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

Clinical Findings

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SUMMARY

The Community Dental Health Services Research Unit (CDHSRU), in partnership with the Community Dental Services Division of North York Public Health Department, conducted a study into the dental health of disadvantaged adolescents in North York. While the literature suggests that adolescents in general are a group that is at risk for dental problems, it is assumed that teens who are no longer under their parents' care or who do not have access to dental insurance plans are likely to experience more serious problems. Homeless, unemployed or recently immigrated teens may be at the most risk for dental disease. This study was undertaken to assess the dental health of high risk teens to determine if their dental experiences differ from more fortunate youth.

INTRODUCTION

A previous report[1] on the oral health of adolescents noted that "adolescence is a period of physical, emotional and psychological change". Young people are less influenced by the family and more influenced by their peers and exert their independence by making choices and taking risks that could impact on their health. Oral health can be affected by behaviours like toothbrushing frequency, use of dental services and dietary choices.

The report used data from the 1990 Ontario Health Survey (OHS) to determine if there are changes to the dental health of adolescents once they cease to be eligible for dental treatment programmes. The results of the OHS study suggest that the dental health of adolescents deteriorated with age. For example, older adolescents (18-19 years old) reported more toothache and bleeding gums than 12-13 year olds[1]. While all adolescents may be at higher risk of dental problems, those with less-than-adequate access to care, such as the homeless, unemployed or new immigrants, are likely to be more at risk. In response to the lack of information on the dental health of adolescents, the CDHSRU undertook a study to try and determine the oral health and treatment needs of these youth.

The study included adolescents who attended youth employment centres, hostels or other youth counselling centres in North York as well as adolescents from North York high schools, many of whom were recent immigrants.

The first report on this study of high risk adolescents in North York[2] summarized the analysis of subjective indicators of oral and dental health needs. The report concluded that high risk adolescents had a high rate of subjectively reported oral health needs. For example, the teens complained of a high rate of oral pain and discomfort and felt they needed to visit a dentist for treatment or advice. They also reported irregular attendance at the dentist with a significant number only attending if they had pain or other problems. The first report also confirmed that a high number of the teens required some form of dental treatment.

This report will discuss the results of a more extensive analysis of the clinical data collected in the survey of the dental care needs of young, disadvantaged teens. The analysis looked at decayed, missing and filled teeth (DMFT), periodontal health and treatment needs. The results provide additional information on the dental disease and treatment needs for this group of disadvantaged youth.

METHODS

The methods used in the survey were described with detail in the first report[2]; consequently, only limited information will be given here.

High risk teens were recruited from nine youth counselling centres and hostels in North York and eight hostels and agencies in Toronto that provide services to homeless teens. Agencies that provide aid to street youth do not have a regular clientele, but operate on a 'drop-in' basis and serve a transient population. Since it was not possible to draw a random sample, convenience sampling was used to recruit subjects. All patrons aged 16 years or older who used the agencies the day of the survey were approached to participate in the study.

Teens were also recruited from eight randomly selected high schools in North York. The parents of Grade 9 and Grade 11 students were mailed letters and asked to give consent for their teens to participate in the study. Students participated either in their homes or at schools. A low response rate resulted in a convenience sample for this group rather than a random sample. Since a high proportion of participants were recent immigrants, they were also considered to be a high risk group.

Data Collection:

The dental examination involved noting the presence of dento-facial anomalies, malocclusions and lesions of mucosa or enamel. Dental caries experience was measured with tooth scores for decayed, missing or filled teeth (DMFT). Oral hygiene status was measured with a debris index, a calculus index and a gingival index, all for six indicator teeth[3]. Periodontal status and treatment needs were measured using the CPITN[4].

Survey Procedures:

The survey data were collected by two trained and calibrated dental hygienists. Due to the transient nature of the participants in the study, it was not possible to repeat examinations or perform tests of inter-examiner reliability.

Data for the questionnaires were obtained through interviews with participants. This was followed by the clinical portion of the survey which involved the collection of data for 28 teeth. The third molars were excluded from the analysis.

Data Analysis:

The analysis examined the various oral health indices and clinical treatment needs of three groups of adolescents. Depending on their place of recruitment, the teens were assigned to either Agency, Street, or School groups.

Since the participants were recruited as a result of convenience sampling, the findings cannot be generalized to the wider population.

RESULTS

Characteristics of subjects:

A total of 478 adolescents participated in the study with 472 taking part in the clinical examination portion. Subjects ranged in age from 14 to 22 years with a median age of 16. The Agency group consisted of 146 youth who attended youth employment or counselling centres. Some Agency teens lived with their parents and worked part time while others were living on their own and worked or were looking for full-time employment. The Street group involved 155 homeless teens who lived in hostels or 'dropped-in' at shelters or youth centres. Few of the Street youth were students. The School group involved 171 adolescents who lived with their parents while attending school full time.

Table 1 summarizes the place of birth of the participants.

