An estimation of dental treatment needs in two groups of refugees in Sweden

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The aim of this study was to estimate dental treatment need in groups of Chilean and Polish refugees in Sweden. Of the Nordic countries, Sweden accepts the greatest number of refugees. An average of 5000 refugees arrived annually in 1981–85, increasing to 15,000 during 1986–87. Refugees and their families now comprise 93% of non-Nordic immigration. In 1981–83 a sample of 193 Chilean and 92 Polish refugees in the county of Stockholm was selected for this study. Dental treatment needs were calculated in accordance with CPITN and the working study of Swedish dentistry, which formed the basis for the Swedish scale of dental fees for the National Dental Insurance Scheme. The estimated mean treatment time (±SD) in the Chilean sample was 6.9 ± 2.3 h and in the Polish group 8.4 ± 3.0; in comparison with estimated treatment needs in a Swedish material, both would be classified as extreme risk groups. There was no correlation between the number of months in Sweden and the estimated treatment needs. The results indicate a cumulative, unmet need for dental care in these groups. Barriers to ensuring adequate health care for immigrants persist; special outreach programmes, conducted by dental health personnel, may be an effective means of introducing immigrants to the Swedish dental care system. □ *Clinical study; dental health care; immigrants; periapical lesions; periodontal treatment; prosthetic treatment; restorative treatment*

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Of the Nordic countries, Sweden accepts the greatest number of refugees. Non-Nordic immigration to Sweden is now extremely restricted: most present-day immigrants are admitted as refugees with their families. Refugees account for 93% of non-Nordic immigration and approximately 80% of the total immigration to Sweden.

From 1981 to 1985 an average of around 5000 refugees arrived annually. By 1986–87 the number of refugees had tripled to 15,000. During the 1980s the largest number of refugees originated from Chile, Poland, and Iran (1).

Several studies have indicated that immigrants/refugees in the Western world generally have a very high prevalence of dental disease (2–13). Underutilization of medical health services has been shown to be common among immigrant groups (14–16). The reasons for this are more complicated than mere cultural isolation or language difficulties. Immigrants often do not have specific information on how to contact different medical services and how these services function (17). In an investigation of the effect of immigration and migration on health and welfare habits, Haavio-Mannila (18) found that longer residency in a city did not increase utilization or understanding of its health and welfare services.

Immigrants generally seek dental services for emergency care only; that is, their utilization of services is symptom-oriented (10, 13). Dental disease is perceived as acute and episodic (10). A cumulative, unmet need for dental care might be due not only to cultural and behavioral attitudes (14–18) but also to a lower priority for dental health in relation to the more immediate problems of resettlement.

As a result of expansion of dental services and the introduction of a national dental insurance scheme, accessibility to dental care

in Sweden has steadily improved (19). However, there are still groups within society with poor dental health and very low utilization of dental services. Studies have shown that immigrant groups belong to this category (12, 13, 20–22).

A high prevalence of dental disease in groups of recently arrived Polish and Chilean refugees in Sweden has been described in an earlier study (23). The aim of this study was to estimate dental treatment needs in a group of Chilean and a group of Polish refugees in Sweden.

Materials and method

All refugees granted residency in the County of Stockholm were examined at the Department of Oral Diagnosis, University Dental School, as part of a medical and dental treatment program organized in collaboration with the local Immigration Authority.

The material in this study comprised 193 Chilean refugees (94 men and 99 women) and 92 Polish refugees (43 men and 49 women). The average age of the Chileans was 34.0 ± 11.2 years, and for the Poles 34.8 ± 10.2 years (mean ± SD). The Chilean refugees had been granted residence permits in Stockholm between January and May 1981 and January and April 1982 and had been in Sweden an average of 17.3 ± 9.0 months (mean ± SD). The Polish refugees had been granted residence permits during the period September 1982 to May 1983 and had been in Sweden an average 16.0 ± 9.6 months at the time of the study (23).

The dental treatment needs, on the basis of data from the clinical investigation previously published (23), were estimated with regard to restorative, prosthetic, and periodontal treatment and the presence of periapical changes and root remnants.

The need for periodontal treatment was calculated in accordance with the Community Periodontal Index of Treatment Need (CPITN) (24, 25). The other treatment requirements were estimated in accordance with a special study of Swedish dentistry (26). The scale of dental fees for the National Dental Insurance Scheme is based on this study; the actual time taken by the dentist to complete each dental procedure has been calculated.

