivitis and periodontitis are the most common forms of periodontal disease.<sup>[1]</sup> After caries, periodontitis is the most common reason for tooth extraction in adults.<sup>[2-4]</sup> Pain and disability that result from periodontal diseases affect the quality-of-life<sup>[5]</sup> by changing how we chew, speak, taste and smile. These oral impairments can diminish one's social interaction; self-esteem and self-image, therefore importance of periodontal health can't be underestimated. The prevalence of periodontal disease is

more among population groups which have limited access to oral health-care services because of cultural and language barriers, low awareness of the health system and lack of financial resources;<sup>[6]</sup> thus, the majority of the population affected are poor minorities in developing countries and refugees.<sup>[7]</sup>

Several studies<sup>[5-10]</sup> have shown poor oral health status among refugees. Out of total refugees in the world, 70% of the refugees belong to Tibet.<sup>[8]</sup> Among the Tibetans settled in India the largest concentration of refugees is in Himachal Pradesh. In Himachal Pradesh Tibetans are mainly settled in the districts of Kangra, Shimla, Solan and Mandi.<sup>[10]</sup>

Although central Tibetan administration in Dharmshala has established primary health-care centers in almost every settlement in Himachal Pradesh, studies from volunteer western and Tibetan health workers suggested an extremely poor oral and general health situation among Tibetans.<sup>[11]</sup> Dental treatment of these refugees often limited to just antibiotics and extraction at the time of pain because of their social and financial position.

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Though, Tibetans are refugees living in India they are intricately bound with the Indians since 1959. Hence, it is our moral responsibility to take care of their health aspects. As there are no earlier studies regarding periodontal status and treatment requirements of Tibetan population, this study has been taken up as an eye opener to assess the periodontal health status and treatment needs and to explore and suggest better oral health-care delivery to them.

## MATERIALS AND METHODS

After obtaining ethical clearance and consent from the authorities the study was taken up on the Tibetan population, spread in the various colonies in the city of Shimla. A pilot study was conducted among 50 Tibetans and format was updated. A request letter of principal was processed and the written consent was obtained. Study was conducted between the period of 26-02-2009 and 08-04-2009 covering 712 Tibetan populations. The study was systematically conducted on a pre-scheduled time table. The help of local Tibetan leaders were taken for translation purpose.

Community health worker of Tibetan colony accompanied and assisted for study and for arranging the survey camp and translating. The study was conducted in the colonies of Tibetan refugees utilizing the available furniture. All the Tibetans above the age of 12 years were included in the study.

American Dental Association Type-3 type of examination<sup>[12]</sup> was conducted. The recorder was asked to sit close to the investigator for the recordings. Out of 1292 Tibetans, 712 were examined. The data regarding demography, oral health practices and periodontal health status was recorded on a structured format. For recording periodontal health status Community Periodontal Index of Treatment Needs (CPITN) index<sup>[12]</sup> was used. Universal sample of Tibetan population was taken. Left over from the study were only those people who have left the settlement for business purpose on the day of examination and those who were not willing.

Instruments were sterilized by autoclaving before taking to the field. Later in the field chemical sterilization was followed, disposable ice cream sticks were used.

They were also health educated, demonstration of the tooth brushing was given on a model and free tooth pastes were distributed, for those subjects who needed detailed treatment referral card were issued and motivated to take the treatment at Govt. Dental College and Hospital Shimla. Data was analyzed using SPSS package 13.

### Socio-economic status

Socio-economic status was evaluated by B.G. Prasad

classification, which was modified using Aggrawal criteria,<sup>[13]</sup> which uses all India whole sale piece index, which is multiplied by a hypothetical value, i.e., 0.53.

### Statistical analysis

The collected data was entered in to MS-Excel sheet and analyzed using the SPSS, statistical software (SPSS version 13 11.05).  $P < 0.05$  was considered to be significant. Confidence interval was taken at 95%. Statistical test used were, Chi-square test, *t*-test, one-way analysis of variances test.