TABLE 1

PLACE OF BIRTH

	% BORN IN CANADA	% WHO IMMIGRATED 4 YRS AGO OR LESS
ALL (n=472)	56.9	20.9
AGENCY (n=146)	60.3	17.8
STREET (n=155)	66.5	11.6
SCHOOL (n=171)	45.8	31.6

Overall, 56.9% were born in Canada and over one-fifth had immigrated to Canada less than five years ago. The School group had the highest rate of individuals reporting that they had immigrated. This group also had a high rate of recent immigrants. Nearly one-third (31.6%) of the School group came to Canada less than four years previously. In contrast, almost two thirds of the Agency and Street groups were born in Canada.

RESULTS OF THE CLINICAL EXAMINATION

Malocclusions and anomalies:

When the presence of oral facial anomalies, malocclusions and defects of the enamel or mucosa were noted, malocclusions were the most common disorder. Less than one percent had dental facial anomalies like cleft palate or surgical defects, while over two-thirds (67.4%) of the adolescents were observed with malocclusions. Over one-fifth (21.2%) had lesions of the mucosa, and 40.7% had enamel lesions. Few lesions required assessment by a health care professional.

Missing teeth:

Table 2 shows data on missing teeth. Generally, these adolescents had retained most of their permanent teeth. Overall, 17.4% were missing at least one permanent tooth. However, only 8.3% were missing two or more teeth. The mean number of missing teeth was 0.17 (SD=.38). The School group was missing the most teeth. Almost one-fifth (19.3%) of this group was missing one or more permanent teeth and the mean number of missing teeth was 0.19 (SD=.40).

TABLE 2

MISSING TEETH

	% MISSING ≥ ONE TOOTH	MEAN NUMBER OF MISSING TEETH	% HAVING EXTRACTION ≤ 12 MONTHS	MEAN NUMBER TEETH EXTRACTED ≤ 12 MONTHS
All Subjects	17.4	0.17	9.6	1.9
Agency	15.8	0.16	9.6	1.9
Street	16.8	0.17	9.7	1.9
School	19.3	0.19	9.6	1.9

Almost one in ten teens (9.6%) reported a recent extraction and the mean number of teeth extracted was 1.90. There were no differences in extraction rates by group.

Caries experience:

Caries experience was measured in terms of the number of decayed and filled teeth per subject. Dental decay was found in 15.3% of all subjects and the mean number of decayed teeth was 0.28 (SD=.97). While there were no differences in decay rates by group, the Street group's decay was more serious. This group had twice the rate of urgent cases than the Agency or Street groups. Of those with caries, 11.6% had urgent conditions that were painful or likely to cause pain or infection in the near future.

Fillings were found in almost two-thirds (63.3%) of all subjects. While the Street group had the highest percentage of subjects with fillings, there were no differences in mean filled scores among the groups. As seen in Table 3, the overall DMFT score was 3.28 (SD=3.58) and the Street group had a higher mean DMFT score of 3.44 (SD=3.43).

TABLE 3

DMFT SCORES

	All Subjects (n=472)	Agency (n=146)	Street (n=155)	School (n=171)
D	0.28	0.26	0.28	0.31
M	0.17	0.16	0.17	0.19
F	2.70	2.58	2.92	2.50
DMFT	3.28	3.12	3.44	3.29

ORAL HYGIENE INDICES

Debris and Inflammation:

In general, these teens had poor oral hygiene. Table 4 summarizes the extent of debris and gingival inflammation recorded during the clinical examination. Nearly one-half, 46.0%, of all these adolescents had moderate debris deposits, and nearly two- thirds had moderate to severe gingival inflammation. The Street group had the worst oral hygiene scores. More than one-half had moderate to heavy deposits and more than two-thirds had moderate to severe inflammation.

TABLE 4

PERCENTAGE WITH DEBRIS AND GINGIVAL INFLAMMATION

	% Moderate Debris*	% Moderate to Severe Inflammation**
ALL SUBJECTS	46.0	72.7
AGENCY	45.2	70.5
STREET	51.6	77.4
SCHOOL	41.5	70.2

* Moderate Debris: debris on 2/3 of tooth surface

** Moderate to Severe Inflammation: redness, edema, bleeding on probing, or tendency to spontaneous bleeding.

Calculus:

The poor oral hygiene of these subjects was reflected in the high proportion with calculus deposits. Calculus was detected on the teeth of 86.2% of all subjects and more than two-thirds (76.9%) had subgingival deposits. There was little difference in the rate of calculus deposits by group, although the Street group had more individuals with moderate to heavy subgingival deposits.

TABLE 5

CALCULUS DEPOSITS

	Supragingival Calculus %	Subgingival Calculus %	Moderate to Heavy Calculus %
ALL SUBJECTS	9.3	76.9	29.7
AGENCY	13.7	76.0	23.3
STREET	5.2	82.6	35.5
SCHOOL	9.4	72.5	29.8

CPITN Index:

Table 6 depicts the distribution of the highest CPITN code for individual subjects. The poor periodontal health of these teens is reflected in the CPITN scores. Overall, 90% of all subjects exhibited evidence of periodontal disease with either bleeding gums, calculus or pocketing.