The following criteria were applied for estimation:

Restorative treatment: The number of surfaces requiring operative treatment to achieve an optimal restoration was calculated. The location of the carious surfaces and the presence of earlier restorations were

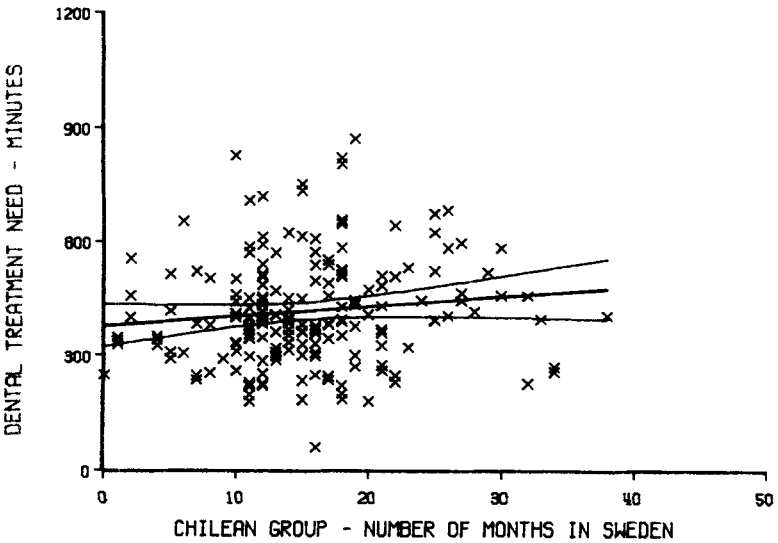

Fig. 1. Linear regression analysis (Chilean group). Dental treatment need (DTN) and number of months in Sweden (NMS). Equation for the linear regression: DTN = 391.89 + 1.553 × NMS; residual deviation = 140.60; SD intercept = 20.97; SD slope = 1.17; and corr. coeff. = 0.095.

decisive factors. In cases of secondary caries it was assumed that replacement of the entire restoration was necessary.

Need for prosthetic treatment: The subjects were classified in accordance with the Eichner Index (27–29). Eichner classes A2 and A3 were considered to require fixed bridgework. It was assumed that the occlusion would be rehabilitated to provide contacts in all support zones and that no arch spans bounded by abutment teeth would be left unrestored. Subjects classified in groups B and C were considered to require removable dentures.

Periodontal treatment need: This was assessed per sextant in accordance with the CPITN (24, 25). The presence of calculus was not registered, and CPI index 2 was therefore omitted.

Endodontic treatment need: This was assessed only from the radiographs and was considered indicated in cases of periapical lesions. Teeth indicated for endodontic therapy were also considered to require subsequent crown therapy. Teeth with periapical pathologic findings were classified in accordance with previous endodontic therapy and the magnitude of the periapical lesion. Previous root fillings were classed as complete or incomplete.

Need for extraction: An extraction was considered necessary when there were 'root remnants'—that is, any tooth considered clinically and radiographically impossible to restore. No assessment of impacted/partially erupted teeth was attempted.

Statistical methods

The following statistical methods were applied: Student's *t* test for independent variables, Kruskal–Wallis (one-ANOVA rank correlation), and Spearman's rank correlation. All analyses were performed with both the parametric and the non-parametric tests. Linear regression was used to evaluate the correlation among age, number of months in Sweden, and treatment need. Both actual and logarithmic values of the variables were tested.

Results

The estimated total mean treatment time (±SD) in the Chilean sample was 6.9 ± 2.3 h (median, 6.6 h; range, 1.0–14.5 h) and in the Polish group 8.4 ± 3.0 h (median, 8.1 h; range, 2.3–19.0 h). The mean treatment time given under each specified therapy refers to the subgroups considered to require this form of therapy. With regard to treatment