## RESULTS

Subject's mean age was 39.63. Median was 36 years and the range was 12-101 years. Children below the age of 12 years were excluded from the study. Nearly, 58.1% were males and 41.9% were females. Most of them 93.7% were poor and uneducated 38.6%. Out of the total subjects, 12.4% had a habit of smoking tobacco, 15.9% had a habit of chewing tobacco and 2% were alcoholics.

Out of the total subjects, 4.5% did not have a habit of brushing. Majority of the subjects were brushing their teeth once a day using a tooth brush and tooth paste [Table 1].

When subjects were asked whether they have any tooth problem or not 71.9% of males and 77.2% of the females said they have tooth problem [Figure 1].

Almost, 42.6% of the subjects (46% of the females and 40.2% of the males) had earlier experience of dental treatment [Figure 2].

### Periodontal status

A total of 550 subjects were examined for CPITN.

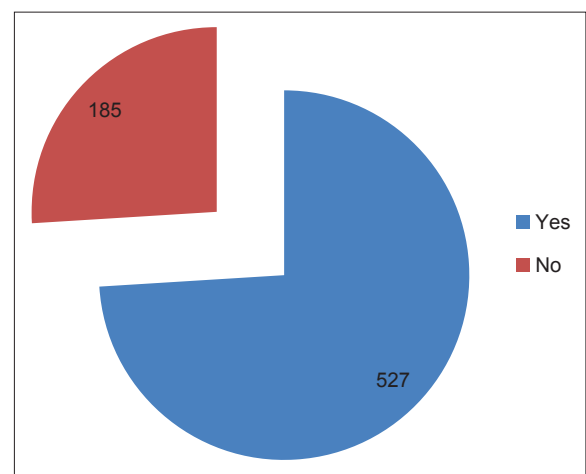


Figure 1: The distribution of the subjects according to awareness regarding dental problem

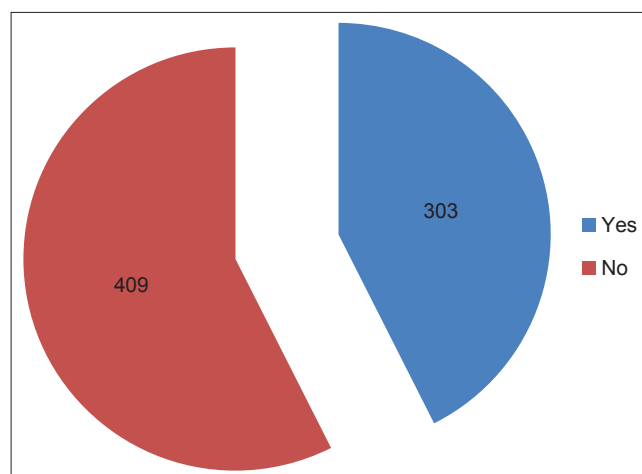
**Table 1: Distribution of the patients according to oral hygiene aid, material and brushing frequency**

Dental hygiene aid	Frequency (%)	Oral hygiene material	Number (%)	Brushing frequency	Number (%) L/O
No aid used	25 (4.5)	No material	25 (4.5)	No brushing	25 (4.5)
Tooth brush	495 (90.0)	Tooth paste	506 (92.1)	Once a day	550 (90.7)
Tooth brush and finger	9 (1.7)	Tooth paste and tooth powder	12 (2.1)	Twice-a-day	26 (4.8)
Finger	21 (3.8)	Tooth powder	7 (1.3)	Total	550 (100)
Total	550 (100)	Total	550 (100)		

**Table 2: Distribution of maximum CPITN score according to gender**

CPITN score	Female		Male		Total	
	%	No.	%	No.	%	No.
0 (healthy)	27.9	68	26.4	80	27	149
1 (bleeding)	16.4	40	19.14	58	17.8	98
2 (calculus)	48.9	121	47.8	145	48.3	266
3 (pocket≤4-5 mm)	4.8	12	3, 63	11	4.1	23
4 (pocket≥6 mm)	2.0	5	2.97	9	2.5	14
Total	100.0	247	100.0	303	100.0	550

No. – Number of subjects. From 550 subjects. CPITN – Community periodontal index of treatment needs



**Figure 2:** The distribution of the subjects according to earlier history of dental treatment taken

Maximum subjects 266 (48.3%) had a CPITN score of 2 (calculus and other plaque retentive factors). There was no significant gender difference regarding CPITN scores. 27% (149) subjects had healthy peridontium [Table 2].

