

## Oral Health Problems in Jumla Area

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### Abstract

*So far there have been very few oral health surveys done in Nepal. This survey was requested from Karnali Technical School in Jumla to get a picture of the oral health status among the students of the schools as well as the people in Jumla area. Altogether 317 persons were examined.*

*The results show a "very low" (37% 0,8 DMFT for 12 year olds) prevalence of dental caries. It is likely that this will rise in the future, due to worse food habits. The incidence of periodontal disease is, however, "high" (97,1% and an average of 3.2 sextants affected by calculus at 16-19 years of age). Prophylactic fluoride and an oral health programme to improve the oral hygiene habits are recommended to maintain the low rate of dental caries and to reduce the rate of periodontal disease.*

### Introduction

At the Health Trade at Karnali Technical School (KTS) in Jumla, the students have, for some years, with the assistance of dentists from Patan Hospital, Kathmandu, received basic oral health training. This training has included emergency care as well as prevention. The intention has been to give the students such a good training that they, after finishing school and working at different health posts in the district, would be able to perform basic oral emergency care and to teach prevention. The need for this was known by experience, but no previous statistics on the state of oral health existed for this area, in

fact there is a little data on this subject for the whole of Nepal (1, 2). It was therefore determined to undertake a survey with the following objectives :

1. To estimate the prevalence of the main oral diseases and conditions, and to identify variations in regional groups.
2. To supply data for subsequent evaluation of the effect of the work done by health workers in the region.

## Materials and Method

### AREA AND POPULATION

Jumla, situated at 2500 m. altitude in Karnali Zone in North-West Nepal, is the centre of a very remote area. It can only be reached by STOL-airplanes or by walking 5-7 days from the nearest road. The population is mainly involved in agriculture and is generally regarded as very poor. The houses are usually gathered in small villages with the fields around. Some people have cattle, goats and sheeps, but the main foodstuffs are grains and potatoes. Things like Coca-Cola are not available, but biscuits and sugar can be bought in Jumla. There are schools, but not all children attend regularly. Many of the population understand Nepali, but quite a few can only speak their local language. At Karnali Technical School, where part of the survey was done, there are students coming from all over Karnali Zone.

### NATURE OF INFORMATION COLLECTED

#### Collection of Data, Personnel

The "WHO combined Oral Health and Treatment Need Assessment (with CPITN) 1983 E" form (3) was found to be ideal for the survey. Briefly this gives information about; personal and demographic circumstances, dental caries status and treatment of teeth needs, community periodontal index of treatment needs, oral mucosa conditions, dento-facial anomalies, fluorosis, denture status, and other conditions, if required.

All individuals were examined by a clinical examination using natural light only. A mouth mirror, an examination probe and a WHO pocketprobe were used. The clinical examinations were done by qualified dentists, who were assisted by students from the Health Trade of KTS. The data was recorded on the forms. These forms were then analysed by WHO (Geneva) using a SPSS (Special Programme for Social Services) computer programme.

Approval for the survey was obtained from Ministry of Health, Nepal and the Chief District Officer (CDO) in Jumla. Also, a letter from KTS, telling what was going on, was brought to the respective Pradha Panchas (village leaders), if needed. For KTS the headmaster of the school approved the survey. Also the doctor in Jumla was informed about the survey.

The survey at KTS was done during April 1986 and the rest of the survey during April 1987.

#### SAMPLING METHOD

Four areas were selected to be representative for the population of the Jumla region :

1. Karnali Technical School (KTS) Students
2. Jumla Bazaar (Jumla 6, 7, 8)
3. Jumla Valley (Talmin 1-6, Lamra 1-5)
4. Jumla Highlands (Gaulichar 1-9)

For the first area (KTS) no randomization was done. All students (N=104) were examined and included in the survey. The students, who represent the ages 16-19, originally come from all over the Karnali Zone.

In the other areas and for the purpose of the survey the sample group for each age group had to include at least 20 subjects in each area surveyed. The specific age groups of 6, 12 and 35-44 years were selected in order to include the primary teeth and also the permanent teeth at significant stages throughout life.

