THE ORAL HEALTH STATUS OF 'HIGH RISK' ADOLESCENTS IN NORTH YORK

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SUMMARY

From June 1993 to June 1994, the Community Dental Health Services Research Unit conducted a survey of the dental health of adolescents in North York. The North York Public Health Department has information on the dental health status of North York school children up to Grade 8 and the CINOT programme addresses the dental needs of this age group. In contrast, there is no information on adolescent dental health once they cease to be eligible for Public Health dental programmes. The literature suggests that this may be a group at risk for dental disease and disadvantaged adolescents may be at the highest risk. There is speculation that homeless, unemployed or immigrant adolescents are likely to experience dental problems when access to dental services is limited. The survey addressed this assumption by assessing the dental health experiences of teens from hostels, employment centres and schools in North York. The results support the hypothesis that adolescents from high risk groups experience a high rate of oral disease and problems.

INTRODUCTION

As we noted in an earlier report (1), adolescence is a period of physical, emotional and psychological change with unique characteristics that can impact on oral health. The emergence of independence may lead to dietary and other behaviours which place the individual at risk (2-6). This independence reflects the declining influence of family and school on the adolescent and the increasing influence of peer-based norms.

With respect to dental care, school-based public programmes are provided up to age 13 or 14 years. The focus of the earlier report (1) was on changes in the use of dental services and oral health status following cessation of eligibility for these programmes. Using data from the Ontario Health Survey 1990, (OHS), we were able to show that dental visiting declined between the ages of 12-13 years and 18-19 years, and declined more for adolescents from low compared to high income families. These data also suggested that oral health status also deteriorated with age. For example, toothache and bleeding gums were more commonly reported by 18-19 year-olds than 12-13 year-olds. However, apart from the limited data collected by the OHS, there is no information on the dental health of Ontario adolescents.

While adolescents as a whole may be a group at greater risk of dental disorders than others, it is likely that disadvantaged adolescents are at the greatest risk of all. There is speculation that homeless or unemployed adolescents, along with those who have most recently come to Canada, may be at greatest risk of oral health problems and have less-than-adequate access to dental care.

In order to obtain data on this group, the CDHSRU conducted two surveys of adolescents. The first was a study of 'high risk' adolescents recruited from community agencies, hostels and centres for stressed youth. The second was a survey of adolescents in school. The aim was to compare the oral health status and use of dental health services of the former with the latter. For reasons described below, data from the two surveys were pooled and compared, to the extent possible, with data from the OHS for adolescents living in Metropolitan Toronto.

METHODS

1. Sampling design and subject recruitment

Subjects for the study of 'high risk' adolescents were recruited from nine community agencies and youth centres in North York and eight agencies and hostels providing services to street youth in the City of Toronto. Since there are no services for street youths in North York, most migrate to the City of Toronto where support services are available.

All the agencies who cooperated in the study operate on a 'drop-in' basis. They do not have a regular clientele from whom a random sample could be drawn. Rather, the adolescents who use their services are a transient population and appear when in need. For this reason, convenience sampling was used in recruiting subjects for the study. Each agency provided space for a field-work team of clinical examiner and data recorder for a limited number of days and evenings. All adolescents aged 16 years and over who approached the agency for support or other services during these

days and evenings were asked to give their consent to participate in the study. Since many of the adolescents served by these agencies have little or no contact with parents, only those aged 16 years and over and able to give their own consent were included in the study.

For the school-based study, the parents of all students in Grades 9 and 11 attending eight randomly selected schools in North York were contacted and asked to give their consent for their daughter/son to be asked to participate in the study. Once parental consent had been obtained, the adolescents themselves were contacted and asked to participate. Since both parents and students had to sign a consent, subjects could be less than 16 years old.

Problems in obtaining consent meant that the response to the school-based study was low. In addition, many of those who participated came from disadvantaged groups. Consequently, we decided to treat this as a convenience rather than a random sample and pool the data for the purposes of analysis.

2. Survey procedures

Data were collected by questionnaire and clinical examination. Both were administered by a team of two trained and calibrated hygienists. Given the nature of the survey, repeat examinations and assessments of inter-examiner reliability were not possible. For subjects recruited from agencies, youth centres or hostels, the data were collected in space provided by the organization in question. For the school-based study, data collection took place in the subjects' schools or homes according to

preference.

The questionnaire consisted of 70 items and was designed to collect information on self-perceived oral health, use of dental services, dental and general health behaviours and knowledge of dental diseases, their causes and prevention. Measures of self-perceived dental health included oral function, pain and other symptoms and the impact of oral conditions on daily life.

