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## Acculturation and oral health status among tibetan immigrants residing in Bangalore City, India

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### Abstract

**Background:** This study is the first of its kind conducted among Tibetans immigrants to Bangalore City, India to study the effects of acculturation on the oral health outcomes of less established group of individuals.

**Objectives:** To determine the Acculturation and oral health status among Tibetan immigrants in Bangalore city and to assess the relationship between them.

**Materials and Methods:** A random sample of 560 immigrants aged 18 years and above from different Tibetan centre of Bangalore city were included for the study. Acculturation was measured using modified Psychological-behavioral acculturation scale. Dental caries experience and periodontal status were recorded. Results: 49.1% of females and 50.9% of males were in highly accultured group. Bivariate analysis using Chi-square test was performed using 5% significance level. Logistic regression analysis demonstrated a strong association between DMFT and Ethnic factors, and periodontal status with language barrier and utilization of health care.

**Discussion:** Reducing disparities in oral health status and in the use of dental services among Tibetan immigrants require attention to cultural factors such as language barrier and age at migration and immigrant's degree of acculturation.

**Key Words:** *Acculturation, oral health status, oral health beliefs, Tibetan Immigrants, Bangalore City.*

## Introduction

Acculturation is a complex phenomenon that can serve as a proxy for cultural norms and behaviors affecting care seeking, prevention behaviors, and ultimately, health outcomes (1, 2, and 3). This process does not occur at the same rate or to the same degree in all individuals. Various studies of the effect of acculturation on the general health of immigrants have shown that acculturation can be beneficial to some health behaviors and outcomes due to preventive health care services and detrimental to others by adopting negative behavioral practices (4, 5).

Bangalore, being the third largest metropolitan city in India is one of the most happening cities in the world. There are large number of immigrants from the neighboring countries in search of job opportunities and better living conditions. Since their exodus in 1959, a few Tibetans have made Bangalore their home. Culture of Bangalore is an amalgam of many cultures. Assimilation of one cultural group into another group is evidenced by adoption of common attitudes and values.

Acculturation has been studied in relation to prevalence of chronic illness and utilization of health services. As people move from one culture and adopt another culture, the degree of acculturation can affect the immigrants' decisions to change the life style and behavioral change, including those related to health (6). Limited research data are available to describe the differences in oral health care pattern among the various immigrants in India and especially among the Tibetans. The move away from Tibet has brought about dramatic changes in the Tibetan culture and health of the people. Hence an attempt is made to assess the relationship between acculturation and oral health status among the Tibetan immigrants of Bangalore city.

## Methodology

The study is based on cross sectional survey data collected from a sample of 560 individuals aged 18 years and above in different Tibetan centres of Bangalore city.

Simple random sampling was used for sample selection. Individuals in the age group of 15-45 years of age were included in the study and an informed consent was obtained from study subjects prior to participation in the study.

Acculturation was measured using modified psychological behavioral acculturation scale<sup>4</sup>, which comprised of language, knowledge and media use, social interactions, food preferences and self-identification items.

A self-administered questionnaire consisting of 24 items was pre validated by pilot study. Each question was categorized into low and high acculturation scale. The acculturation score ranging between 0-12 was considered as low and score between 12-24 as high acculturation.

Basic data on socio demographic characteristics of

subject's age, gender, education, occupation, income levels, marital status, age at migration, duration of stay in Bangalore, access to dental care and previous dental visits was collected.

Following the completion of questionnaire an oral health assessment was carried out for caries experience (DMFT and DMFS index of Knutson and Palmer 1938), Periodontal status (CPI index 1997) and Fluorosis (Deans Fluorosis index 1945) by two calibrated examiners and trained recorders. The examination was done by using diagnostic instruments such as mouth mirror, explorer and CPI probe under artificial light.

### Data analysis

Data was entered into excel sheets and exported to SPSS version 14.0 for statistical analysis. Descriptive statistical analysis and Bivariate analysis were performed. The dependent variables DMFT and Periodontal status were dichotomized as presence or absence of the condition. Bivariate analysis using Chi-square test was performed at 5% significance level. Then Logistic regression analysis using stepwise procedure was performed to identify the acculturation factors which were at more risk to develop dental caries and periodontal disease.

## Results

*Table 1* shows the frequencies for socio demographic characteristics such as age, gender, education, occupation, Socio-economic status and marital status. The study consisted of 560 individuals, of whom 52% were male and 48% were females. Most of the individuals (59.3%) were in age group of 15-24 years. 72.5% were in upper lower socio-economic status, 98.5% have used tooth brush and tooth paste and 64.8% brushed once daily. Only 7% had the habit of smoking, 51.1% were affected by dental caries, mean DMFT 3.6%. 82.5% had gingivitis and 7.5% had periodontal involvement. 17.8% had dental fluorosis and is seen more among first generation group, the reason may be the endemic fluorosis.

