

## Oral health among Vietnamese using a community health centre in Richmond, Victoria

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### Abstract

**Background:** The purpose of this study was to assess the prevalence of specific oral diseases in a Vietnamese background population living in Melbourne, Australia, and to compare these findings to existing oral health data.

**Methods:** One hundred and fifty-eight subjects of Vietnamese background, 18 and older, participated in the study.

**Results:** Subjects were clinically examined, in a cross-sectional study, using standard World Health Organization criteria. The mean decayed, missing and filled surfaces scores were 27.8 (26.1). With the exception of one person, all subjects displayed clinical signs of gingivitis and 39 per cent had shallow pockets. Complex periodontal therapy was required by about 5 per cent of the sample. Comparing these findings to existing data on oral health in Melbourne, subjects in the study had lower DMFS scores, a higher number of untreated decayed surfaces and higher prevalence of gingivitis but less need for advanced periodontal treatment.

**Conclusions:** These findings, in terms of dental caries and periodontal disease, represent a more encouraging oral health situation than that previously described in this immigrant population. Inequalities within the present sample were not reflected in the overall caries experience but were reflected in the proportion of unmet restorative needs. Further research is needed to get a clearer picture of the factors that shape the oral health of migrant Vietnamese populations and expansion of this research into other migrant groups is also necessary.

**Key words:** Epidemiology, migrant groups, oral health, Vietnamese, adults.

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### INTRODUCTION

Australia is one of the most multicultural countries in the world, with more than 100 different countries of

birth represented in its population and an increasing number of those born overseas coming from non-English speaking countries. One of the fastest growing groups in this sector is the Vietnamese. From 1986-96, the Vietnamese population in Australia almost doubled to 150,839 people.<sup>1</sup> While Sydney has the largest Vietnamese population in Australia (39.3 per cent of total Vietnamese), Melbourne has registered the highest increase in its Vietnamese population since 1986 (51.5 per cent). In some suburbs of Sydney and Melbourne, Vietnamese comprise more than 10 per cent of the population.

Given this demographic characteristic, it might be expected that oral health in people of non-English speaking background (NESB) would occupy a prominent place in the literature. However, few studies have examined oral health among migrant groups living in Australia. If interviewers communicate solely in English, general population studies do not capture these groups and the language limitations make NESB people less likely to participate. Also, if electoral databases are used, the high proportion of NESB people who have not registered to vote or adopted citizenship will not be reflected. This lack of information has been emphasised by the National Health Strategy, the Commonwealth Department of Human Services and Health and Health Services Victoria.<sup>2-4</sup>

Previous oral health studies on migrant groups concentrated on Indochinese groups.<sup>5-9</sup> These investigations concentrated on the areas of dental caries and periodontal diseases, using specific age groups – schoolchildren and adolescents – or refugees as study subjects. On the basis of these studies, NESB populations are commonly referred to as a high risk oral health group<sup>4,10</sup>

Durward and Wright<sup>8-9</sup> examined the oral health, oral health knowledge, attitudes and behaviours of 131 Indochinese and 107 Australian-born adolescents from a Melbourne state high school. The Indochinese came from Vietnam, Laos and Cambodia. The decayed, missing and filled surfaces (DMFT) score for the Vietnamese group was significantly higher than for the other two Indochinese groups and the Australian-born adolescents had the lowest mean DMFT score. The

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Vietnamese group had the lowest proportion of caries-free subjects.

Other studies have described the oral health status of primary dentition of Vietnamese refugees living in refugee camps<sup>11-13</sup> and Vietnamese children living in the UK<sup>14</sup> and Canada<sup>15</sup> as having high levels of caries experience. However, reports on the status of permanent dentition in Vietnamese immigrants tended to be better than reports on deciduous dentition and better than that for the mainstream population. This was the case in permanent dentition of Vietnamese living in Norway, whose dental caries prevalence was found to be lower than that of the general Norwegian population.<sup>16</sup>

