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Abstract

Since 1975, the Hmong refugee population in the U.S. has increased over 200%. However, little is known about their dental needs or self-rated oral health (SROH). The study aims were to: (1) describe the SROH, self-rated general health (SRGH), and use of dental/physician services; and (2) identify the factors associated with SROH among Hmong adults. A cross-sectional study

design with locating sampling methodology was used. Oral health questionnaire was administered to assess SROH and SRGH, past dental and physician visits, and language preference. One hundred twenty adults aged 18–50+ were recruited and 118 had useable information. Of these, 49% rated their oral health as poor/fair and 30% rated their general health as poor/fair. Thirty-nine percent reported that they did not have a regular source of dental care, 46% rated their access to dental care as poor/fair, 43% visited a dentist and 66% visited a physician within the past 12 months. Bivariate analyses demonstrated that access to dental care, past dental visits, age and SRGH were significantly associated with SROH ($P < 0.05$). Multivariate analyses demonstrated a strong association between access to dental care and good/excellent SROH. About half of Hmong adults rated their oral health and access to dental care as poor. Dental insurance, access to dental care, past preventive dental/physician visits and SRGH were associated with SROH.

Keywords

Self-rated oral health Self-rated general health Adults Dental visits Hmong

Introduction

About 186,310 Hmong live in the United States (U.S.), the majority residing in the states of California, Minnesota, and Wisconsin.^{1,2} Most Hmong-Americans represent an ethnic minority group originally from Laos³ and on arrival in the U.S. were included in the Asians and Pacific Islander (API) category by the U.S. Census Bureau.⁴ The API category in national and state oral health surveys give the impression that the group is homogeneous and have tried to generalize the findings. In reality, the API group is a heterogeneous group of people with different cultures, languages, lifestyles, religions, diets and health behaviors.⁵ In addition, some of the ethnic groups in the API category have lived in the United States for generations (e.g., Chinese) and are considered well acculturated, and others are recent immigrants like the Hmong who are considered less acculturated.⁶ While there are advantages in grouping populations together one obvious disadvantage is the loss of data specific to ethnic groups that are important for developing appropriate local or community oral health promotion and intervention strategies.

Wisconsin's Hmong population grew from 16,373 in 1990 to 33,791 in 2000, an increase of 106%.⁷ The "Asian" population of Wisconsin is comprised of 40% Hmong and they are the largest subgroup.⁷ In the year 2000 to 2001 alone, Hmong population grew by 15% and in 2005 an additional 3,190 Hmong refugees were expected to be resettled in Wisconsin.⁸ A report by the Office of Global Health Affairs, part of the U.S. Department of Health and Human Services, shows that 60% of recently emigrated Hmong refugees from Wat Tham Krabok (a temple located north of Bangkok, Thailand where many Hmong sought refuge following the closure of the last refugee camp in Thailand in the early 1990's) have serious dental health problems, most have never had any dental care and dental problems were the most prevalent health condition faced by the refugees.⁹ Oral health is an integral component of general health. It contributes to maintaining a person's quality of life and overall well-

being.¹⁰ Despite the Hmong population growth in the U.S., their oral and dental care needs have received little or no attention.

However, their general health care needs and the influence of culture, beliefs and values on the provision of medical procedures continue to be studied by physicians and nurses.¹¹ For example, “the health of a Hmong woman deteriorated after undergoing caesarean section, and she felt that her ill health was caused by her soul leaving her body during general anesthesia”.¹¹ In addition, some Hmong believe that a human being is a unity of body and soul, and are troubled by procedures or surgeries that alter the body.¹¹ This custom of worshipping ancestral spirits and believing that surgery will create a disharmony in their body and compromise their soul’s well-being is still being practiced by some Hmong living in the U.S.^{11,12} With no information on the oral health of Hmong populations available dental health practitioners will be unable to provide culturally appropriate dental care to this population.