*Table 2* shows Acculturation data of the study population. 49.1% of females and 50.9% of males were in highly accultured group. Among 15 to 24 year olds who form the majority of the study population, 57.1% were highly accultured and 62.9% were in low acculturation. Among those affected by Dental caries, 57% were highly accultured. Among those with periodontal involvement, 17.1% were highly accultured.

*Table 3a and Table 3b:* Data was subjected to Bivariate analysis. Those with p value less than 0.05 were subjected to logistic regression analysis.

*Table 4a:* Stepwise logistic regression analysis with DMFT as dependent variable. Statistically significant factor in this model was music preferred (p<0.05).

*Table 4b:* Stepwise logistic regression analysis with Periodontal status as dependent variable. Among the variables subjected for logistic regression analysis with pe-

Variables	Number	Percentage
<i>Age Group</i>		
15-24 yrs	332	59.10%
25-34 yrs	122	21.70%
35-44 yrs	98	17.40%
45 yrs and above	8	1.50%
<i>Gender</i>		
Male	292	52%
Female	268	48%
<i>Education</i>		
Primary school	38	6.80%
High school	68	12.10%
Graduate	454	81%
<i>Occupation</i>		
Unskilled worker	6	1.1%
Semiskilled	86	15.3%
Skilled	102	18.2%
Clerical/Shop	360	64.2%
Semiprofessional	6	1.1%
<i>Socioeconomic status</i>		
Lower	0	0
Upper lower	406	72.5%
Lower middle	112	20%
Upper middle	42	7.5%
Upper	0	0
<i>Marital status</i>		
Married	338	60.4%
Unmarried	222	39.6%

Table 1. Sociodemographic data

riodontal disease, Language preferred and place of birth were found to be statistically significant ( $p < 0.05$ ).

**Discussion**

There is scarcity of data available on oral health among Tibetan immigrants in India. The move from Tibet has brought about dramatic changes in their culture and health. Evidence from Tibetan health workers has suggested an extremely poor dental health situation among the Tibetans and their children in their new environment (7).

In this study, acculturation was measured using modified psychological behavioral acculturation scale. Psychological acculturation reflects the degree of consensus with defined norms, basic values, beliefs, attitudes and preferences of the majority of the group. Behavioral acculturation is related to the cultural learning and the adoption of the most observable, external aspects of the dominant culture including social skills, language skills and lifestyle and the ability to fit into the new socio cultural reality. It was found that 49.1% of females and 50.95% of male were in high acculturation group and 49.05% of males and 50.89% of females were in low acculturation group. These results are similar to the studies conducted by *Jiro Otsuru* (8) where 92% of migrants to Japan were in low acculturation group.

Dental caries experience was almost similar in both high and low acculturation group, 57% and 58% respectively. In a study by *Gustavo D. Cruz*, Length of stay was inversely associated with need for treatment of dental caries (9). This process is related to acculturation where individuals modify values and behaviors as a result of