Among Vietnamese populations, a high prevalence of calculus and gingival bleeding has been reported in children.<sup>11-13</sup> More recently, in a Swedish study, Vietnamese children showed a significantly higher number of sites with bleeding on probing and with probing depths equal or greater than 4mm, compared to Swedish children.<sup>17</sup> In Australia, researchers investigated the gingival health of a group of Indochinese refugee children living in the Brisbane area.<sup>6-7</sup> The Indochinese children had more than 10 bleeding sites more frequently (62 per cent) than the control groups (24 per cent). Prevalence of bleeding sites and calculus were more marked in refugee children than in Australian born children. An Australian study reported poor periodontal health in Indochinese adolescents and although the majority did not show signs of loss of periodontal attachment, some of the Vietnamese adolescents required more complex periodontal treatment.<sup>9</sup> A US study of adolescent Vietnamese refugees reported a mean periodontal index (PI) score three times that of a comparable population born in the US.<sup>18</sup>

Less information is available on the periodontal health of adult Vietnamese migrants. Selikowitz and Gjeramo<sup>19</sup> reported the periodontal health of recently arrived Vietnamese as better than the Norwegian population and Vietnamese refugees arriving in Malaysia who presented with gingival bleeding and calculus, increasing with age.<sup>12</sup>

The purpose of this paper is to assess the oral health status (dental caries and periodontal disease) of a Vietnamese background population, 18 and older, living in a multi-ethnic suburb of Melbourne, and to provide descriptive epidemiological information on its distribution by selected socio-demographic characteristics (age, gender, occupational status and education) and immigration characteristics. The paper also provides estimates of restorative and periodontal treatment needs in this population. In addition, the paper compares these data to Australian oral health data on comparable age groups.

## MATERIALS AND METHODS

This study focused on Vietnamese born people, 18 and older, living in Richmond, Victoria. Richmond is a multi-ethnic suburb of Melbourne, with a high

Vietnamese concentration and a total population of approximately 25,000. The register of patients from Vietnamese background at the Richmond Community Health Centre (RCHC) comprised the sampling frame.

Three bilingual research assistants contacted, by phone, each Vietnamese background person on the list. They explained the project and invited people to participate by attending the RCHC during March and April 1995. If a person agreed to participate, an appointment was made for an interview and clinical examination. When participants arrived at the RCHC, the research assistants organised the flow of patients. In a dedicated area of the waiting room, participants were asked to complete two surveys. First, participants were asked to fill out the consent form and, second, to complete a questionnaire on self-assessed oral health status, utilisation of oral health services, oral hygiene practices and oral health knowledge. This questionnaire also included items assessing socio-economic and demographic variables. Following the completion of the consent form and the questionnaire, the subjects received an oral examination consisting of an assessment of dental and periodontal status.

Clinical examinations were performed by one dental examiner (RM) in a dental surgery at the RCHC. The examination criteria, procedures followed and instruments used were those recommended by the World Health Organization (WHO) for basic oral health surveys and other well established methods of data collection.<sup>20-22</sup> The clinical assessment was carried out in the dental clinic, using standard dental light. Teeth were neither cleaned nor dried before the examination but debris obscuring the visual inspection of tooth surfaces was removed using a dental probe. No dental radiographs were taken.

To assess the number of decayed, missing and filled teeth and surfaces, the decayed, missing and filled surface scores (DMFS) index was used. To further explore dental health status, the dental caries assessment included the proportion of unmet restorative needs. An index was computed to measure restorative needs by dividing carious surfaces by the sum of carious and filled surfaces – the restorative unmet needs index [DS/(DS + FS)].<sup>18,23</sup>

The prosthetic assessment included determination of the need for and use of dental prostheses, as well as the condition of the appliances used by individuals. Denture possession was recorded for each subject by arch. If the subject presented a denture at the time of the clinical examination, the appliance was assessed for defects, stability, retention and integrity based on the criteria used in the National Health and Nutrition Examination Survey (NHANES).<sup>22</sup>

To collect data on the periodontal status, the Community Periodontal Index (CPI) was used, as described in the WHO guide.<sup>21,24-25</sup> This index was selected to allow comparisons with other Australian surveys using the WHO methodology, such as the Socio-Dental Study of Adult Periodontal Health (SAM)

Part I<sup>26</sup> and Part II<sup>27</sup> and the National Oral Health Survey of Australia (NOHSA).<sup>28</sup>

Socio-demographic information included in the analyses were: age, gender, occupational status and education. Age was grouped into five mutually exclusive age groups. Occupational status was classified as: 1 Working; 2 Students, which included fulltime students only; and 3 Not working, which referred to those not working or not working outside the home.