Riedy et al.¹³ suggested that individual-level factors (e.g., socioeconomic constraints, health beliefs, attitudes, and knowledge) and system factors (e.g., society, oral health care systems, and culture) impact disadvantaged or minority individual’s oral health status. In a multicultural society, one way to understand racial/ethnic minority population oral health status is to explore the individual-level characteristics within the various cultures.¹³ While there is some information in the medical literature about the general health and disease status of Hmong populations in the U.S., to the best of our knowledge, there are no studies that have documented the use of single-item questions for self-rating of oral health in this population. Self-rated general health and self-rated oral health are subjective patient-centered measures of health which involve the patient in the decision making process and assessment of their health and oral health. The measures are important because they help in understanding how patients relate to a health care system.¹⁴ Self-rated oral health is associated with use of dental services, decayed teeth, toothache, missing teeth, filled teeth and periodontal status.^{15,16} Self-rated general health is a valid indicator of health status, particularly among the elderly.¹⁷ Manor et al. concluded that self-rated general health is a valid health measure appropriate for use in general health surveys of young and older populations.¹⁷

With the change in lifestyle experienced by Hmong, from an agrarian, patriarchal society to living in an industrialized society, dental health professionals will require training in cultural competency to enable them provide culturally appropriate oral health care services to Hmong populations.¹⁸ Culturally competent health care combines the tenets of patient care with an understanding of the social values, religious beliefs, and cultural influences that affect the quality of health-care services and treatment. The aims of the study were to: (1) describe the self-rated oral health, self-rated general health, and use of dental/physician services by Hmong adults; and (2) identify the factors associated with SROH of Hmong adults.

Methods

Survey Setting

This study is based on cross-sectional survey data collected at two Hmong events; (1) a Hmong Community Resource Fair held in May 2004 in Milwaukee, organized by Hmong ABC Radio of Wisconsin; and (2) the 13th Annual Hmong National Sports and Performing Arts Festival held in May 2005 in Green Bay, Wisconsin. Both events were advertised on the radio, internet and in newspapers/flyers to members of the Hmong community. Participants for the survey were recruited as part of the Dental School Community Outreach activity.

The sampling method used in this survey was “location sampling” a technique identified for sampling rare population groups.^{19,20} We used the “location sampling” method to recruit subjects because random sampling methods have limited application in surveys of minority populations and we believed it would be impossible for financial and logistic reasons to conduct such a survey successfully. The two Hmong events were chosen following discussions with Hmong community leaders, who described both events as a good forum to meet a fairly reasonable number of Hmong. A booth with the dental school logo was located close to the entrance of the events and the presence of the dental school faculty and students were repeatedly announced to the guests on the public radio system at the events. Participants were invited to the dental school booth as they moved around during the events. Both events lasted several hours and the booths were open from start of the event until the close of event activities.

Instruments

A closed-ended questionnaire was used to obtain information on sociodemographic characteristics, dental and physician visits, previous dental visits, dental insurance status, access to dental care, duration of stay in the U.S., and who Hmong would seek care from when they have a dental problem. The SROH question was a single-item question phrased as follows: How would you rate your oral health? The possible responses were: fair, poor, good and excellent. The SRGH was phrased as: How would you rate your general health? The possible responses were: fair, poor, good and excellent. Most of the questions in the questionnaire have been previously tested and validated in other similar studies on SROH and SRGH.²¹

The questionnaires were written in English, translated to Hmong and back translated by another Hmong person to English. The questionnaires were pilot tested among several Hmong students and an employee to help clarify any misunderstanding or misinterpretation of the questions. Face and content validity were established through discussions with experts, Hmong students, organizers of the events and review of the literature. Questionnaires were self-administered to participants aged 18–50+ years old. Two Hmong students and a Hmong employee were available to serve as bilingual translators when necessary. The completion time for each survey ranged from 10–15 min. Toothpaste and dental floss were given out to

attendees and survey participants at both events. The surveys were approved by the Institutional Review Board at Marquette University.

Data Analysis

Data was entered from the paper questionnaire onto Excel spreadsheets and exported to SPSS version 13.0 (SPSS Inc., Chicago, IL, USA) for statistical analysis. Descriptive statistical analysis and bivariate analyses were performed. The frequency for each question in the questionnaire was determined and the association of the outcome variable with other independent variables was examined using the Chi-square test for comparison of proportion, where appropriate.