Functional limitations were measured with a 3-item index of problems with speech. The items referred to difficulty in pronouncing words, speaking, or making oneself understood. Pain and discomfort were measured with two scales; a 9-item oral and facial pain inventory and a 7-item list of oral symptoms. Both scales referred to the four weeks preceding the date of the questionnaire. The social and psychological impact of dental problems were assessed using: a 6-item scale concerning the effects of dental problems on daily living; a 2-item scale measuring worry and concern about the health and appearance of the teeth and mouth; and a 3-item scale measuring satisfaction with appearance, chewing and speaking. The questionnaire also contained single-item indicators of the self-rating of oral health and self-perceived need for dental treatment.

Other questions addressed the regularity of use of dental services, time since last dental visit, the frequency of tooth-brushing and flossing, diet, smoking and the use of alcohol.

The clinical component measured dental caries experience recorded as tooth surface scores (DMFS), gingival and periodontal health and oral hygiene. When

observed, dentofacial anomalies, malocclusions and mucosal and enamel lesions were also recorded. Gingival and periodontal health were measured using the Gingival Index (7), scored for six indicator teeth, and the CPITN (8), also scored for six indicator teeth. Debris and calculus were also scored for these teeth. Treatment needs were recorded using the following categories: urgent, extractions, restorations, periodontal scaling, prophylaxis and preventive instruction.

3. Data analysis

The analysis compared data from the questionnaire and clinical examination concerning oral health status and use of dental services for three groups. These groups were designated as Agency, Street and School according to their place of recruitment. Because these were convenience samples, statistical tests were not undertaken since the findings cannot be generalized to a wider population. Data on health behaviours and dental knowledge are not included here and will be the focus of a further report.

RESULTS

1. Characteristics of subjects:

In all, 478 adolescents participated in the survey. Participants ranged in age from 13 to 21 years. The median age was 16 years. The Agency group consisted of 146 individuals who attended employment centres or youth counselling centres. This group included a mix of advantaged and disadvantaged teens. Some lived at home

and worked part-time, while others lived on their own and worked full-time. The Street group consisted of 155 teens who lived in hostels or used youth shelters or drop-in centres. The 177 teens in the School group lived at home while attending school full time. The age distribution of each group is shown in Table 1.

TABLE 1

GROUP BY AGE

Age:	14/15 years	16 years	17 years	18+ years
	%	%	%	%
All Subjects (n=478)	16.9	23.8	35.8	22
Agency (n=146)	0.0	45.2	43.8	11.0
Street (n=155)	1.3	17.4	35.5	44.5
School (n=177)	44.6	11.9	29.4	13.6

Table 2 depicts the place of birth of subjects overall and for each group. Over one half (56.9%) of all the study subjects were born in Canada, while 43.1% were immigrants. Just over one-fifth (21.6%) came to Canada within the last four years. The School group contains the highest percentage of immigrants (52.4%), nearly one

third (32.9%) of whom came to Canada within the last four years. In contrast, three-fifths or more of Agency and Street subjects were born in Canada.

TABLE 2

PLACE OF BIRTH

	% Born in Canada	% Immigrated 4 years ago or less	% Immigrated 5 years or more
All Subjects	56.9	21.6	19.8
Agency	60.7	17.9	21.4
Street	69.1	12.1	18.8
School	47.6	32.9	19.4

Missing cases: 14

2. Self-perceived oral health status

Table 3 shows that a quarter of these adolescents rated their dental health as

only fair or poor and two-fifths felt they needed dental treatment or advice at the present time. The Street group perceived their oral health as being worse than the other two groups. More than one third described their dental health as only fair or poor and half felt they needed treatment.

TABLE 3
SELF-PERCEIVED ORAL HEALTH STATUS

	% **Dental health fair to poor**	% **Thinking they need dental treatment or advice**
All Subjects	25.7	43.7
Agency	19.2	34.9
Street	36.1	49.0
School	22.0	46.3

3. Oral function and oral symptoms

Since few adolescents are likely to experience difficulties chewing, functional limitations were measured in terms of difficulties with speech. Table 4 shows that one fifth of the teens reported having difficulty pronouncing words, speaking clearly or making themselves understood. These problems were more common among Agency and Street adolescents than among those in School.

TABLE 4
FUNCTIONAL LIMITATIONS:
DIFFICULTY WITH SPEECH DUE TO
ORAL HEALTH PROBLEMS

	%
All Subjects	22.6
Agency	28.8
Street	23.2
School	16.9

Oral symptoms were common among these adolescents. Over half, 55%, had experienced one or more of the nine oral or facial pain symptoms in the preceding month and 66% reported one or more of seven other oral symptoms.