The different wards within the three areas were randomly obtained. The order of selection was achieved by having all the wards for the specific area written on tags and kept in a container from which one by one was drawn at random. The order in which the wards were drawn were immediately recorded and the survey followed this order until the needed number of subjects in each specific age group achieved. However, all individuals in the specific age group, in a ward that was commenced had to be examined.

When starting the examinations at one house in the village, very soon a lot of people gathered around. These persons were also examined if they fitted into the survey. Also some were not in their houses at the time it was visited, then the protocol stated that these people were to be left out. Some, both young and old, did not know their exact ages, so it was guessed quite often. Some persons did not want to be examined, especially girls and women. These factors contribute to the fact that not all of those who should have been examined were examined. However the proposed number of subjects was achieved. Before examining no proper cleaning of the teeth was done, which, of course, made a proper examination more difficult.

#### Results

The main interest of the results, is, of course, focused on the caries status and periodontal status results. There are, however, some other results that come out of the survey. Altogether 317 peoples were examined.

## ORAL MUCOSAL LESIONS

In Table 1 the incident of oral mucosal lesion is recorded. Any type of lesion is recorded, e. g. anything that differs from a normal clinical appearance of the soft tissues in the mouth, except for periodontal diseases. The type of lesion is not recorded, but could include conditions like aphthous lesions, herpes lesions, leukoplakia, erythroplakia, lichenoid lesions, erythema multiforme, chemical burns by tobacco etc., oral carcinoma or just a traumatic ulcer etc.

Table 1  
Incidence of Oral Mucosal Lesions

Age	Total	N	%
6	66	0	0
12	73	0	0
16-19	104	17	16,3
35-44	74	1	1,4
Total	317	18	17,8

## DENTOFACIAL ANOMALIES

The dentofacial anomalies were recorded according to the WHO-form recommendations. This can include any type of dentofacial anomaly like for instance crowded teeth, supernumerary tooth, missing tooth, proclinated or rotated tooth, crossbite or postnormal bite. "Absent" means that no obvious dentofacial anomaly is present. "Present" means that is present, but not disturbing so much that treatment is needed. "Treatment need" means that the anomaly is so disturbing that treatment is needed. The result is shown in Table 2.

Table 2  
Dentofacial Anomaly Results

Age	Total	Absent		Present		Treatment need	
		N	%	N	%	N	%
6	66	55	83,3	5	7,6	6	9,1
12	73	46	63,0	19	26,0	8	11,0
16-19	104	96	92,3	0	0	8	7,7
35-44	74	66	89,2	8	10,8	0	0
Total	317	263	83,0	32	10,1	22	6,9

Total Present : 54, 17,0%

## FLUOROSIS

None of the examined showed any signs of dental fluorosis.

## CRIES STATUS

In table 3 caries status for primary teeth and permanent teeth for the whole sample as well as for different ages and different areas are shown. % means the percentage affected by DMFT. D means number of decayed permanent teeth, M is missing permanent teeth and F is filled permanent teeth. T stands for teeth. dmft means the same as above for primary teeth.

Table 3  
Caries Status in Primary and Permanent Teeth

	Area	Age	Total	%	dmft	d	m	f	
Primary Teeth	Total	6	66	57.6	1.9	1.8	0.95	0	
	Jumla Bazar	6	24	75.8	2.7	2.6	0.1	0	
	Jumla Valley	5	21	61.9	1.4	1.4	0	0	
	Highlands	6	21	38.1	1.3	1.3	0	0	
Permanent					DMFT	D	M	F	
	Teeth	Total	6	66	7.6	0.1	0.1	0	0
			12	73	37.0	0.8	0.8	0	0
			16-19	104	35.5	1.0	0.95	0.04	0
			35-44	74	73.0	4.0	3.0	1.00	0
	KTS	16-19	104	36.5	1.0	0.95	0.04	0	
	Jumla Bazaar	6	24	8.3	0.1	0.1	0	0	
		12	23	39.1	0.8	0.8	0	0	
		35-44	22	81.8	4.4	3.4	1.00	0	
	Jumla Valley	6	21	2.5	0.1	0.1	0	0	
		12	22	40.9	0.9	0.9	0	0	
		35-44	25	76.0	2.8	3.4	0	0	
	Highlands	6	21	4.8	0.1	0.1	0	0	
		12	27	29.6	0.6	0.6	0	0	
35-44		27	63.0	3.9	2.3	1.6	0		