The association between the SROH variable and other independent variables was assessed via logistic regression analysis. Variables considered in the logistic regression analysis are listed in Tables [1](#) and [2](#) which also include all the variables used at the bivariate level. Variables with more than two levels were coded as a group of dichotomous indicator variables. The reason for a participants' past dental visit was recoded into a two level variable of preventive visit and restorative visit. A preventive visit represented the regular check-up response. The restorative visit represented pain in the teeth, repair of a broken denture or bridge, requiring a filling and others. Past visit to the physician was recorded into a two level variable; visits within the past three years and never been to the physician.

Table 1
Study population sociodemographic variables

	Number	(%)
Total number of respondents	118	
<i>Age (years)</i>		
18–34	59	50
35–49	34	29
50+	25	21
<i>Sex</i>		
Male	56	48
<i>Marital status</i>		
Single	64	54

	Number	(%)
Married	33	28
Previously married	21	18
<i>Education</i>		
No School	42	36
School (1–8 years)	12	10
High School (9–12 years)	24	20
College(>12 years)	40	34
<i>Income/year</i>		
\$0–9,999	46	39
\$10,000–19,999	22	19
\$20,000–34,999	32	27
>\$35,000	18	15
<i>Dental insurance</i>		
Yes	95	81
<i>Language preference</i>		
English	25	21
Hmong	65	55
Both (Hmong and English)	28	24
<i>Foreign-born</i>		
Yes	97	82
<i>Duration of stay in United States</i>		
≤1 year	5	4.2
≤2–5 years	1	0.8

	Number	(%)
> 6 years	112	95

Table 2

Frequency distribution of SROH, SRH, access to dental care, teeth cleaning frequency, dental care seeking behavior and health service utilization

Access to dental care	No	(%)
Fair/poor	54	46
Good/excellent	64	54
<i>Regular source of dental care</i>		
Yes	72	61
<i>Self-rated oral health</i>		
Fair/poor	58	49
Good/excellent	60	51
<i>Self-rated general health</i>		
Fair/poor	36	30
Good/excellent	82	70
<i>Past physicians visits</i>		
≤1 year	78	66
2–3 years	16	14
≥3 years	18	15
Never received care	6	5
<i>Past dental visits</i>		
≤1 year	51	43
2–3 years	29	25
≥3 years	26	22

Access to dental care	No	(%)
Never received care	12	10
<i>Reasons for past dental visits</i>		
Regular check-up	55	47
Pain in teeth or gum	20	17
Repair a broken denture or bridge	12	10
Required a filling	11	9
Other	20	17
<i>Frequency of brushing</i>		
Once daily	18	15
Twice daily	94	80
Few times a week	5	4.2
I do not brush my teeth	1	0.8
<i>Who would you seek dental care from</i>		
Dentist	102	86
Traditional healer	3	3
Both	13	11

The final model was built by using a stepwise model of selection procedure. The factors found to be significantly associated with the outcome variable as determined by the likelihood ratio test and a 5% alpha level was kept in the final model. The general linear modeling procedure was also used to check for possible two-way interaction of independent variables and no effect was noted. Adjusted odds ratio (ORs), beta coefficient, standard error and confidence intervals (CIs) for all the variables found to be significant in the final model of the logistic regression analysis were calculated.

Results

Table 1 shows the frequencies for sociodemographic characteristics, place of birth, length of stay in the US and language preference variables. Complete usable information was available

for 118 adults, aged 18–50+ years old. The younger age group (18–34 years) was 50% of the study population and the older age group (50+ years) was 21% of the study population. There were an almost equal number of males and females, over 50% of the participants were single, 36% reported no school, and 39% had income between \$0–9,999. Eighty-one percent had dental insurance, 55% prefer to speak the Hmong language, 82% were born outside the US and 95% have lived in the U.S. for more than 6 years.

Table 2 shows that almost half of the participants rated their access to dental care as good/excellent and their SROH as good/excellent, while 70% rated their general health as good/excellent. Sixty-one percent reported that they have a regular source of dental care and 80% brushed twice daily. Forty-seven percent reported that the reason for their past dental visit was for a regular check-up. About 66% visited the physician in the past 12 months while 43% visited the dentist in the same period. Eleven percent prefer going to both the dentist and a traditional healer when they have a dental problem.