There was a significant correlation between age groups and CPITN score. Only 2.5% (14) had a maximum CPITN score of 4. Most of subjects from young age groups were having bleeding from gums and calculus was more prevalent in young age groups while pockets were found more in older patients [Table 3].

Mean of healthy sextants was found higher in those subjects who brushed their teeth twice-a-day [Table 4]. Mean number of healthy sextants were found slightly higher in males [Table 5].

## DISCUSSION

The present study was a cross-sectional study, carried out to assess the periodontal health status and treatment needs of Tibetan population in Shimla Himachal Pradesh. The study is unique as it reports the first documented scientific data on Tibetan overall health status in general and periodontal status in particular in Himachal Pradesh.

Children below 12 years were not examined as the study was concentrated on permanent dentition and total of 550 subjects were examined. It was found that one person was more than 101 year old and 23.3% of the population falls above the age of 55 years. This clearly says that proportion of the population above the age of 55 is considerably higher. The longevity of Tibetan population in India is higher with all the problems they are facing such as social insecurity, poverty and refugee ship etc., This definitely needs a further study to know the secret of longevity of life among Tibetans. Number of males was higher than females and this ratio was (1000:719) was found higher than the ratio of Indian population. There is good literacy rate (61%) among young Tibetan population. Illiterates and uneducated were the elderly who have migrated from Tibet.

Hypertension was the most common systemic condition found. This could be because of their social insecurity leading to stress full living conditions. They do not have any stable income. Most of them are poor. They are also not given any voting's rights in India. Their access to medical facilities is limited.

Most common oral habit was smoking (13%), which was lower than reported by Awartani and Al-Jasser,<sup>[14]</sup> Saraswathi *et al.*<sup>[15]</sup> and Jindal *et al.*<sup>[16]</sup> The prevalence of smoking was low in women it may be because of social unacceptability. Habits were significantly correlated with gender. Similar findings were reported by Saraswathi *et al.*<sup>[15]</sup>

Nearly, 74% of the subjects were aware of their dental problem, but on clinical examination almost all subjects had one or the other dental problem. This indicates less awareness of the population regarding their oral health status. Only 42% of the population had visited dental hospital for the dental treatment. This is higher as compared reported by Saumyendra and Arvind.<sup>[17]</sup>

**Table 3: Distribution of maximum CPITN score according to age**

Age (years)	0 (healthy)		1 (bleeding)		2 (calculus)		3 (pocket≤4-5 mm)		4 (pocket≥6 mm)	
	%	No.	%	No.	%	No.	%	No.	%	No.
12-24	18.7	28	16.3	16	13.9	37	0	0	0	0
25-34	26.1	39	19.3	19	26.3	70	0	0	0	0
35-44	24.1	36	15.3	15	27.4	73	13.0	3	0	0
45-54	16.1	24	16.3	16	13.5	36	39.1	9	14.2	2
55-64	8.05	12	13.4	13	9.39	25	13.0	3	21.4	3
65-74	4.6	7	14.3	14	6.76	18	26.0	6	28.5	4
≥75	2.4	3	5.1	5	2.6	7	8.6	2	35.7	5
Total	100.0	149	100.0	98	100.0	266	100.0	23	100.0	14

P<0.001 (significant). No. – Number of subjects. From 550 subjects. CPITN – Community periodontal index of treatment needs

