

Asthma in a Vietnamese Refugee Population

ANDREW L. RIES, MARIA A. PICCHI, LE HA TAN NGUYEN, ROBERT J. MOSER, CRAIG A. MOLGAARD, and STEPHEN I. WASSERMAN

Division of Pulmonary and Critical Care Medicine and Department of Medicine, University of California, San Diego; Department of Refugee and Immigrant Services, Catholic Charities of San Diego; and Department of Epidemiology and Biostatistics, Graduate School of Public Health, San Diego State University, San Diego, California

Asians and Pacific Islanders comprise a large and growing minority group in the United States, yet data on health status specific to these populations are scant. We conducted an epidemiologic study of asthma in a Vietnamese refugee population to estimate prevalence, evaluate risk factors, and better understand treatments of asthma among Vietnamese individuals. One hundred twenty-four asthma cases were identified from a population of 2,536 new Vietnamese refugees in San Diego (prevalence = 49 per 1,000; 4.9%). Two nonasthmatic control groups of Vietnamese refugees, matched for age and gender with the asthma cases, were recruited for a case-control study, using a questionnaire administered in Vietnamese. Vietnamese asthmatic individuals used both Western and non-Western therapies. Most subjects used traditional health practices, such as coining, cupping, and oil inhalation. As compared with current-refugee controls, the asthmatic subjects used significantly more bleeding (OR: 3.40; 95% CI: 1.06 to 10.80) and herbal ingestion (OR: 1.87; 95% CI: 1.08 to 3.19). As compared with former-refugee controls, the asthmatic subjects used significantly more oil inhalation (OR: 2.58; 95% CI: 1.45 to 4.85), bleeding (OR: 8.64, 95% CI: 1.02 to 73.70), and herbal ingestion (OR: 1.93; 95% CI: 1.02 to 3.67). The presentation and recognition of asthma among the Vietnamese subjects were similar to those in other populations. This information may be helpful in designing culture-specific health-education programs. **Ries AL, Picchi MA, Nguyen LHT, Moser RJ, Molgaard CA, Wasserman SI. Asthma in a Vietnamese refugee population.**

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Since the end of the Vietnam war in 1975, more than 1 million Southeast Asian refugees have entered the United States (1, 2). These refugees present unique challenges to the United States health-care system because of language and cultural barriers and different health practices and beliefs (3-6). Although there are data about asthma in Caucasian, Hispanic, and Black populations, little is known about asthma prevalence, risk factors, or treatment in Southeast Asians. Many Western health-care providers are unaware of traditional medical-care systems used by these individuals and misinterpret patients attitudes and behavior through a lack of knowledge of different cultures (6-8). Information about health practices and belief systems for these groups can be used to design and implement culturally sensitive health-care education programs and services. The overall purpose of this study was to conduct a preliminary epidemiologic investigation of asthma in a population of Vietnamese refugees in San Diego. The objectives were to estimate the prevalence of asthma, conduct a case-control study

to evaluate risk factors, and learn more about perceptions and management of asthma in this Vietnamese population.

METHODS

Study Population

Vietnamese refugees newly arrived in San Diego were screened for asthma through the Refugee Preventive Health Services Program run by the Department of Refugee and Immigrant Services of Catholic Charities of San Diego. This program provides screening health services required of all refugees upon arrival in the United States, under contract with the U.S. Department of Health and Human Services. Since these services are provided free of charge, nearly all refugees in San Diego are seen in the clinic that serves the program. Typically, refugees are screened within a few weeks of their arrival in the area. Thus, these individuals are representative of the whole population of Vietnamese refugees in San Diego.

All refugees screened for the study completed a standard refugee health screening history form that was modified to include the following three questions: (1) "Have you ever had asthma?"; (2) "Does your chest ever sound wheezy or whistling?"; and (3) "Do you ever take medicine for breathing problems?" A "Yes" response to any of these three questions was considered potentially positive for asthma. Most cases responded positively to all three questions. All asthma cases were confirmed by telephone follow-up to clarify the symptoms of disease, diagnosis by a physician, and use of medications. Individuals reporting chronic respiratory symptoms not diagnosed as asthma were excluded. Therefore, the case definition for the study includes those persons reporting ever having asthma and who had compatible symptoms.

Among 2,536 Vietnamese refugees screened between October

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Correspondence and requests for reprints should be addressed to Andrew L. Ries, M.D., M.P.H., 200 West Arbor Drive, San Diego, CA 92103-8377.