The most common symptoms reported were pain with hot or cold foods, bleeding gums, bad breath and toothache (Tables 5 and 6).

Of those with pain, 7.9% reported that it was moderately severe and 14.0% that it was severe. Almost one-in-five (19.2%) of the Street group experiencing pain reported that it was severe, compared to one-in-ten of the Agency and School groups. Of those living on the street, 24.3% overall had moderate to severe oral or facial pain. Of those with other oral symptoms, 13.6% reported that they were bothered a lot by them.

TABLE 5

PERCENT REPORTING ORAL SYMPTOMS IN PREVIOUS FOUR WEEKS

PAIN SYMPTOMS:	%
Toothache	18.0
Pain in teeth with hot/cold foods	31.8
Pain in teeth with sweet foods	15.9
Pain in jaw joint while chewing	14.4
Pain in jaw joint when opening wide	8.2
Pain in face in front of ear	5.6
Burning sensation in tongue or other parts of mouth	4.4
Shooting pains in face/cheeks	3.3
Pain from orthodontic device	3.6

TABLE 6
PERCENT REPORTING ORAL SYMPTOMS
IN THE PREVIOUS FOUR WEEKS:

OTHER ORAL SYMPTOMS:	%
Ulcers	10.0
Cold Sore	9.0
Sore Gums	16.3
Bleeding Gums	31.4
Bad Breath	23.4
Clicking/ Grating noise in jaw joint	15.3
Difficulty opening mouth wide	6.5

Table 7 shows that the Street group reported a higher rate of symptoms than the other two groups. For example, 23.9% of the Street group reported toothache and 38.7% pain with hot and cold foods. The same percentage in each group complained of bleeding gums.

TABLE 7

PERCENTAGE REPORTING SELECTED ORAL SYMPTOMS IN PREVIOUS MONTH

	Toothache	Bleeding Gums	Pain hot/cold
Agency	15.8	31.5	28.1
Street	23.9	30.3	38.7
School	14.7	32.2	28.8

With respect to the other self-perceived measures, over half, 53.4%, indicated that they worried or were concerned about their oral health or dental appearance during the preceding twelve months. Almost one-third indicated that oral problems had had an impact on daily living in the previous year and almost one-in-ten, 8.6%, reported restrictions in daily living on a frequent or constant basis. While the majority (70.3%) of respondents expressed satisfaction with their chewing, speaking and the appearance of their teeth and mouth, almost one-third were dissatisfied with some aspect of their oral health status.

4. Clinically-defined treatment needs

Table 8 summarizes the treatment needs detected during the clinical examination. The data reveals that many of these adolescents need dental treatment. Periodontal care was the most common need with 70.1% requiring scaling. More than one-half, 52.3%, required oral hygiene instruction. Almost one-half, 46%, had one or more of six index teeth with moderate amounts of plaque. Restorative treatment needs were also high with almost one-third requiring such treatment.

TABLE 8
SUMMARY OF TREATMENT NEEDS

	Urgent	Restorations	Periodontal Treatment	Preventive Instruction
	%	%	%	%
All Subjects	6.6	29.4	70.1	52.3
Agency	4.8	31.5	79.5	57.5
Street	11.6	31.0	84.5	61.9
School	03.5	26.3	49.1	39.2

The Street group had the most dental needs. The teens in this group had the worst debris scores and the worst periodontal problems. Half, 51.6%, had moderate plaque deposits and 84.5% required periodontal treatment. The rate for restorative

treatment was similar for all three groups at around 30%. The Street group had more than twice the rate of conditions needing urgent treatment to relieve current of future pain or infection than the Agency and School groups.

TABLE 9

DEBRIS SCORES
% WITH MODERATE PLAQUE ON AT LEAST ONE OF SIX INDICATOR TEETH

	%
All Subjects	46.0
Agency	45.2
Street	51.6
School	41.5

The high rate of dental treatment needs can be linked to an infrequent use of dental services (Tables 10 and 11). Within the preceding twelve months only 51.0% of respondents had visited a dentist. A similar proportion reported that they visited a dentist at least once a year for an examination. Almost one third only went to a dentist when they experienced pain or other trouble. The Street group was least likely to attend a dentist regularly and almost 60% did not have a dental visit in the previous year.