**Table 4: The distribution of mean sextants in relation to brushing frequency**

Frequency	0 (healthy)	1 (bleeding)	2 (calculus)	3 (pocket≤4-5 mm)	4 (pocket≥6 mm)
No brushing					
Mean	1.3750	0.6250	0.6875	0.0625	0.0313
Standard deviation	1.97974	1.31370	0.93109	0.35355	0.17678
Once a day					
Mean	2.4226	1.0232	0.7926	0.0728	0.0155
Standard deviation	2.36238	1.52836	1.02844	0.37681	0.13552
Twice a day					
Mean	3.5294	0.4412	0.4412	0.0588	0.0000
Standard deviation	2.59645	0.78591	0.61255	0.34300	0.00000
Total					
Mean	2.4284	0.9775	0.7711	0.0716	0.0154
Standard deviation	2.37792	1.49807	1.01027	0.37380	0.13433

**Table 5: Means score of the sextants in relation to gender**

CPITN code	Male		Female		Total	
	Mean	SD	Mean	SD	Mean	SD
0 (healthy)	2.27	2.38	2.63	2.36	2.42	2.37
1 (bleeding)	0.90	1.48	1.07	1.51	0.9	1.49
2 (calculus)	0.73	1.03	0.81	0.97	0.77	1.01
3 (pocket≤4-5 mm)	0.072	0.36	0.70	0.38	0.07	0.37
4 (pocket≥6 mm)	0.014	0.11	0.16	0.15	0.01	0.13

CPITN – Community periodontal index of treatment needs; SD – Standard deviation

Maximum subjects used tooth brush for the cleaning of their teeth. This clearly indicates their awareness about oral hygiene, but most of them brush once a day. Hence, they need to be educated and motivated to brush their teeth twice-a-day. Subjects who never brushed their teeth in this study were lower than reported by Ronderos *et al.*<sup>[18]</sup> and Uetani *et al.*<sup>[7]</sup> Most of the brushed their teeth once a day, which was higher than reported by Ronderos *et al.*,<sup>[18]</sup> Bagramian *et al.*<sup>[19]</sup> and Wang *et al.*<sup>[20]</sup>

Over all prevalence of periodontal disease was 72%, which was correlated. The presence of the calculus was the main finding (48%) which was supported by Vrbic *et al.*<sup>[21]</sup> Smith and Lang,<sup>[22]</sup> Nunn *et al.*,<sup>[23]</sup> Mosha *et al.*,<sup>[24]</sup> Wang *et al.*<sup>[20]</sup> and Varenne *et al.*<sup>[25]</sup> This clearly shows that their oral

hygiene practices are ineffective and they do not get their teeth professionally cleaned this may be because of limited access and low socio-economic status. Prevalence of periodontal pocket was (6.7%), which was high compared to Nunn *et al.*,<sup>[23]</sup> but lower than reported by Galan *et al.*<sup>[26]</sup> and Zimmerman *et al.*<sup>[27]</sup>

There was a significant correlation between the age group and periodontal status, which was similar to that reported by de Macêdo *et al.*<sup>[28]</sup> Female periodontal status, was worse than males, but the difference could not reach to statistically significant value. This finding is opposite to study done by Hessari *et al.*<sup>[29]</sup> It was also found that the mean number of healthy sextants was higher in subjects who brush twice a day (3.5) when compared with those who brush once a day (2.4).

It was interesting to find that Tibetan people get gold crown in their anterior sound teeth. It's a myth in their community that this will save them from the evil spirits. It's a cultural Taboo in this community for which they need to be educated.

Although the study was restricted to Tibetan population residing in Shimla due to economic and time constraints, the results obtained after the study are appreciable and underscore the importance of conducting large scale

multicenter studies. Such studies will not only help us to know the prevalence of dental and other health problems faced by Tibetans and other refugees but also facilitate oral health-care providers to deliver effective treatment to similar under privileged populations.

Future studies may include the prosthetic needs and caries prevalence among Tibetans. Also, studies should be undertaken to assess the effect of stress on periodontal health in Tibetan refugees.

## CONCLUSIONS

Over all periodontal status of the Tibetan population was found poor. Older Tibetan people more affected by periodontal problem. Periodontal status of males was better than females. The presence of the calculus was the main finding. This may be because of low awareness, low access to health-care facilities. It is also related to other factors such as poverty, education and their tough life where oral health is given no priority.

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