## PERIODONTAL DISEASE STATUS AND TREATMENT NEED

Table 4 shows the findings of periodontal disease and the treatment needs according to WHO recommendations. The percentage as well as mean number of sextants involved with different stages of disease are given for different areas and ages. Regarding treatment need, TN 1 indicates the percentage needing oral hygiene instruction. TN 2 indicates those needing professional prophylaxis in addition to TN 1, and TN 3 indicates those needing complex treatment in addition to TN 1 and TN 2.

## Discussion

The figures that are found certainly give a good indication of the oral health status of the people in the Jumla region. Some figures like caries and periodontal status are, of course, more interesting than others.

## ORAL MUCOSAL LESIONS

5.7 % (N = 18) of the sample had an oral lesion. Most of these were oral ulcerations and seen among the 16-19 year olds in KTS. However, these figures are regarded as a little doubtful since the investigators were to some extent confused about what to record/not to record as an oral mucosal lesion.

## DENTOFACIAL ANOMALIES

17% (N=54) were recorded as having a dentofacial anomaly among the surveyed population. 40.7% of these, or 6.9% of the total sample, needed some sort of treatment for their anomaly. Which type of anomaly that was present or which treatment was not recorded. A much larger sample is may be needed to get a more complete picture of the situation.

No fluorosis at all was recorded. No measuring of the fluoride content in the drinking water in Jumla is done. However, the results are in accordance with what can be expected in Nepal, where no or very little fluoride is found in those few places where the fluoride content in the water has been measured.

## CARIES STATUS

The results show that 39.1% of the sample population were affected by dental decay in their permanent teeth. Among the 6 year olds the 57.6% were affected by decay in their permanent teeth. There was a tendency of the decay incidence in all age groups to be greater in Jumla Valley compared with Highlands and even greater in Jumla Bazaar. This was the case both for permanent and primary teeth. For instance in 6 year olds the incidence was almost double in Jumla Bazaar compared with Highlands (permanent teeth 8.3% vs 4.8% and primary teeth 70.8% vs 38.1%) (Table 3).

Table 4 CPIITN — Community Periodontal Index and Treatment Need (according to WHO)  
CPIITN — Periodontal Disease Status and Treatment Needs

Age	N	Percentage of Persons with					MNS = Mean number of sextants with					TN = Treatment Need				
		No Perio- dental Disease	Blee- ding only	Calcu- lus	Sha- llow Pock- ets	Deep Pock- ets	No Perio- dental Disease	Blee- ding or wor- se	Cal- culus or wor- se	Sha- llow Pock- ets or worse	Deep Poc- kets	Oral Hygien Instruc- tion TN 1	Pro- phy- laxis TN 2	Com- plex Care TN 3		
Sample total																
6	66	0	71.21	28.79	0	0	0.11	5.89	0.58	0	0	100	28.97	0.58	0	0
12	73	0	12.33	87.67	0	0	0.03	5.97	2.03	0	0	100	87.67	2.03	0	0
16-19	104	0	2.88	97.12	0	0	0.48	5.52	3.19	0	0	100	97.12	3.19	0	0
35-44	74	0	0	28.38	37.84	33.78	0.05	5.88	5.58	2.14	0.55	100	100.00	5.58	33.78	0.55
KTS (Area 10)																
16-19	104	0	2.88	97.12	0	0	0.48	5.52	3.19	0	0	100	97.12	3.19	0	0
Jumla Bazar (Area 11)																
6	24	0	87.50	12.50	0	0	0	6.00	0.29	0	0	100	12.50	0.29	0	0
12	23	0	17.39	82.61	0	0	0.04	5.96	1.96	0	0	100	82.61	1.96	0	0
35-44	22	0	0	50.00	31.82	18.18	0.05	5.82	5.14	1.32	0.41	100	100.00	5.14	18.18	0.41
Jumla Valley (Area 12)																
6	21	0	76.19	23.81	0	0	0.29	5.71	0.43	0	0	100	23.81	0.43	0	0
12	22	0	18.18	81.82	0	0	0.05	5.93	1.59	0	0	100	81.82	1.59	0	0
35-44	25	0	0	20.00	44.00	36.00	0	5.00	5.80	2.36	0.60	100	100.00	5.80	36.00	0.60
Highlands (Area 13)																
6	21	0	47.62	52.38	0	0	0.05	5.95	1.05	0	0	100	52.38	1.05	0	0
12	27	0	3.70	96.30	0	0	0.00	6.00	2.44	0	0	100	96.30	2.44	0	0
35-44	27	0	0.00	18.52	37.04	44.44	0.11	5.81	5.74	2.59	0.63	100	100.00	5.74	44.44	0.63

