Oral Health Problems in Lalitpur District – Nepal

a survey report

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Abstract

This paper reports the results of a "pilot" survey undertaken in 1986 in the region of Lalitpur district, prior to the commencement of a primary oral health programme in the area. Rural areas, and urban schools were the venue for this survey, and were chosen at random.

The results show a "low" to "very low" prevalence of dental decay with a rising incidence. On the other hand the area has a "high incidence" of periodontal disease. Recommendations are that a fluoride supplement should be added to the diet to maintain a low prevalence of dental decay (especially in the urban area), and that widespread educational programmes should be started with the aim of promoting good oral hygiene practices.

Introduction

An oral health survey for the Lalitpur district was proposed prior to the commencement of a primary oral health programme within an existing community health programme in South Lalitpur. No previous statistics on the state of oral health existed in this area, in fact there is little data on this subject for the whole of Nepal (1, 2, 3). It was therefore determined to undertake a survey with the following objectives:

1. To estimate the prevalence of specific oral diseases and conditions, and to identify variations in regional groups.
2. To supply base line data for subsequent evaluation of the primary oral health care programme.

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Methods

The WHO, "pathfinder survey" form was seen to be ideal for the proposed survey. Random sampling in the Lalitpur region of Nepal was also carried out.

The region of Lalitpur is triangular in shape. It includes the city of Patan, where Patan Hospital is situated at the apex of the triangle, as well as a large section of the rural area of the Kathmandu Valley. It extends south over the shoulder of the Kathmandu Valley, and also includes a "mid hill" and a "far hill" region.

Population Description

The rural area supports a population involved mainly in agriculture. Access is by road for the Kathmandu Valley rural area, or by foot to the "mid hills" and "far hills" regions (furthest point of the triangle is 2 days walk from the road). The hill region gave the impression of being poor (Brahmins generally living near rivers, Tamangs generally living on the crest of the hills), while the rural valley area seemed to be rich in comparison. Generally children from households near the rivers appeared to be more regular in school attendance than those from households in the ridges. The main foodstuffs in these farming areas were grains and pulses, either grown in the area, or carried in. There were very few teashops in the whole region.

The urban area of Lalitpur is mainly occupied by Newar families who are involved in a wide range of occupations and all live within a 1.5 km radius of the centre of the city. In this area there is a large variety of foodstuffs available all the time.

Sample Selection Procedure

The division of the region into rural and urban was utilized, and further subdivided into the following areas.

Urban : Old Patan	Rural : Valley
Intermediate Patan	Mid hills
New Patan	Far hills

This subdivision was carried out so as to achieve a true representative sample from the urban and rural region. The rural area was again subdivided, utilizing the administrative divisions of panchayats and wards. Thus a sample could be randomly obtained from within the ward of a particular panchayat. Therefore for each area a panchayat was first selected and then a ward (numbered 1 - 9) from within this panchayat. The order of selection was achieved by a disinterested party selecting tags (upon which the panchayat names were written) from a container in which all the panchayats were recorded and placed. The same system was applied to the wards.

The order in which the names and numbers were drawn were immediately recorded and the survey followed this order. A similar procedure was undertaken for the schools visited in the urban area. Each area, or school, randomly selected was surveyed for the particular age group. However, if due to inadequate numbers, another area was commenced, then the second which was selected, was surveyed, and again all the individuals of this particular area in the respective age groups were examined. This process was repeated with the third and fourth area et cetera until the full complement of the sample was achieved.

In the case of schools, if the number of children present in an age group was larger than that required then the group was divided appropriately and randomly. For the purpose of the 'pathfinder 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, 15, 18 and 35-44 yrs were selected for surveying in order to include the deciduous teeth, and also the permanent teeth at significant stages throughout life. 6 and 12 yrs olds were sampled in all areas. However, 15 yrs and 18 yrs olds were only examined in the urban region, and 35-44 yrs olds only in the rural areas. All individuals were examined using natural light only. The survey was completed within 3 months (March-June) during 1986. Part of the survey protocol required that every house in the respective rural areas be visited. However, if members of the household were away from the house at the time it was visited, then the protocol stated that these households were not to be revisited.

Collection of data

The survey was carried out by 4 qualified dentists and the data was recorded on forms provided by WHO (4). These forms were then analysed by WHO using a SPSS (Special Programme for Social Services) computer programme.

Approval for the survey

Approval was obtained from the District Education Office and then the respective headmasters at the schools and the Campus Chief at the 'Patan Gate' Campus. In the rural areas survey permission was obtained from the respective Pradan Panchas.

Discussion

Lesions of the oral mucosa

The most frequently presenting oral lesion was an oral ulceration. (Table 1) Half of the number of these ulcerative lesions, presented in the 12 years and under age group (Mumps was also present at the time of the survey).

There was a high incidence of oral ulcerations in the urban 15-18 year age group (5.5% of the sample group). When this was observed, it was also noted that the use of "Khaini" and "Supari" was common. (Questions regarding the use of tobacco had not originally been included in the survey protocol).

Leukoplakia and submucosal fibrosis presented in the 35-44 year age group. (Both of these lesions are considered to be precancerous lesions). However, the number of lesions presenting was small in the sample of 85 and indicated that this should be followed up with an assessment of a larger sample for the 30 year age group.

Dentofacial Anomalies

Dentofacial anomalies were present in 3.5% of the surveyed population, and of these half required corrective treatment. (Table 2) However, the types of anomalies, and treatment required, were not recorded.