The bivariate association between the dependent and independent variables is shown in Table 3. Self-rated oral health status was associated with age ($P = 0.004$), education ($P = 0.01$) and access to dental care ($P < 0.001$). Frequency of brushing ($P < 0.02$), reason for past dental visit ($P < 0.01$), and SRGH ($P < 0.001$) were also associated with the outcome variable. SROH was not associated with sex ($P = 0.84$), marital status ($P = 0.53$), past dental visits ($P = 0.91$) and who participants will seek care from when they have a dental problem ($P = 0.59$).

Table 3

Bivariate analysis between SROH and independent variables

	Good/excellent (%)	<i>P</i> -value
<i>Age (years)</i>		
18–34	39 (66)	0.004
35–49	13 (38)	
50+	8 (32)	
<i>Sex</i>		
Male	29 (52)	0.84
<i>Marital status</i>		
Single	31 (48)	0.53
Married	16 (48)	

	Good/excellent (%)	P-value
Previously married	13 (62)	
<i>Education</i>		
No school	15 (36)	0.01
School (1–8 years)	6 (50)	
High school (9–12yrs)	11 (46)	
College (>12 years)	28 (70)	
<i>Income/year</i>		
\$0–9,999	22 (48)	0.24
\$10,000–19,999	8 (36)	
\$20,000–34,999	18 (56)	
>\$35,000	12 (67)	
<i>Dental insurance</i>		
Yes	46 (48)	0.28
<i>Access to dental care</i>		
Fair/poor	16 (30)	<0.001
Good/excellent	44 (69)	
<i>Past dental visit</i>		
≤1 year	26 (51)	0.91
2–3 years	15 (52)	
≥3 years	14 (54)	
Never received care	5 (42)	
<i>Frequency of brushing</i>		
Once daily	5 (28)	0.02

	Good/excellent (%)	P-value
Twice daily	51 (54)	
Few times a week	3 (60)	
I do not brush my teeth	1 (100)	
<i>Reasons for past dental visit</i>		
Regular check-up	37 (67)	0.01
Pain in teeth or gum	6 (30)	
Repair a broken denture or bridge	4 (33)	
Required a filling	4 (36)	
Others	9 (45)	
<i>Perception of general health</i>		
Fair/poor	8 (22)	<0.0001
Good/excellent	52 (63)	
<i>Past physicians visit</i>		
≤1 year	43 (55)	0.24
2–3 years	9 (56)	
≥3 years	7 (39)	
Never received care	1 (17)	
<i>Regular source of dental care</i>		
Yes	42 (58)	0.42
<i>Who would you seek dental care from</i>		
Dentist	50 (49)	0.59
Traditional healer	2 (67)	
Both	8 (62)	

Table 4 shows results of the final model of the multivariate logistic regression analyses based on the general linear model procedure. Having good/excellent SROH was associated with dental insurance ($P = 0.02$; odds ratio [OR] = 3.89; 95% confidence interval [CI] = 1.19, 12.65), access to dental care ($P < 0.0001$; odds ratio [OR] = 6.6; 95% confidence interval [CI] = 2.50, 17.26), SRGH ($P = 0.001$; odds ratio [OR] = 5.4; 95% confidence interval [CI] = 1.92, 15.43) respectively. Past restorative dental visits were associated with SROH and these participants were less likely to rate their oral health as good/excellent ($P = 0.03$; odds ratio [OR] = 0.4; 95% confidence interval [CI] = 0.15, 0.93) and those who have never visited the physicians were also less likely to rate their oral health as good/excellent ($P = 0.02$; odds ratio [OR] = 0.3; 95% confidence interval [CI] = 0.08, 0.85).