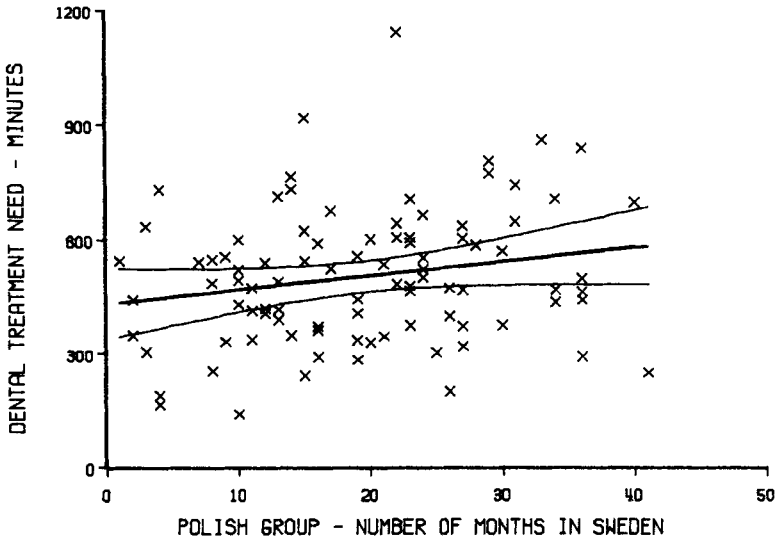

Fig. 2. Linear regression analysis (Polish group). Dental treatment need (DTN) and number of months in Sweden (NMS). Equation for the linear regression: DTN = 429.08 + 3.742 × NMS; residual deviation = 174.80; SD intercept = 40.75; SD slope = 1.88; and corr. coeff. = 0.205.

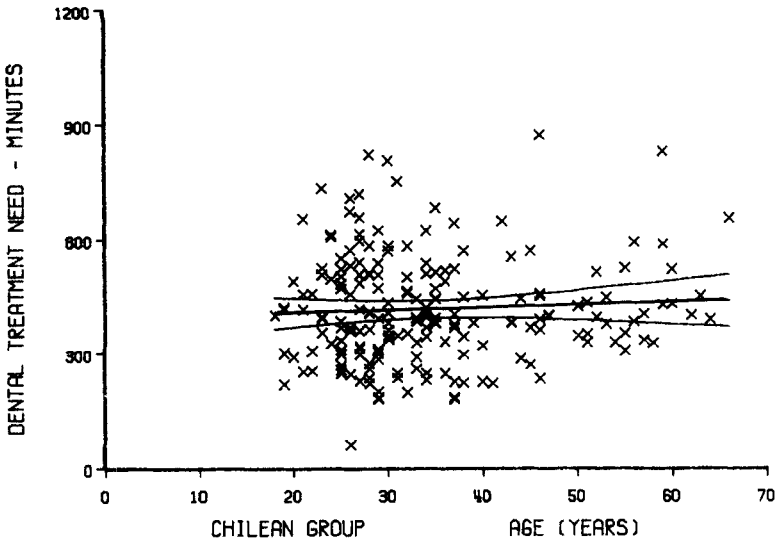

Fig. 3. Linear regression analysis (Chilean group). Dental treatment need (DTN) and age. Equation for the linear regression: DTN = 393.11 + 0.668 × age; residual deviation = 141.10; SD intercept = 33.52; SD slope = 0.923; and corr. coeff. = 0.052.

need, there were no significant differences between sexes in either group. A regression analysis with regard to the number of months of residence in Sweden and treatment requirements showed no significant correlation in either group (Figs. 1 and 2) or for age and treatment need (Figs. 3 and 4).

Conservative treatment need

Of the Chilean refugees 97.9% and of the Poles 96.7% required conservative treatment (Table 1). In the Chilean group 84.5% of the decayed teeth required one- or two-surface fillings. The corresponding value in the Polish group was 79.5% (Table 1). Of the total tooth surfaces 8.7% were carious in the Chilean subjects and 10.6% in the Poles. Of Chilean subjects 44% and of the Poles 44.5% had more than 10 carious surfaces. More than 15 carious lesions were registered in 17.5% of the Chileans and in

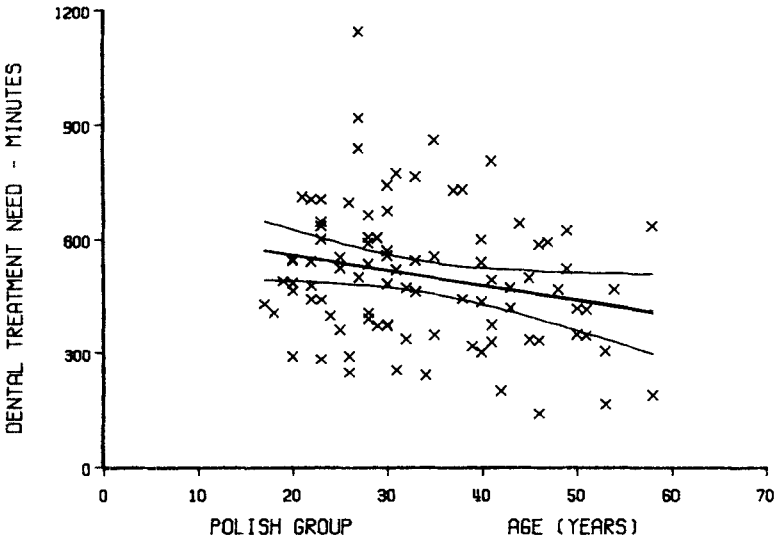

Fig. 4. Linear regression analysis (Polish group). Dental treatment need (DTN) and age. Equation for the linear regression: DTN = 639.02 − 4.09 × age; residual deviation = 173.40; SD intercept = 61.12; SD slope = 1.737; and corr. coeff. = −0.240.