If compared with previous studies in Nepal, the result show worse figures for 6 year olds primary teeth, 57.6% vs 23.1% and dmft 1.9 vs 0.5 in the Simikot study 1985 (1). Compared with permanent teeth in Dr. Tewari's study in Kathmandu Valley 1985 (2) the figures for Jumla are better. For 12 years old it is 37% vs 66% and DMFT 0.8 vs 2.1. For 16-19 years olds the figures are; Jumla 36.5% vs 81% and; Jumla DMFT 1.0 vs 3.1.

Neighbouring countries like India (Northern provience study 1985 (4)) and Bangladesh (Dhaka study 1985 (4)) seem to have about the same results for 6 year olds primary teeth, but the incidence and DMFT values in permanent teeth in 12 year olds seem to be much higher in these countries than in Jumla (India vs Jumla are 86% vs 37% and 3.9 vs 0.8). Compared with a developed country, like Australia, (Australia study 1985 (4)) the figures are for 6 year olds Australia dmft 2.0 vs 1.9, Australia DMFT 0.1 vs 0.1 and the incidence of decay in permanent teeth Australia 5% vs Jumla 7.6%. The figures at 12 year of age are 37% (Australia 27%) with 0.8 teeth affected (Australia 2.0).

These comparative figures contribute to the assumption that the more remote an area is, the less is the percentage of people having dental caries, in a country where preventive habits and methods are negligible. (Simikot is more remote than Jumla Highlands, which is more remote than Jumla Valley, Jumla Bazaar and Kathmandu Valley). One contributing factor to this is, of course, that the availability and consumption of sugar probably is less in the remote area, but also the use of toothbrushes and probably also the knowledge about how to prevent the common oral diseases.

According to WHO, which use the DMFT - rate at 12 year of age as a goal guidance for caries preventive programmes, the rate in Jumla area is "very low". Though the trend cannot be determined due to lack of previous sureys, it may be conjectured, that the DMFT - rate is increasing. The caries status for 6 year olds is worse than for 12 year olds, and the availability of sugar containing products will probably increase in the future.

#### PERIODONTAL DISEASE

100% of the sample group shows periodontal disease to some degree. There is none who has sextants in the mouth free from periodontal disease. (Table 4). The comparative age group recommended by WHO to be used for goals regarding periodontal disease programmes is 15 years of age. This age group is not included in this survey. However, the assessment involves the consideration of the percentage affected by calculus. Jumla survey are placed in the "high" category on the WHO Scale (97.1% affected, average 3.2 sextants): 15 year olds can be assumed to have slightly lower figures. The percentage of persons with more severe peridontal disease and more sextants involved seem to increase in the more remote areas.

#### Conclusions and Recommendations

Although this survey shows a very low prevalence of dental caries, it can be assumed that it will rise in the future. Dental caries is very much related to food habits,



and there are strong forces bringing about changes for the worse in the whole country. It is therefore recommended to start programmes trying to improve preventive methods within the population. This includes education in having good food habits as well as changing to good oral hygiene practices, and also the introduction of fluoride in the prevention of dental caries.

The second and even bigger problem at this stage, identified in the survey, is that of periodontal disease. This disease is specially related to the ability to clean the teeth and the gum properly. Thus, good oral hygiene practices must be stressed to reduce the amount of periodontal disease among the population.

To carry out these suggestions or a special oral health programme in Jumla area, Karnali Zone, the Auxiliary Health Workers examined from KTS health Trade could, with an appropriate training, be of great significance.

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