Participants were classified according to their educational level reached in Australia and country of origin as: Less than secondary education, which included all levels from no formal education to complete primary education; Secondary incomplete, which included those with incomplete secondary education; Secondary complete, which included those with completed secondary education or with trades education; and Tertiary education, those who had completed tertiary or were tertiary education students.

One immigration variable was included in the analysis – proportion of life spent in Australia. Because most migrants have lived a part of their life in their countries of origin, the actual length of residence will vary according to the subject's age and age on arrival. Length of residence was considered a poor indicator of the effect of contact with the mainstream society. An index, Current year – year of arrival/age, made up of the respondent's length of residence and actual age, was computed.<sup>29</sup>

The analysis provides information on the distribution of oral diseases in the Vietnamese population, as well as information on dental status, unmet restorative needs and aspects of periodontal status. Results were analysed using the Kruskal-Wallis test variance, a non-parametric equivalent one-way analysis of variance. For variables that were nominal or ordinal, differences between groups were subjected to chi-square analysis to test for significance. To determine which of the groups were significantly different for each of the independent variables examined, a significant differences test was performed. When a probability value was smaller than 0.05, the difference was considered to be statistically significant.

## RESULTS

A total of 670 subjects from the selected area was telephoned. Of those, about 40 per cent were eliminated because they were classified as wrong numbers or no answer. This gave a usable sample size of 402 subjects. Of the 402, 244 refused to be examined. The main reason for non-participation was they were too busy or had recently attended the Richmond Community Health Centre. Of the valid contacts, 158 resulted in appointments, which represents a response rate of 39 per cent. The present analysis was conducted on the total number of participants although, in some cases, some socio-demographic or immigration data are missing.

Table 1. Demographic characteristics of the Vietnamese sample and the Australian population from Vietnamese background (1991 Census).

Demographic variable	Vietnamese No (%)	Vietnamese 1991 Census (%)
Age		
15-24	41 (27.9)	27.5
25-34	41 (27.9)	33.3
35-44	27 (18.4)	22.4
45-54	21 (14.3)	7.7
55+	20 (12.9)	9.1
NS	3 (2.0)	–
Gender		
Male	53 (33.5)	52.3
Female	105 (66.5)	47.7
NS	–	–
Income		
Less than \$15,000	107 (74.3)	60.6
\$15-22,000	16 (10.9)	21.6
\$22,001-32,000	9 (6.1)	6.0
More than \$32,000	3 (2.0)	2.1
NS	10 (6.7)	9.7
Occupational status		
Working	29 (19.7)	67.5
Students	38 (25.9)	*
Home duties	72 (49.0)	32.5
NS	8 (5.4)	–
Education		
Less than secondary	68 (46.2)	35.9
Secondary complete	46 (31.3)	21.4
University	23 (15.6)	20.3
NS	10 (6.8)	13.0
Religion		
Catholic and other Christian	23 (15.6)	22.1
Buddhist	93 (63.3)	35.9
Other non-Christian	8 (5.4)	4.9
None	18 (12.9)	29.2
NS	5 (3.3)	7.7
Proportion of life in Australia %		
0-10	48 (32.6)	*
10-20	29 (19.7)	–
10-30	32 (21.8)	–
10-40	18 (12.2)	–
40+	13 (8.8)	–
NS	7 (4.8)	–

NS=Not stated.

\*Data not available.

## Socio-demographic characteristics

Over 50 per cent of participants (Table 1) were under 35 years of age (55.8 per cent) and 105 (66.5 per cent) participants were female. The majority of participants were health care cardholders, therefore they had access to regular sources of health care. Low income earners predominated – 74.3 per cent of participants had household incomes lower than \$15,000/year. Only three subjects reported household incomes higher than \$32,000/year.

Data on occupational status showed 49 per cent of participants were not working or were engaged in home duties. About 20 per cent of the participants reported paid employment and 26 per cent were full-time students. Of the employed (n=29), one-third were labourers or unskilled workers and there were virtually no professional or para-professional workers. Distribution by level of education indicated the majority of the participants had less than completed

secondary education (n=68; 46.2 per cent); 39 participants (26.5 per cent) had completed secondary education and 23 (15.6 per cent) had some tertiary education. The breakdown of the sample found the majority were Buddhist (63.3 per cent), 23 (15.6 per cent) were Christian, eight (5.4 per cent) indicated other religions and 18 (12.9 per cent) indicated no religion.