Table 1. Distribution of treatment need and time requirement per single treatment

Clinical procedure	Time required per single treatment (min)	No. of treatments required		No. of individuals requiring treatment			
				Chileans		Poles	
		Chileans	Poles	*n*	%	*n*	%
Restorative therapy							
1 surface							
Inc. can.	13	171	107	83	43.0	42	45.6
Premol.	8	43	45	34	17.6	28	30.4
Molar	8	368	115	134	69.4	55	59.8
Total		582	267	174	90.2	78	84.8
2 surfaces							
Inc. can.	20	53	36	32	16.6	20	21.7
Premol.	13	255	96	139	72.0	53	57.6
Molar	15	231	104	121	62.7	53	57.6
Total		539	236	164	85.0	81	88.0
3 or more surfaces							
Inc. can	30	10	6	9	4.7	6	6.5
Premol.	19	109	36	59	30.6	21	22.8
Molar	27	86	87	57	29.5	41	44.6
Total		205	129	84	43.5	45	48.9
Total restorative therapy		1326	632	189	97.9	89	96.7
Endodontic therapy							
Primary treatment	25 }						
Continuous treatment	21 } 69	166	169	95	49.2	64	69.6
Root-canal filling	23 }						
Extractions	10	11	17	9	4.7	10	10.9
Prosthetic therapy							
Partial denture	79	68	34	68	35.2	34	36.9
Full dent. + part. dent.	81	9	4	9	4.6	4	4.3
Full dent. (both jaws)	53	1	—	1	0.5	—	—
Single crown							
Per prep.	12	13	10				
Per patient	50			7	3.6	9	10.0
Bridge-work							
Per prep.	12	275	115				
Per patient	63			80	41.5	41	44.6
Total prosthetic therapy		366	163	165	85.5	88	95.6
Periodontal therapy							
Oral hygiene instruction	60/individual	192	92	192	99.5	92	100.0
Scaling	20/sextant	534	219	119	61.6	49	53.3
Complex treatment or surgery	40/sextant	123	57	70	36.3	30	32.6
Total periodontal therapy		849	368	192	99.5	92	100.0
Total all dental therapy				193	100.0	92	100.0

26.1% of the Poles. To meet this treatment need, treatment times of 95 ± 53 min (mean ± SD) and 106 ± 66 min per subject, respectively, was estimated.

Prosthetic treatment need

Of the Chileans 41.5% and of the Poles 44.6% were classified into Eichner class A.2 or A.3, requiring fixed bridge work (Table 1). The mean value (±SD) for missing teeth in these groups was 3.4 ± 1.8 for Chileans and 2.8 ± 1.8 for the Poles.

Of the Chileans 35.2% and of the Poles 36.9% were classified as having Eichner index B.1–4 or C.1, requiring removable prostheses (Table 1). The mean values (±SD) for missing teeth were 9.4 ± 4.4 and 10.2 ± 3.4, respectively. In the C.2 group, considered to require a combination of par-

tial and full dentures, there were 4.6% Chileans and 4.3% Poles (Table 1). The mean values for missing teeth in this group were 20.4 ± 2.2 and 24.0 ± 4.7, respectively. Index C.3—full dentures in both maxilla and mandible—was awarded to only one person, from the Chilean group (Table 1).

There was a need for prosthetic treatment in 85.5% of the Chilean subjects and 95.6% of the Poles (Table 1), and in these subjects the estimated treatment time to meet this need was 119 ± 98 min and 132 ± 111 min, respectively.

Periodontal treatment need

In the Chilean group 61.6% of the subjects had at least one sextant with index 3, and 36.3% had at least one sextant with index 4. The corresponding values for the Polish groups were 53.3% and 32.6% (Table 1). The need for periodontal treatment was estimated at 141 ± 44 min (mean ± SD) for the Chilean group and 132 ± 50 min for the Poles.

Endodontic treatment need

Periapical lesions were recorded in a total of 3.8% of the teeth in the Chilean group and in 8.5% of the teeth in the Polish group. In both groups the periapical radiolucency exceeded 2 mm in 38% of these teeth. Of the teeth with periapical lesions 32% in the Chilean group and 64% in the Polish had previously been root-filled. Of these teeth 89% and 92%, respectively, of the root fillings were assessed as incomplete. With regard to periapical changes greater than or less than 2 mm, there was no difference in the distribution between root-filled/not root-filled teeth.