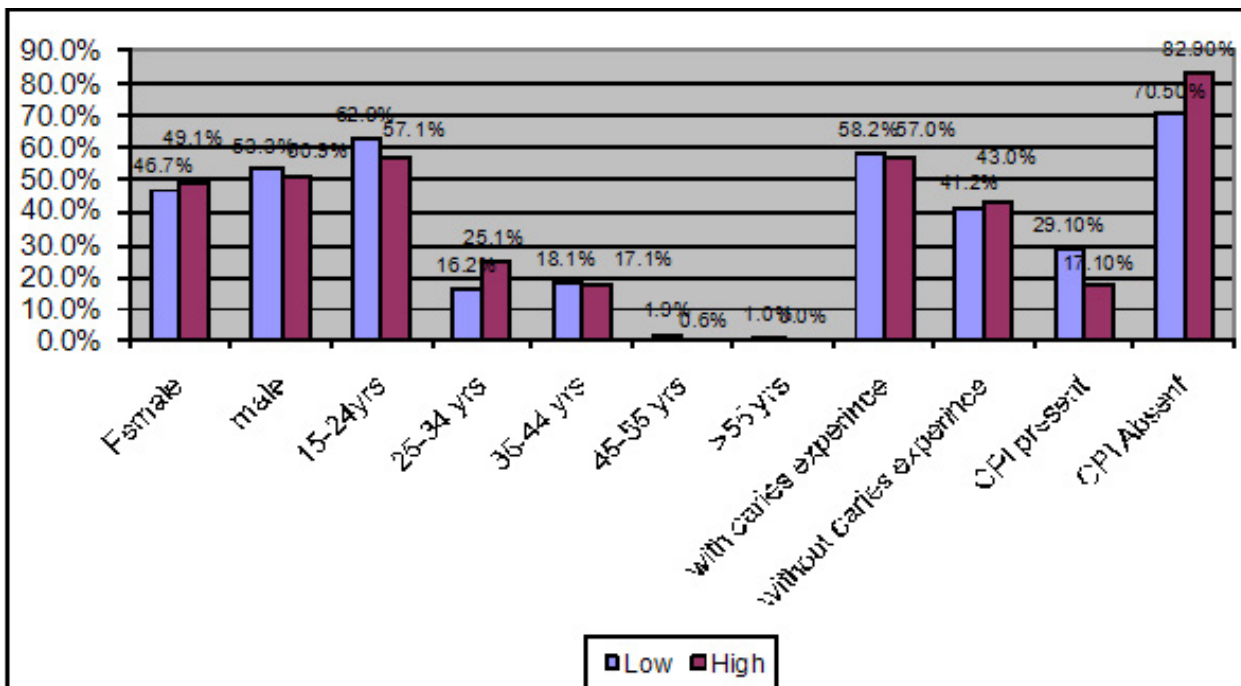


Table 2. Acculturation Data.

Acculturation Scale	DMFT = 0	DMFT > 0	P value
<i>I. Language spoken</i>			
High acculturation	70(12.5%)	160(28.5%)	<0.001*
Low acculturation	152(27.1%)	178(31.7%)	
<i>2. Language preferred</i>			
High acculturation	74(13.2%)	158(28.2%)	<0.001*
Low acculturation	156(27.8%)	172(30.7%)	
<i>3. Place of birth</i>			
High acculturation	150(26.7%)	242(43.2%)	0.201
Low acculturation	74(13.2%)	94(16.7%)	
<i>4. Place of growing up</i>			
High acculturation	112(20.0%)	146(26.0%)	0.128
Low acculturation	112(20.0%)	190(33.9%)	
<i>5. Generation level</i>			
High acculturation	70(12.5%)	102(18.2%)	0.822
Low acculturation	154(27.5%)	234(41.7%)	
<i>6. Food preferred</i>			
High acculturation	102(18.2%)	138(24.6%)	0.296
Low acculturation	122(21.7%)	198(35.3%)	
<i>7. Music/Television</i>			
High acculturation	218(38.9%)	294(52.5%)	<0.001*
Low acculturation	6(1.1%)	42(7.5%)	
<i>8. Customs and Festivals</i>			
High acculturation	160(28.5%)	242(43.2%)	0.878
Low acculturation	64(11.4%)	94(16.7%)	
<i>9. Difficulty in getting Jobs</i>			
High acculturation	44(7.85%)	178(31.7%)	<0.001*
Low acculturation	180(32.1%)	158(28.2%)	
<i>10. Utilization of health services</i>			
High acculturation	86(15.3%)	130(23.2%)	0.943
Low acculturation	138(24.6%)	206(36.7%)	
<i>II. Age at migration</i>			
High acculturation	170(30.3%)	234(41.7%)	0.106
Low acculturation	54(9.6%)	102(18.2%)	

\* denotes significant association

**Table 3a.** Bivariate analysis between acculturation Variable and DMFT

continuous exposure to a new cultural system, better access to dental care. Mean DMFT was found to be 3.6 as compared to 6.05 by Gustavo et al (10) Periodontal involvement was seen more in low acculturation group. Only 17% of high acculturation subjects had periodontal involvement. It could be due to majority of individuals brushed their teeth twice. Individuals with low acculturation and males had higher levels of periodontal disease

Acculturation Scale	Perio < 0	Perio > 0	P value
<i>I. Language spoken</i>			
High acculturation	50(8.9%)	176(31.4%)	0.741
Low acculturation	70(12.5%)	264(47.1%)	
<i>2. Language preferred</i>			
High acculturation	70(12.5%)	168(30%)	0.001*
Low acculturation	58(10.3%)	264(47.1%)	
<i>3. Place of birth</i>			
High acculturation	72(12.8%)	320(57.1%)	0.002*
Low acculturation	50(8.9%)	118(21.0%)	
<i>4. Place of growing up</i>			
High acculturation	64(11.4%)	194(34.6%)	0.109
Low acculturation	58(10.3%)	244(43.5%)	
<i>5. Generation level</i>			
High acculturation	28(5%)	144(25.7%)	0.035*
Low acculturation	94(16.7%)	294(52.5%)	
<i>6. Food preferred</i>			
High acculturation	52(9.2%)	188(33.5%)	0.952
Low acculturation	70(12.5%)	250(44.6%)	
<i>7. Music/Television</i>			
High acculturation	120(21.4%)	392(70%)	0.001*
Low acculturation	2(0.3%)	46(8.2%)	
<i>8. Customs and Festivals</i>			
High acculturation	96(17.1%)	272(48.5%)	0.195
Low acculturation	60(10.7%)	132(23.5%)	
<i>9. Difficulty in getting Jobs</i>			
High acculturation	36(6.4%)	86(15.3%)	0.019*
Low acculturation	86(15.3%)	352(62.8%)	
<i>10. Utilization of health services</i>			
High acculturation	58(10.3%)	158(28.2%)	0.021*
Low acculturation	64(11.4%)	280(50%)	
<i>II. Age at migration</i>			
High acculturation	88(15.7%)	316(56.4%)	0.997
Low acculturation	34(6.0%)	122(21.7%)	