In this sample, more than half of the participants (52.3 per cent) had lived in Australia for less than 20 per cent of their life. Although not shown in Table 1, the majority of the participants arrived under the family reunion category (51.3 per cent) and another 29.7 per cent gave political reasons as their main reason for migrating (which may or may not indicate refugee status). In addition, the sample represented Vietnam-born migrants who arrived in Australia after 1990 (41.4 per cent) or during the 1980s (48.3 per cent). About 10 per cent of the participants arrived before 1980.

Despite the low response rate, the socio-demographic profile of the sample closely resembled that of the broader Vietnamese community living in Australia. No statistical differences, at the 0.01 confidence interval, were found in terms of age, level of education or proportion of life in Australia. Labour force participation differences were apparent (higher proportion of participants not in the labour force in this sample). The present sample also had a higher percentage of females and there was a higher proportion of Buddhists and a lower proportion of Catholics, other Christians and those with no religion.<sup>30</sup>

## Dental status

DMFS values ranged from 0-128, with a mean 27.8 (standard deviation 26.1) affected surfaces. Eight subjects (5.1 per cent) had no history of caries experience (DMFS=0) and there was a significant increase in the mean DMFS by age groups. Table 2 summarises the DMFS and its components by socio-demographic variables (age, gender, level of education and occupational status) and immigration variables (proportion of life spent in Australia). Older age groups had a higher mean DMFS ( $p<0.01$ ). Differences by gender also reached statistically significant levels. Those with less than secondary education had a higher DMFS score than any other education group ( $p<0.05$ ). Analysis of the mean DMFS according to their occupational status also showed statistically significant results. Fulltime students had a lower mean DMFS score than any of the other groups ( $p<0.01$ ).

Proportion of life spent in Australia, grouped into five categories, revealed a significant although non-linear association with mean DMFS scores at the 0.05 level. Those with the highest proportion of life spent in Australia had a lower DMFS (DMFS=12.9) and those with the smallest proportion of life spent in Australia had the largest DMFS (DMFS=32.3). However, groups between these two categories showed an inverted pattern. For example, the second largest mean DMFS score was in the group with the second highest proportion of life spent in Australia (DMFS=32.1).

Table 2 shows the mean number of surfaces (DS) with coronal caries. For the entire sample, there were

Table 2. Distribution of DMFS, decayed (DS) and filled surfaces (FS), missing teeth and unmet restorative needs, according to selected socio-demographic and immigration variables.

	DMFS (sd)	DS (sd)	FS (sd)	Missing teeth (sd)	Unmet needs
Total	27.80 (26.11)	2.64 (4.74)	8.55 (8.86)	3.70 (5.41)	0.27
Age group	$p<0.01$			$p<0.01$	
15-24	13.02 (9.98)	2.81 (6.33)	7.22 (6.50)	0.76 (1.04)	0.24
25-34	17.95 (12.58)	3.24 (4.22)	6.68 (7.09)	1.88 (2.04)	0.37
35-44	30.85 (25.26)	1.44 (2.34)	10.48 (11.98)	4.19 (5.55)	0.22
45-54	36.20 (19.54)	3.60 (6.28)	13.75 (11.03)	3.95 (3.15)	0.21
54+	55.42 (34.50)	2.12 (2.97)	8.19 (7.97)	10.04 (6.69)	0.21
Gender	$p<0.01$		$p<0.01$		
Male	22.70 (27.19)	2.09 (3.10)	5.77 (7.67)	3.35 (5.66)	0.32
Female	30.38 (25.29)	2.91 (5.37)	9.95 (9.12)	3.88 (5.30)	0.24
Education	$p<0.05$	$p<0.05$		$p<0.01$	$p<0.05$
Less than secondary	37.89 (25.21)	4.15 (7.65)	7.30 (6.78)	6.41 (5.47)	0.33
Secondary incomplete	21.63 (18.65)	3.60 (5.39)	7.88 (7.65)	2.73 (3.60)	0.31
Secondary complete	26.98 (30.30)	2.02 (3.39)	7.67 (8.55)	4.22 (6.49)	0.29
Tertiary	19.30 (16.24)	0.96 (2.01)	11.70 (12.43)	1.61 (2.11)	0.12
Occupational status	$p<0.01$	$p<0.01$	$p<0.05$	$p<0.01$	$p<0.01$
Working	22.37 (17.98)	3.96 (5.68)	6.22 (7.97)	2.78 (3.26)	0.44
Students	15.76 (15.84)	1.45 (2.98)	9.82 (9.91)	1.11 (2.92)	0.14
Home duties	34.04 (27.94)	2.64 (5.26)	9.38 (8.87)	4.85 (6.02)	0.24
Proportion of life spent in Australia %	$p<0.05$	$p<0.05$		$p<0.05$	$p<0.05$
Students					
0-10	32.29 (28.50)	3.40 (6.21)	9.77 (10.43)	4.17 (6.04)	0.28
10-20	19.68 (19.31)	2.07 (2.92)	6.61 (6.27)	2.54 (4.24)	0.28
10-30	25.09 (19.09)	2.88 (5.29)	8.38 (9.44)	3.22 (3.59)	0.28
10-40	32.18 (23.50)	2.88 (4.23)	10.35 (9.42)	4.18 (4.65)	0.28
10+	12.92 (7.52)	0.31 (0.75)	10.69 (6.70)	0.46 (0.78)	0.04