Table 4

Multivariate regression analyses of factors associated with SROH

	Beta coefficient	Standard error	Odds ratio (OR)	95% CI for OR	P-value
<i>Dental insurance</i>					
No			1.00		
Yes	1.36	0.60	3.89	1.19–12.65	0.02
<i>Access to dental care</i>					
Poor/fair			1.00		
Good/excellent	1.88	0.49	6.57	2.50–17.26	0.0001
<i>Self-rated general health</i>					
Poor/fair			1.00		
Good/Excellent	1.69	0.53	5.44	1.92–15.43	0.001
<i>Reasons for past dental visits</i>					
Preventive			1.00		
Restoration	-0.98	0.46	0.37	0.15–0.93	0.03
<i>Past physician visits</i>					

	Beta coefficient	Standard error	Odds ratio (OR)	95% CI for OR	P-value
Within past 3 years			1.00		
Never received care	-1.35	0.60	0.26	0.08–0.85	0.02

Past dental visit variable recoded into binary variable with preventive vs. restoration (regular check-up, preventive and others restoration). Past physicians visit variable recoded into binary variable within the past 3 years vs. never received care.

Discussion

National data lack the specificity for the investigation of unique social, cultural and environmental factors surrounding ethnic minority populations at the family, peer, and community levels.²² Other specific health issues of concern for individual minority population groups are not easily identifiable from national studies. Although national studies on dental service utilization for Asians and Native Hawaiian or other Pacific Islanders (ANHOPI) are available in the US they are generally of little value in understanding any variation in self-rated general health and self-rated oral health of the heterogeneous group that make-up the ANHOPI population.²³

Studies have investigated self-reported oral health of racial/ethnic minority populations in the United States and the United Kingdom but none have specifically studied the Hmong population.^{24,25,26} SROH and SRGH are useful summaries of oral and general health and SRGH has been found to predict future health outcomes.²¹ Seventy percent of our study participants reported that their general health was good/excellent and 51% of the participants rated their dental health as good/excellent. In the bivariate analysis, SROH was associated with SRGH and was found to be statistically significant ($P < 0.0001$). This study supports findings from other studies that have shown an association between SROH and SRGH.^{27,28} In our study, the participants who reported good/excellent oral health were almost six times more likely to report good/excellent general health. A study by Cruz et al. of Asian-American subgroups (Chinese, Indian, and Pakistani) living in New York City suggested an ethnic difference in the perception of oral health status among racial/ethnic minority groups.²⁶ Cruz et al. study used a single-item question similar to what is used in our study, however the response (very healthy, I have no problem, okay, but I have some problems) were different.²⁶ Approximately 50% of the study participants in the three ethnic groups reported that their oral health was “very healthy, I have no problem” and “okay, but I have some problems”.²⁶

Reisine and Bailit study of adults sample with a mean age 34.6 years reported that 65% rated their oral health as “good” or “excellent”.²⁹ Although the results concerning the proportion of

people reporting good/excellent oral health appear similar to earlier studies, it is important to recognize the variation in the sample sizes, ethnic origin, and ages of participants. It is also difficult to speculate on some of the reasons for similarities or differences between studies in the proportion of people rating their oral health as good/excellent. In our study 54% of the participants had some high school or college. However, only in the bivariate analysis was education found to be significant ($P < 0.001$) and associated with SROH.

The proportion of participants who in the past 12 months have visited the dentist was 43% and 10% had never been to the dentist at all. The proportion who visited the dentist in the past 12 months is low when compared to the 64% of Asians and 56% of Native Hawaiian or other Pacific islanders reported from the National Health Interview Survey (NHIS) data from 1997–2000.²³ Dental visits within the past 12 months were not associated with SROH. A visit to the physician within the past 24–36 months was also not associated with SROH, and those who had never been to the physician were less likely to rate their oral health as good/excellent (OR = 0.26 CI; 0.08–0.85). Further research is needed to investigate Hmong perceptions of general health in relation to oral health and their perception of the quality of physical and dental services received. Results from the logistic regression analysis show that those participants who visited the dentist for regular check-ups (preventive) reported their oral health as good/excellent, in comparison to those who visited the dentist for restorative work; i.e., to fix a dental problem (OR = 0.37 CI; 0.15–0.93). This was found to be significant ($P < 0.03$). Oral health promotion and preventive strategies are highly desirable in this population similar to most other population groups in the U.S.