\* denotes significant association

**Table 3b.** Bivariate analysis between acculturation Variable and Periodontal Status

se levels than those with high acculturation and females similar to study by Ismail & Szpunar,(11). However the studies conducted by Marino R (12) Stewart et al, (13) and Cruz (14) showed that individuals with low acculturation status had a higher prevalence of decayed and missing and higher periodontal disease levels than those with high acculturation.

With respect to the oral hygiene practices followed

Variables	Significance	Odds Ratio	95% C.I.	
			Lower	Upper
Language spoken	0.054	0.558	0.310	1.010
Language preferred	0.163	1.490	0.851	2.610
Music preferred	0.008	0.182	0.052	0.643
Difficulty in getting jobs	0.996	0.999	0.579	1.723

**Table 4a.** Stepwise logistic regression analysis with DMFT as Dependent variable

Variables	Significance	Odds Ratio	95% C.I.	
			Lower	Upper
Language preferred	0.016	0.469	0.252	0.870
Music preferred	0.056	0.137	0.018	1.050
Place of birth	0.016	2.220	1.161	4.243
Utilization of Health care	0.058	0.554	0.301	1.020
Generation level	0.067	1.916	0.956	3.839
Difficulty in getting job	0.154	0.603	0.306	1.190

**Table 4b.** Stepwise logistic regression analysis with Periodontal status as Dependent variable

*The Association of Immigration and Acculturation Attributes With Oral Health Among Immigrants in New York City*

Gustavo D. Cruz, DMD, MPH, Yu Chen, PhD, Christian R. Salazar, MPH and Racquel Z. Le Geros, PhD

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35 % of Tibetan immigrants brushed their teeth twice daily.18.46% of African immigrants to Philadelphia brushed twice a day in contrast with the 61.3% immigrants to New England, 90% of Latin American migrants to Japan brushed more than twice a day (8) and 80% of Hmong immigrants to U.S brushed twice day (15).

Consistent with the hypothesis that acculturation influences the use of health services, we found that the 60% of Tibetan immigrants seek oral health care from dentist compared to 49% visiting dentist among Hmong refugee population in US Christopher (15) and Okunseri et al (16) studies. This could be due to the reason majority of immigrants in our study were in high acculturation group.

Our results are similar to the findings of Ismail and Szpunar (11), suggesting a lack of significant association between acculturation and the number of decayed teeth. Acculturation was associated positively with younger age, higher education & income and more years of duration of stay and these findings are similar to study by Gustavo et al ,Cruz et al(10,14).

Language barrier made it difficult to communicate the affected oral the health between dentist and patient in turn significantly associated with dental caries and periodontal status. These findings are similar to the study conducted by Micheale A. Graham et al (6). Those who lived in Bangalore for 4 years or more and who can communicate in English appear to have better oral health and most likely to get dental checkup.

Acculturation and language utility have been shown to

affect not only whether a group has access to dental care but also whether its members seek treatment (Francisco et al 2005)<sup>17</sup>.The present study suggests that their overall oral health doesn't worsen as they become more acculturated. On the contrary, the more acculturation they become, the more oral health benefits were seen.

This study is limited in its generalization due to its sampling methodology nevertheless; this is the first study of its kind reported in India on a group of adult immigrants. Thus, it provides valuable information on the effects of acculturation on the oral health outcomes of a less established group of individuals. Through information secessions and by distribution of study material at immigrants could learn and improve their management of oral health and illness and thus facilitate their communication with dentists as well as their adoption to the culture of their new country.

Understanding and characterizing the process of cultural change is essential to the conduct of relevant health intervention. Basic services and health promotion activities should be made available to the immigrant population. Acculturation positively influences the oral health of these individuals by mediating their access to preventive and restorative oral heath. Language is directly an important factor that should be considered during oral health education and treatment procedures. Preventive programmes should be organized at local community level in collaboration with key persons of the immigrant population

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