Table 3. Percentage distribution of subjects by highest CPI scores according to selected socio-demographic variables.

Code	0	1	2	3	4
Total (n=156)	0.6	6.4	48.1	39.1	5.1
Age group (n=152)					
15-24	0.0	15.4	61.5	23.1	0.0
25-34	0.0	4.8	54.8	40.5	0.0
35-44	0.0	3.6	39.3	46.4	10.7
45-54	0.0	0.0	30.0	55.0	15.0
54+	4.5	4.5	41.0	45.5	4.5
Gender (n=154)					
Male	0.0	4.6	54.6	28.0	12.0
Female	1.0	7.7	45.2	44.2	1.9
Education					
Less than secondary	3.8	0.0	42.3	46.2	7.7
Secondary incomplete	0.0	7.5	37.5	52.5	2.5
Secondary complete	0.0	4.5	61.4	25.0	9.1
Tertiary	0.0	17.4	52.2	26.1	4.2
Occupational status					
Working	0.0	3.4	48.3	44.8	3.4
Students	0.0	18.4	63.2	15.8	2.6
Other	1.4	1.4	42.9	45.7	8.6

on average 2.6 decayed surfaces. Students, the tertiary educated and those with a larger proportion of life spent in Australia had the lowest number of decayed surfaces. There were no statistically significant differences ( $p < 0.05$ ) in the number of decayed surfaces by age group or gender. For filled surfaces, only gender and occupation were statistically significant. Males and those who worked outside the home had fewer filled surfaces ( $p < 0.01$  and  $p < 0.05$  respectively).

Participants had an average of less than four teeth missing due to caries and only one participant was fully edentulous. Missing teeth increased significantly by age, from 0.8 teeth in the 15-24 group to 10.0 teeth in the 54+ group ( $p < 0.01$ ). The mean number of missing teeth was significantly higher in those with no secondary education (6.4) and in those confined to home duties. The proportion of life spent in Australia was reflected in a significant non-linear association with mean number of missing teeth.

#### Periodontal status

The Community Periodontal Index (CPI) was recorded at the six surfaces of the six index teeth in 155 subjects. In three cases, the CPI was not computed (two had all sextants excluded and in the other data were incomplete). The percentage distribution of subjects according to the highest CPI score in any sextant is shown in Table 3. Only one participant (0.6 per cent) had no sign of periodontal disease (code 0) and therefore had no treatment needs. Bleeding after probing (code 1) occurred in 10 subjects (6.4 per cent). Overall, 48.1 per cent of subjects ( $n=75$ ) had supra- or sub-gingival calculus (code 2). Pockets greater than 3mm but less than 5mm (code 3) were found in 61 subjects (39.1 per cent). Only a small percentage (5.1 per cent;  $n=8$ ) of subjects had pockets greater than 5mm (code 4) as their highest score.