In this study, 3% reported that they would go a traditional healer to seek dental care, and 11% reported that they would seek dental care from the dentist and a traditional healer. This result may suggest a mistrust for the westernized health care system and a continual reliance on belief in traditional health care. Another possible explanation for this result could come from the Hmong belief in the integrity of the physical body, and when body parts are cut or mutilated in accidents, surgery or autopsy, a person remains that way after reincarnation. Study participants desiring to visit a traditional healer when they have dental problems could potentially have some implications for dental treatment. Dental providers have to be culturally competent in order to best serve the dental needs of this growing immigrant population.

Access to dental care was rated as good/excellent by about 50% of the participants, and 61% reported that they have regular source of dental care. Eighty-one percent of the study participants reported that they have dental insurance. Participants who rated their oral health as good/excellent were almost four times more likely to have dental insurance (OR = 3.89 CI; 1.19–12.65). A large proportion of the respondents (80%) brushed twice daily and less than 1% did not brush their teeth at all. Frequency of brushing was associated with SROH and was found to be significant ($P = 0.02$) in the bivariate analysis. The positive oral health behaviors may be attributed to acculturation given that 95% of the participants have lived in the U.S. for more than 6 years.

Although the sampling technique helped to overcome some barriers, certain study limitations potentially limit the generalizability of our results to the entire adult Hmong population of Wisconsin and the United States. The data was collected from individuals attending two Hmong community events, and results from this group could be different from those who did not attend the events. However, to the best of our knowledge this study is probably the first in the dental literature to report on self-rating of oral health in the Hmong population. Despite the perceptual differences in regards to oral health among different ethnic minority groups. The concept of cultural competency is not to cater specifically to each individual but to understand cultural values, language bias and make treatment decisions that result in patient satisfaction and improved oral health outcomes.

For example, 55% of the participants prefer to speak only Hmong and 3% prefer to seek dental care from a traditional healer. The proportion of the subjects who prefer to speak only the Hmong language is an indication that dental providers and dental students should be encouraged and trained on how best to use interpreter services when dealing with patients from different cultures. By overcoming this language barrier, Hmong patients are able to understand dental procedures and know what to expect from dental treatment. Ultimately, trust is established between the patient and dental practitioner. Overall, cultural differences can have a profound impact on the way the Hmong community perceives their oral health. Cultural competency can start in the dental school curricula by exposing students to various ethnic groups. This includes implementing outreach programs that target all ethnic minority groups.

Conclusions

Almost half of the study population rated their oral health and access to dental care as poor. Dental insurance, access to dental care, reason for previous dental visits, physician visits, and SRGH were associated SROH. Participants who reported excellent oral health were six times more likely to report excellent general health. Although this study provides an initial insight into the oral health of the Hmong community; hopefully it will act as catalyst for future qualitative and quantitative research to address some of the unanswered questions raised in our study on how Hmong culture and beliefs could influence their perceptions of oral or general health. Oral health education and promotion programs is a good starting point for increasing dental health awareness within the Hmong community.

References

- ¹Nationally aggregated Hmong data: U.S. Census 2000. Available at <http://www.hmongcenter.org/nataghmondad.html> accessed May 10, 2006.
- ²U.S. Census Bureau, American FactFinder. Race alone or in combination for American Indian, Alaska native, and for selected categories of Asian and of Native Hawaiian and other Pacific Islander: 2000. Available at http://factfinder.census.gov/servlet/QTable?_bm=y&-content=qt&-qr_name=DEC_2000 accessed June 24, 2005.