TABLE 6

HIGHEST CPITN SCORE FOR INDIVIDUAL SUBJECTS (%)

	HEALTH %	BLEEDING %	CALCULUS %	POCKETS >4mm %
ALL	9.1	4.2	53.2	33.5
AGENCY	6.8	4.8	47.9	40.5
STREET	8.4	1.3	56.1	34.2
SCHOOL	11.7	6.4	55.0	26.9

More than 50% of all the teens had calculus as their highest CPITN score and one-third had pocketing greater than four millimetres. The Agency group had the worst CPITN scores with more than 40% having periodontal pockets greater than four millimetres. The Street and School groups had calculus as their worst scores, however, periodontal pocketing was also found in one third of these groups. These CPITN scores show that periodontal therapy is required by many of the adolescents.

TREATMENT NEEDS

Table 7 is a summary of treatment needs noted during the clinical examination. Generally, these adolescents had considerable treatment needs. As demonstrated with the CPITN scores, periodontal therapy was the most common need with 70.1% requiring scaling and 52.3% requiring oral hygiene instruction. The Street group was identified as the most in need of periodontal therapy. More than three-fifths of this group (84.5%) required such treatment. Restorations were needed by nearly one-third of all the adolescents with 6.6% in urgent need of treatment.

TABLE 7

SUMMARY OF TREATMENT NEEDS

	Periodontal Therapy %	OHI* %	Restorations %	Urgent Needs** %
ALL SUBJECTS	70.1	52.3	29.4	6.6
AGENCY	79.5	57.5	31.5	4.8
STREET	84.5	61.9	31.0	11.6
SCHOOL	49.1	39.2	26.3	3.5

* OHI: Oral Hygiene Instruction
** Urgent Needs: Pain or infection.

Table 8 summarizes the restorative treatment needs. Almost one-third of the subjects needed restorations. While there were no differences in restorative needs by group, the Street group had the most urgent treatment needs. More than one-tenth of those requiring treatment had problems that were painful or likely to cause pain or infection in the near future. This is twice the number of urgent cases than found in the Agency or School groups.

TABLE 8

TREATMENT NEEDS:
PERCENTAGE REQUIRING RESTORATIONS OR EXTRACTIONS

	Restorations %	Restorations ≥2 teeth %	Extractions %
ALL SUBJECTS	32.8	16.3	1.9
AGENCY	37.0	21.9	0.7
STREET	33.5	14.8	1.9
SCHOOL	28.7	12.9	2.9

Use of dental services:

The high rate of treatment needs reflects the adolescents' infrequent use of dental services. Nearly one-third only sought dental treatment when they experienced pain or other trouble, and only 51.0% claimed to have had a dental visit in the preceding year. The high rate of periodontal treatment needs for these adolescents could reflect the asymptomatic nature of periodontal disease. As they had no pain, they would not have consulted a dentist.

TABLE 9

PERCENT WITH AT LEAST ONE DENTAL VISIT IN THE LAST YEAR

	%	n
ALL SUBJECTS	51.0	478
AGENCY	53.4	146
STREET	41.3	155
SCHOOL	57.6	177

CONCLUSIONS

The target population for this study was high risk adolescents in North York. Adolescents who utilized a variety of community-based agencies were recruited by means of convenience sampling. The transient nature of these teens prevented random sampling, instead, all teens who attended the agencies on the various days of the survey were asked to participate. Random selection was attempted for the school-based comparison group. A low response rate and difficulties in obtaining informed consent necessitated that the school group be considered a convenience sample. As a result of the convenience sampling, the data can only apply to the individuals taking part in the study. The results cannot be generalized to a wider population.

The results demonstrate that the adolescents included in the study had a high rate of oral disease and treatment needs. The clinical and subjective measurements support the hypothesis that adolescents are more at risk of dental disease once they are no longer eligible for dental public health programmes. The first report on the oral health of these disadvantaged teens[2] concluded that a substantial number complained of pain and other symptoms, did not visit a dentist regularly, and felt that they needed to visit a dentist.

This report summarizes a more extensive analysis of the clinical data. These high risk adolescents were found to have high rates of oral disease and treatment needs. A substantial proportion of teens had poor gingival health and periodontal

problems. Many participants had dental caries. As expected, the Street group was the most disadvantaged. This group had more oral disease, more treatment needs and more conditions in urgent need of treatment than the Agency or School groups.

These results suggest that provision should be made to improve the dental health status of the disadvantaged youth. Methods of identifying those in need of treatment should be considered. Since few agencies currently meet the dental needs of high risk teens, improved access to dental treatment should be addressed. The clinical data suggest that dental care for the high risk teens should, at minimum, focus on relieving urgent problems and pain, periodontal treatment, and the improvement of oral hygiene.

The data from this study suggests that further research into the dental health of adolescents should collect information on the dental health of 'low risk' adolescents so that their dental health experiences can be compared with the high risk group. Longitudinal studies could also track the dental health of teens once they are no longer eligible for treatment.

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