The percentage of sites with gingival bleeding (code 1) as the highest score decreased with age, from 15.4 per cent in the 15-24 group to 4.5 per cent or less in subjects 35+. For those with code 2 (calculus) as the highest CPI score, there was also a decrease with age. In the 15-24 group, 61.5 per cent demonstrated calculus as the highest CPI score whereas 41 per cent of the 54+ group had calculus. The data indicated the percentage of subjects with pockets (codes 3, 4) increased from 23.1 per cent in the 15-24 group to 70 per cent in the 45-54 group and decreased to 50 per cent in those 55+. By age, there were no subjects younger than 35 years with deep pockets (code 4). In the 35-44 group, 10.7 per cent of the subjects had loss of attachment of 6mm or more (code 4), which increased to 15 per cent in the 45-55 group, while in the 55+ group this percentage decreased to 4.5 per cent.

Overall, 12 per cent of males and 1.9 per cent of females scored code 4 (deep pockets) as their higher scores. By level of education, more than half of those who had not completed secondary education presented with more advanced periodontal involvement, categories with either code 3 or code 4, whereas in those who had at least completed secondary education, these proportions were about 35 per cent. In the same way, students showed better periodontal health than the other two occupational groups. Due to the small numbers of participants in some cells, it was not possible to test the statistical significance of these differences.

#### Treatment needs

Table 2 also shows unmet restorative needs. Overall, 27 per cent of the average Vietnamese participant's restorative treatment needs were not met. No significant differences were found by age or gender, although there was a trend for men and those aged 25-34 to have higher unmet restorative needs. Those with tertiary education had less unmet restorative needs (0.12) than those in the other groups ( $p < 0.05$ ). There was a statistically significant pattern of skilled and unskilled outside the home workers having higher unmet restorative needs ( $p < 0.01$ ). Students had a ratio of 0.14, those engaged in domestic duties a ratio of 0.24 and those working outside the home had a ratio of 0.44. There were statistically significant differences in the level of unmet restorative needs and the proportion of life spent in Australia ( $p < 0.05$ ). The proportion of unmet needs was smaller in those with the largest proportion of their lives spent in Australia (0.04) compared to any of the other groups (0.28).

The need for periodontal treatment is analysed in Table 3. The results indicated that all but one dentate participant required some form of periodontal treatment. In addition, oral hygiene instruction and improvement were required by almost the entire sample, while dental prophylaxis and scaling (CPI code 2 or code 3) were the most frequent treatments required. Complex periodontal treatment was required by 5.1 per cent of the participants.

Fifty per cent of those who needed prosthetic appliances in the upper maxilla (n=17) had an unmet prosthetic need. Fourteen subjects did not wear a prosthesis at the time of the clinical examination and another three subjects were wearing prostheses but were assessed as requiring some prosthetic treatment. In the lower maxilla, the great majority (78.9 per cent) of participants who were found to be in need of a prosthetic appliance (n=28) did not wear one at the time of examination.

## DISCUSSION

This research represents a small-scale study of the oral health status of an adult population from Vietnamese background attending the Richmond Community Health Centre. Several limitations of this study must be noted and should be considered when interpreting its results. The major weakness of the study was that a small voluntary sample of Vietnamese background participants was used. Both the sample size and the voluntary nature of the study must limit confidence in the generalisations ensuing from the results. Additionally, because of the recruitment criteria, only people meeting the criteria of the RCHC could be accommodated. Although large-scale studies of state or national representative samples are desirable, it is not unusual that studies on migrant groups use sample of convenience. In addition, response rates below average have been obtained when respondents were members of minority groups.<sup>31</sup> However, small studies such as this one may play an important role as this study provides unique data on the oral health status of adult Vietnamese immigrants in Australia.

To a large extent, oral health socio-demographic indicators of the sample followed the expected variation described in the literature. For example, it is generally accepted that age is associated with higher DMF indexes and less favourable socio-demographic indicators (that is, level of education, income, occupational status) with a concomitant high risk of oral disease. By gender, there were significant differences in dental status, in particular in the mean number of filled surfaces, with females presenting with a significantly higher number of filled teeth than males. In treatment needs terms, this suggests women are making better and more appropriate use of available services than males.

Among the participants, those who had lived in Australia for a greater proportion of their lives exhibited better dental health than those who had lived in Australia for lesser periods. The survey results also suggest that the proportion of life spent in the receiving society tended to show a non-linear relationship with dental status. Familiarity with oral health services in the receiving society has been suggested as an explanation for this effect.<sup>32</sup> However, data not shown in this paper<sup>33</sup> indicated those with the shortest proportion of life spent in Australia were statistically

significantly more likely to have been to the dentist in the 12 months before the study.