- ³The Hmong People in the U.S by Jeff Lindsay. Available at http://www.jefflindsay.com/Hmong_tragedy.html accessed July 31, 2005.
- ⁴The Asian Population: 2000. U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau. Issued February 2002.
- ⁵Yu ESH, Liu WT. United States National Health Data on Asian Americans and Pacific Islanders: A Research Agenda for the 1990s. *Am J Public Health* 1992;82:1645–52.
- ⁶Reeves T, Claudette B. The Asian and Pacific Islander Population in the United States: March 2002, Current Population Reports, P20-540, Washington, DC: U.S. Census Bureau; 2003.
- ⁷Hmong Task Force University of Wisconsin Extension & Applied Population Laboratory. Hmong educational needs assessment project, Wisconsin's Hmong population: census 2000 population trends. Available at <http://www.uwex.edu/ces/hmong/assessment.cfm> accessed May 20, 2005.
- ⁸Wisconsin's Hmong Resettlement Task Force Report. Report to Governor Doyle February 2005. Available at <http://dwd.wisconsin.gov/hrtf/default.htm> accessed May 9, 2007.
- ⁹Office of Global Health Affairs. Background on potential health issues for Hmong Refugees from Wat Tham Krabok. Available at <http://www.dhfs.state.wi.us/international/refugee>.
- ¹⁰Gift HC, Atchison KA. Oral health, health and health-related quality of life. *Medical Care* 1995; 33(11 suppl):N57–77. Review.
- ¹¹Rice PL, Ly B, Lumley J. Childbirth and soul loss: the case of a Hmong woman. *Med J Aus* 1994;160:577–8.
- ¹²Gervais KG. Providing culturally competent health care to Hmong patients. *Minnesota Med* 1996;79: 49–51.
- ¹³Riedy CA, Weinstein P, Milgrom P. An ethnographic study for understanding children's oral health in a multicultural community. *Int Dent J* 2001;51:305–12.
- ¹⁴Ware JE Jr., Brook RH, Davies AR, et al. Choosing measures of health status for individuals in general populations. *Am J Public Health* 1981;71:620–5.
- ¹⁵Aday LA, Fleming G, Andersen R. Access to health study of access to medical care. *Health Serv Res* 1970;9:208–20.
- ¹⁶Gooch BF, Dolan TA, Bourqu LB. Correlates of self-reported dental health status upon enrollment in the Rand Health Insurance Experiment. *J Dent Educ* 1989;53:629–37.
- ¹⁷Manor O, Matthews S, Power C. Self-rated health and limiting longstanding illness: inter-relationships with morbidity in early adulthood. *Int J Epidemiol* 2001;30:600–7.
- ¹⁸Culhane-Pera KA, Vawter DE, Xiong P, et al. editors. *Healing by heart: clinical and ethical case stories of Hmong families and Western providers*. Nashville: Vanderbilt University Press; 2003.
- ¹⁹Sudman S, Kalton G. New developments in the sampling of special populations. *Annual Rev Socio* 1986;12:401–29.
- ²⁰Kalton G, Anderson DW. Sampling rare populations. *J R Stat Soc A* 1986; 149:65–82.
- ²¹Benyamini Y, Leventhal H, Leventhal EA. Self-rated oral health as an independent predictor of self-rated general health, self-esteem and life satisfaction. *Soc Sci Med* 2004;59:1109–16.
- ²²Gift HC. A look at oral health within the context of diverse populations: foreword. *Adv Dent Res* 1997;11(2):200–2.

- ²³Qiu Y, Ni H. Utilization of dental care services by Asians and native Hawaiian or other Pacific Islanders: United States, 1997–2000. Advance data from vital and health statistics; no 336. Hyattsville, Maryland: National Center for Health Statistics. 2003.
- ²⁴Newton JT, Corrigan M, Gibbons DE, et al. The self-assessed oral health status of individuals from White, Indian, Chinese and Black communities in south-east England. *Community Dent Oral Epidemiol* 2003;31:192–9.
- ²⁵Newton JT, Khan FA, Bhavnani V, et al. Self-assessed oral health status of ethnic minority residents of south London. *Community Dent Oral Epidemiol* 2000;28:424–34.
- ²⁶Cruz GD, Galvis DL, Kim M, et al. Self-perceived oral health among three subgroups of Asian-Americans in New York City: a preliminary study. *Community Dent Oral Epidemiol* 2001;29:99–106.
- ²⁷Rosenberg D, Kaplan S, Senie R, et al. Relationships among dental functional status, clinical dental measures, and general health measures. *J Dent Educ* 1988;52:653–7.
- ²⁸Norlen P, Ostberg H, Bjorn A. Relationship between general health, social factors and oral health in women at the age of retirement. *Community Dent Oral Epidemiol* 1991;19:296–301.
- ²⁹Reisine ST, Bailit HL. Clinical oral health status, adult perceptions of oral health. *Soc Sci Med* 1980;14A:597–605.