Decay Prevalence

The results of the survey show that 33% of the sample population were affected by dental decay at the time the survey was taken. There was a tendency for the decay prevalence to be greater in the urban areas rather than rural areas, (Figures 1 and 2). Where comparative figures exist (6 years and 12 years) a chi squared test (χ^2) was undertaken and the 'P' value recorded. In the 6 year age group (deciduous teeth) there was less decay among the rural population than the urban (20% vs 31%, $p < 0.05$). However, this difference becomes less marked at age 12 years (21% vs 19%, $p < 0.1$). Comparative figures do not exist for the other age groups.

The results for South Lalitpur are similar to the figures for dental decay prevalence found in Simikot Village (1) and Bajhang (2), but varies from the prevalence found in the Kathmandu Valley by Dr Tewari in 1985 (3). These results showed a higher decay prevalence in the Kathmandu Valley than were observed in this present survey in the Lalitpur area. This, in part, reflects the area selection procedure for the survey in the Kathmandu valley - the schools chosen were selective, and reasonably wealthy. However, the results may be an indicator of the way that the Lalitpur area will go in the near future.

Generally the results for the Lalitpur survey compare favourably against results for comparable areas in neighbouring India or Bangladesh. However, the comparison against a 'western' country like Australia is noteworthy. In Lalitpur 26.5% of 6 years olds were affected by decay in their deciduous teeth, and an average 0.6 (Australia 0.1) teeth were affected by decay. Permanent teeth at this age were affected in 8% (Australia 5%) with an average number of 0.8 (Australia 2.0) teeth affected. At 12 years of age the figures are 20.1% (Australia 27%) with 0.5 teeth affected (Australia 2.0).

As the availability of refined foods becomes easier there is pressure for change in the general diet of people and it would be expected that the results for Lalitpur will get worse in the future. This is perhaps heralded by the Kathmandu results of Dr Tewari, where refined foods are easily accessible. It is also noteworthy that at 6 years of age there is a tendency for females to have less decay than males (19% vs 34%, $p < 0.01$) and probably reflects cultural customs as the tendency begins to disappear by 12 years of age, (Figures 3 and 4).

What then is the way ahead for this community? WHO uses the decay prevalence in 12 year olds for goal guidance for caries preventive programmes (6) (decay prevalence being the average number of decayed teeth per individual). The results for Lalitpur show that this area has a "very low" to "low" prevalence. Though the trend cannot be determined due to a lack of previous surveys, it may be conjectured, that the prevalence is increasing especially in the urban area. (Prevalence for 6 years and 12 years remains the same in the rural area 0.6 but changes from 0.1 to 0.5 in the urban area). If this is the case then flouride should be given to the urban population of under 12 years olds so as to stabilize this trend. Although water flouridation is perhaps impractical at present, flouride supplements can be given in other forms.

The examples of Japan and French Polynesia serve as an historical warning for everyone involved in oral health programmes. In both these cases the prevalence of decay rose from 'low' and 'very low' levels to 'very high' in the time period of only 20-30 years.

Periodontal diseases

The amount of periodontal diseases in the area is more difficult to assess. The age suggested by WHO for the assessment of this disease is 15 years of age. Assessment involves the consideration of the percentage of the population affected by calculus, or the mean number of segments, per person, with calculus. However, in the Lalitpur survey only urban results are available for this age group, (Table 3, Figure 5). Nevertheless, with this in mind it can be said that the results show a "high incidence" of the disease in the urban community on the WHO scale, (95% of the sample group, and average of 3.4 segments). Programmes designed to cope with this problem should be geared towards promoting oral hygiene practices, such that there is an improvement in the oral hygiene of individuals. Education alone has been shown not to be sufficient, there must also be motivation such that there is a change in behaviour.

Conclusions and recommendations

The results shown in this survey are an attempt to document an everchanging situation. It should be remembered that although the prevalence of dental decay is 'low' to 'very low' the incidence is rising, and the present forces bringing about changes in dietary habits will accelerate this. It is possible to learn lessons from what has happened in other

countries, and the two cases in point are Japan and French Polynesia. The prevalence of dental decay must be stabilized. It has been mentioned that fluoride if added to the diet could achieve this stabilization, especially for the urban population under 12 years of age.

The other major problem identified in the survey is that of periodontal disease. This is already at a "high incidence" level within the community surveyed. This situation could be changed through an education programme – the desired end result being that individuals will be motivated to maintain good oral hygiene.

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Results

Table 1.
Incidence of Oral Mucosal Lesions

	Stomatitis	Leukoplakia	Tumour	Ulcer	Chemical burn
Male	1	1	1	12	1
Female	1	0	0	4	0
Total	2	1	1	16	1

Table 2.
Incidence of Dentofacial Anomalies

Age	(N)	Present	Treatment needed
6 years	132	6	3
12 years	182	8	7
15-18 yrs	276	7	2
25-44 yrs	85	5	—

Table 3.
Average No. of sextants affected by Periodontal Disease

Age	Bleeding		Calculus		Shallow pockets		Deep pockets	
	R.	U.	R.	U.	R.	U.	R.	U.
6 years	3.3	4.8	1.0	0.9	—	—	—	—
12 yrs	4.5	5.3	3.1	2.4	—	—	—	—
15-18 yrs	—	5.6	—	3.4	—	0.2	—	—
25-44 yrs	5.9	—	5.9	—	2.2	—	0.7	—

Fig. 1 Prevalence of Dental Decay

Fig. 2 Average number of teeth affected by decay

Fig. 3 Comparison between males and females affected by dental decay

Fig. 4 Comparison between males and females of the No. of teeth affected by decay

Fig. 5 Percent of the population with Periodontal Disease

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