TABLE 10

PERCENT WITH AT LEAST ONE DENTAL VISIT IN LAST YEAR

	%	n
All Subjects	51.0	478
Agency	53.4	146
Street	41.3	155
School	57.6	177

TABLE 11

FREQUENCY OF DENTAL VISITS

	At least once a year	Time to time for checkups	Only when pain or problem
	%	%	%
All Subjects	52.7	17.2	30.0
Agency	61.0	14.4	34.6
Street	42.6	21.3	35.5
School	54.8	15.8	29.4

6. Comparison with OHS data

In order to assess the relative disadvantage of the adolescents included in this study, they were compared on key indicators with the 574 adolescents from Metropolitan Toronto who took part in the Ontario Health Survey.

Table 12 shows that the adolescents in this study had poor oral health judged in terms of the frequency of oral symptoms and made less use of dental services. This was particularly the case with the Street group. The prevalence of symptoms was generally twice as high for the Street group compared to the mainstream adolescents accessed by the OHS. Moreover, the former were only half as likely to have seen a dentist in the previous year.

TABLE 12
COMPARISON OF OHS METRO TORONTO ADOLESCENT SUBJECTS (N=574) AND STUDY SUBJECTS (N=478) USING SELECTED VARIABLES

	OHS	STUDY	STREET
% with:			
Toothache	12.7	18.0	23.9
Pain with hot and cold	20.9	31.8	38.7
Sore or bleeding gums	13.7	*40.6	*41.9
Pain in jaw joint	**6.1	**17.8	**20.6
% with:			
Dental visit in last year	81.3	51.0	41.3
Dental visits only when having pain	18.8	30.0	35.5

* Constructed from separate question concerning sore gums and bleeding gums.
** Constructed from separate questions concerning pain in jaw joint when chewing and pain when opening wide.

CONCLUSIONS

Given that the target population for this study was a group of adolescents designated as 'high risk', subjects were recruited from among those who used the services of a variety of community-based agencies. Because these serve a transient group of adolescents with various needs, convenience rather random sampling was used. Here, all adolescents using the agencies cooperating in the study were approached on the days and evenings when the data-collection team had been given access and space. Random sampling was attempted to recruit a school-based comparison group, but difficulties in obtaining informed consent and a low response rate meant that the school group had to be considered a convenience sample. For purposes of comparison, the 574 adolescents from Metropolitan Toronto who participated in the Ontario Health Survey 1990 were used.

Since the study was based on convenience sampling, the data apply only to the individuals taking part and cannot be generalized to wider populations. Nevertheless, they clearly indicate that these adolescents had relatively poor oral health measured subjectively and clinically. Substantial proportions viewed their oral health as being poor and felt they needed dental treatment. Many complained of oral pain and other symptoms, oral hygiene was poor and almost all were judged clinically to need dental treatment of some kind. As anticipated, the Street group were the most in need with more than one in ten having conditions requiring immediate attention. Use of dental services was low with only half having seen a dentist in the previous year and almost a third only using dental services when having pain.

Although relatively few questions on dental health were included in the Ontario Health Survey 1990, the limited comparisons that were possible demonstrate the disadvantage of the subjects taking part in this study. When compared to mainstream adolescents this high risk group reported more oral symptoms and less access to dental treatment. This suggests that mechanisms need to be found to ensure appropriate dental care for these individuals in order to assist them to maintain, if not improve their oral health status. One way of accessing these individuals is through the community agencies which provide them with support services. Since few agencies provide assistance for youth requiring dental care, at a minimum these data suggest the need for dental care aimed at relieving pain, dealing with urgent needs and improving oral hygiene.

A more extensive analysis of the clinical data is under way and will provide a fuller description of dental care needs among these young, disadvantaged people.

REFERENCES

1. Locker D, Payne B. Inequities in Oral Health: Ontarians aged 12-19 years. An analysis of data from the Ontario Health Survey 1990. Community Dental Health Services Research Unit: Health Measurement and Epidemiology Report No. 4. 1993.

2. Albino, JE, Tedesco LA and Phipps GT. Social and psychological problems of adolescence and their relevance to dental care. International Dental Journal 32(2): 184-193,1982.

3. American Academy of Paediatric Dentistry. Reference Manual, 1991-92.

4. Blum RW. Global trends in adolescent health. Journal of the American Medical Association 265(20): 2711-2719, 1991.

5. Brindis CD, Lee PR. Public policy issues affecting the health care delivery system of adolescents. Journal of Adolescent Health Care 11:387-397.

6. Handler SL. Understanding the adolescent patient. New York State Dental Journal 50: 480-482, 1984.

7. Greene JC, Vermillion JR. The Simplified Oral Hygiene Index. J. Am. Dental Association 68: 25-31, 1964.

8. Ainamo, J., Beagrie, G., Cutress, T. et al. Development of World HeaLth Organization (WHO) community periodontal index of treatment needs.