Endodontic treatment was indicated in 49.2% of the Chilean and 69.6% of the Polish subjects (Table 1). The treatment time needed for endodontic treatment was estimated at 121 ± 71 min and 182 ± 116 min, respectively.

Need for extractions

Of the Chileans 4.7% and of the Poles 10.9% needed extractions (Table 1). In the Polish group more men than women required extractions ($p < 0.01$). The estimated treatment time for extractions in these subjects was 12 ± 4 min and 17 ± 7 min, respectively.

Discussion

The terms immigrants and refugees could cause some confusion. Today non-Nordic immigration to Sweden accounts for more than 80% of the total immigration. Since 1975 practically no labor immigration from non-Nordic countries is permitted, and refugees and their families comprise 93% of non-Nordic immigration.

According to statistics from 31 December 1982, individuals from other Nordic countries accounted for 50% of the total number of aliens, and of foreign-born individuals residing in Sweden less than 2 years, only 28% were from the other Nordic countries (30). These facts indicate that today's immigration to Sweden is dominated by refugees and their families.

The refugee samples in the present study may not be representative of their ethnic groups in their countries of origin or for other groups of refugees. However, the findings are in agreement with previous studies on immigrants/refugees (2–13, 20–23), all indicating that immigrants/refugees are dental risk groups. Factors not usually associated with dental risk in the population of the host country may have a decisive influence on the dental health of refugees. In recognizing refugees as dentally at risk, it is also important to determine treatment needs in specific refugee groups, to make realistic estimates of the resource commitment that would be required to meet these needs.

This study concerns the dental treatment time required for dental rehabilitation of the two major refugee groups to Sweden during the 1980s. The estimated treatment time is for optimal dental treatment, and no allowance is made for the cost of treatment or the individual patient's subjective need for treatment. The estimated treatment time in the working study represents only the time

during which the dentist actively treats the patients—about 57% of the total working time (26). Our estimates for treatment time should therefore be interpreted accordingly. The use of double statistical methods, using actual and logarithmic values for the same analyses, was an attempt to increase the reliability in the statistical conclusions.

The application of the Eichner Index for estimation of the prosthetic treatment need gives an evaluation of the occlusal contacts in four support zones, namely bilateral molar and premolar zones. Assessed in this manner, the need for partial dentures and bridgework was large in both groups. The average tooth loss for individuals in Eichner groups A2–A3 was low, indicating that the need for bridgework was therefore overestimated in the study. This applied also to crown therapy on teeth indicated for endodontic treatment; it was probable that several of these teeth could be restored with less complicated restorative measures.

Of the estimated total treatment time, periodontal treatment need was dominant in both groups. The need, not only for oral hygiene instruction, scaling, and root planing but also for advanced periodontal treatment, was great. In the Polish group endodontic treatment also comprised a large portion of total treatment time, mainly for revision of incomplete root fillings.

The estimated need for treatment of caries and periodontal disease in the refugee groups may be directly compared with a Swedish population studied in the Piteå project (31). In this project the concept of extreme risk groups was applied; these comprised patients with a need for restorative therapy in at least three teeth and a CPI score of 3 or 4 in accordance with the CPITN (24). In the Piteå project 15% of Swedish subjects were classified as extreme risk cases. When the same criteria were applied to the present material, 91% of the Chileans and 84% of the Poles were extreme risk cases.

In the present study there was no significant correlation between dental treatment needs and the number of months of residence in Sweden. Although the regression analyses were made over a short time span, there were individuals in the Chilean group who had been in Sweden from 1 and up to 41 months and, in the Polish group, from zero up to 90 months. For the statistical analyses and the conclusions that are drawn it is essential to ascertain that the duration of residence in Sweden had not significantly influenced dental health status in these groups. More detailed study of this correlation is necessary; collection of data on dental treatment provided for all refugees who arrived in Sweden from 1975 to 1988 is at present in progress.

The estimated treatment times in this study indicated that large dental resources are necessary to achieve optimal oral health in these refugee groups. Compared with a Swedish population of similar age, the need for dental treatment is markedly higher in both refugee groups (32–34). Other factors not considered in the study, which would also place an extra demand on resources, are language difficulties and cultural attitudes towards dental health and treatment.

Today there are resources available to offer highly qualified dentistry and good potential to provide care for groups with unconventional dental care habits. However, dental care programs for refugees and their families must be sensitive to the special conditions under which refugees of different ethnic, religious, or national origin live in the host community. Special outreach programs with emphasis on preventive measures could be valuable for successfully reaching these groups.

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