The periodontal assessment reflected in the CPI results showed oral hygiene instruction and improvements were needed by almost the entire sample. This suggests the need for general and specialist periodontal care for this group of the population. However, this periodontal result could be an underestimation of the social segment's real needs, particularly in older cohorts, as the use of the CPI probe becomes less reliable as gingival recession advances.<sup>34</sup> Among the participants, more than 25 per cent of tooth surfaces which needed restoration were untreated and more than 50 per cent of those who were in need of prosthetic appliances either did not have one or were wearing one in less than acceptable condition, particularly in the lower maxilla.

One of the main outcomes of the survey was the need to target and educate working people in oral health practices, as they do not normally attend community health centres. As a result of this, working participants had significantly higher unmet restorative needs. This outcome supports the argument that reducing the cost of care and improving geographic accessibility did not increase oral health service use among this population. In the present study, income was not a barrier to obtaining oral health care, as the majority of participants were health care cardholders and health facilities were, for most of the participants, within walking distance.

The study provides general information on oral health which is relevant to CHCs located in areas with high Vietnamese populations. Because of the growth of this immigrant group in Australia, attempts should be made to identify and alleviate barriers to the community's use of health services. The results of the study emphasise, first, the need for the CHCs to address this group's unmet dental needs and periodontal health. Second, the study provides valuable insights into opportunities for integration and development of dental public health and other social services to achieve better oral health standards.

A comparison of this study with overseas studies on adult Vietnamese populations indicates an increase of more than 100 per cent of the dental indexes.<sup>35</sup> However, this study's findings were closer to the relatively more recent studies of permanent dentition of Vietnamese refugees living in Norway and Vietnamese living in refugee camps in Malaysia.<sup>12,16</sup> Although data were reported on dissimilar age groups and probably different social and ethnic backgrounds, which made comparisons difficult, both tended to support this study's findings on the prevalence of dental caries.<sup>13</sup> However, a common observation was the decayed component as the larger component of the DMFS indexes, while the filled component was lowest.<sup>12,16</sup> This observation contradicted current findings, where the decayed component was generally the smallest.

Dental status data from the Vietnamese sample indicate a generally more favourable situation than reported in data for Melbourne and the general Australian population. The DMFT index of this Vietnamese sample was lower than these data for any age group.<sup>27-28</sup> Data from Melbourne and the National Oral Health Study also demonstrated that, in the Australian adult population, virtually no one escaped dental caries. In contrast, the present data found 5.1 per cent of participants had no history of dental caries. Similarly, Selikowitz<sup>16</sup> concluded that dental caries prevalence in Vietnamese living in Norway was lower than for the general Norwegian population. Selikowitz reported 9 per cent of his sample as being caries free.

In contrast, participants' periodontal health status was found to be poorer. A high need for oral hygiene instruction and improvements were common findings in other studies on Vietnamese populations. Poor oral hygiene was reported in Vietnamese children living in a refugee transit centre in Hong Kong and in South Vietnamese adults.<sup>13,36</sup> The present study showed a high prevalence of dental calculus and some advanced periodontal treatment. Compared to other Australian studies using the same methodology, the present findings indicate a generally more prevalent although less severe periodontal involvement.<sup>26-28</sup>

## CONCLUSION

These findings, in terms of dental caries and periodontal disease, represent a more encouraging oral health situation than that previously described in this immigrant population. However, inequalities within the present sample were not apparent in the overall caries experience but were evidenced in the proportion of unmet restorative needs. Although the present result does not reflect Melbourne's Vietnamese population, it suggests that classifying Vietnamese groups as being at higher risk for oral health based only on their dental status is questionable. To get a more useful picture of the factors that shape the oral health of Vietnamese populations, further research should be undertaken and expansion of the research into other migrant groups is also necessary. To ascertain whether significant differences in oral health status exist between migrant groups and the general Australian population and to investigate different risk factors and interventions for oral health conditions in these groups, a survey that allows more in-depth comparison is necessary. When such a survey is completed, more realistic and appropriate conclusions and recommendations can be put forward on methods to improve the oral health of these groups.

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