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1992 and December 1994, there were 124 confirmed cases of asthma identified in 100 families. One hundred cases of asthma were selected for the case-control study. In families in which more than one individual was affected, only one case per family was selected randomly for the case-control study in order to maintain case independence. Thus, 24 affected family members of cases were not included in the case-control study. Of the 100 asthma cases identified, 97 were successfully recruited for the study: two refused to participate and one did not have asthma upon further medical evaluation. The subject in one case refused to answer questions specific to asthma signs and symptoms, but did take medicines for breathing problems. This case was excluded from the analyses of asthma signs and symptoms but included in the analyses of case-control data for the specific questions answered.

Two nonasthmatic control groups, matched for age within 5 yr of the asthmatic subjects and matched with them for gender, were established. One control group (current-refugee controls) consisted of Vietnamese refugees who had arrived in San Diego and were screened through the Refugee Preventive Health Services Program in the same year as the cases. Two subjects per case were recruited. In all, 194 subjects were included in this group. Five potential current-refugee controls refused to participate.

The second control group (former-refugee controls) consisted of Vietnamese refugees who had arrived in San Diego 5 yr before the cases. All subjects in this group had been screened previously, through the San Diego Refugee Preventive Health Screening Program, within 60 d of their entry into the United States. The purpose of using this second control group was to compare asthma risk factors for current-refugee asthma cases with those for subjects who had time to adapt to the environment and culture of the United States and to establish access to the United States health-care system. Vietnamese refugees who had used San Diego as a port of entry between April 1987 and September 1990 were eligible for this control group. Two subjects per case were sought. However, because of the high mobility of this population, only one former-refugee control per case could be matched for more than half of the cases. No former-refugee control could be found for one case. Of 2,479 potential former-refugee controls, 124 agreed to participate, 12 refused, and five reported a history of asthma and were excluded. All other potential matched controls had moved from their original residence at the time of initial screening and could not be located, or were members of a family from which a control subject had already been selected, and were therefore ineligible. There were 96 matched pairs for the case-control analyses.

All subjects willing to participate and complete the questionnaire were asked to sign a consent form approved by the University of California, San Diego (UCSD) Human Subjects Committee. For children under 13 yr of age, parental consent was obtained.

Questionnaire

The questionnaire was developed in English from existing asthma questionnaires in order to obtain information about demographics, health, allergic and respiratory symptoms, risk factors for asthma, access to and use of health-care services; acculturation, and traditional health practices and beliefs among Vietnamese subjects. Subjects who had asthma were asked questions about duration of disease, treatments, and current medications. The questionnaire was piloted in English through open-ended interviews with English-speaking Vietnamese individuals in order to assure that it was effective in accurately conveying concepts for which Vietnamese words might not exist. The questionnaire was then translated into Vietnamese by a native speaker, and then backtranslated to English by a different Vietnamese native who had no prior knowledge of the original version. This was done to assure that the concepts were being accurately conveyed. The Vietnamese version was then piloted and revised as needed before being used in the field.

All study subjects were interviewed over the telephone in Vietnamese by one of two trained interviewers. The average interval between arrival in the United States and the interview was 3.0 ± 2.9 (SD) mo for asthma cases, 4.4 ± 4.7 mo for current-refugee controls; and 67.4 ± 7.4 mo for former-refugee controls. In addition, the patient interviewed in each case of asthma was asked open-ended questions to find out more about particular practices and beliefs for treating

specific asthma symptoms. For children under 13 yr old, the interview was conducted with a parent, using the same questionnaire as for older subjects.

Data Analyses

Results for each group (cases and two control groups) were summarized with descriptive statistics of mean and SD for continuous variables, and with frequencies and percentages for categorical variables. Differences among the three groups were assessed with one-way analysis of variance (ANOVA) for continuous variables and chi-square tests for categorical variables. A value of $p < 0.05$ was considered significant. *Post hoc* significance testing for the ANOVA was done according to the Scheffe method. For the case-control analyses, crude ORs with 95% CIs were calculated to detect differences between cases and current-refugee controls and between cases and former-refugee controls for the use of traditional health practices and adherence to traditional health beliefs. The data were then adjusted for other potential covariates, using the Mantel-Haenszel method. Covariates examined in this way included age, education, smoking status, gender, religion, and marital status. Subgroups for age were ≤ 20 yr, 21 to 40 yr, and > 40 yr. For education, three subgroups were established on the basis of the extent of high-school education completed, as follows: no high school, some high school, and high-school graduate. Smoking status was classified as never smoked or ever smoked.

RESULTS

Prevalance and Characteristics of Asthma

During the course of this study, 124 cases of asthma were identified among the 2,536 Vietnamese refugees screened, indicating a crude prevalence rate of asthma in this population of 49 per 1,000, or 4.9%.

Among the 96 asthma cases interviewed, the average age at which asthma began was 16 ± 16 yr. Sixty-one cases (64%) reported currently having asthma. The diagnosis of asthma was confirmed by a doctor in 70 cases (73%). Asthma medications were taken regularly in only nine cases (9%) and as needed in 32 cases (33%). Although intermittent use of Western medications such as bronchodilators and inhalers was reported by 86 cases (90%), only 26 cases (27%) stated that they had used steroids to treat their asthma. Fifty-four cases (56%) reported use of non-Western as well as Western therapies. Some examples of non-Western therapies used and mentioned in open-ended questioning specifically for treating asthma included swallowing live lizards for clearing excess mucous and use of a tea made from dried cat placenta. Twenty-six (27%) and 27 (28%) cases, respectively, reported having been hospitalized or visited an emergency room for treatment of asthma.

Demographic Characteristics

Basic descriptive results of selected characteristics for cases, current-refugee controls, and former-refugee controls are shown in Table 1. As expected for the matching criteria, the three groups were virtually identical in age and gender distribution. The majority of subjects from all three groups came from urban areas of South Vietnam. Significantly more former-refugee controls than either cases or current-refugee controls reported being of Chinese ethnicity ($p < 0.001$). The secondary education status was similar for all three groups. However, significantly more former-refugee controls had any education beyond high school than did members of the other two groups ($p = 0.02$). There was a statistically significant difference in religious affiliation among the three groups ($p = 0.003$): former-refugee controls were more likely to be Buddhists and less likely to be Protestants.

TABLE 1
DEMOGRAPHIC CHARACTERISTICS OF VIETNAMESE REFUGEES

	Current Refugees		Former Refugees	χ^2 (df)	p Value
	Cases (n = 97) No. (%)	Controls (n = 194) No. (%)	Controls (n = 124) No. (%)		
Gender					
Male	49 (50)	98 (50)	62 (50)		
Female	48 (50)	96 (50)	62 (50)		
Age, yr (mean \pm SD)	36 \pm 17	35 \pm 16	36 \pm 16		
(Range)	(4-69)	(4-70)	(9-70)		
Age, yr (no. subjects per decade)					
0-10	6 (6)	10 (5)	2 (2)		
11-20	16 (16)	24 (12)	19 (15)		
21-30	20 (21)	58 (30)	34 (27)		
31-40	11 (11)	15 (8)	18 (14)		
41-50	20 (21)	42 (22)	20 (16)		
51-60	14 (14)	34 (18)	21 (17)		
61-70	10 (10)	11 (6)	10 (8)		
Where lived most					
North Vietnam	3 (3)	3 (1)	3 (2)	5.8 (4)	0.2
Middle Vietnam	25 (26)	34 (18)	18 (14)		
South Vietnam	69 (71)	157 (81)	103 (83)		
Where mainly lived					
Large city (> 500,000)	38 (39)	84 (43)	67 (54)	10.5 (6)	0.1
Small city (> 100,000)	23 (24)	35 (18)	16 (13)		
Town (< 100,000)	29 (30)	60 (31)	27 (22)		
Rural (< 20,000)	7 (7)	15 (8)	14 (11)		
Primary ethnic group					
Vietnamese	95 (98)	189 (97)	103 (83)	40.8 (4)	< 0.001
Chinese	0 (0)	4 (2)	21 (17)		
Other	2 (2)	1 (0.5)	0 (0)		
Secondary education					
No high school	34 (35)	59 (30)	47 (38)	5.4 (4)	0.2
Some high school	24 (25)	37 (19)	29 (23)		
High-school graduate	39 (40)	98 (50)	48 (39)		
Postsecondary education					
Vocational	5 (5)	13 (7)	4 (3)	11.7 (4)	0.02
Some college	11 (11)	27 (14)	29 (23)		
Degree	2 (2)	12 (6)	1 (1)		
Primary religion					
Buddhism	40 (41)	69 (36)	63 (51)	22.9 (8)	0.003
Catholicism	26 (27)	49 (25)	38 (31)		
Ancestor worship	16 (16)	42 (22)	17 (14)		
Protestant	7 (7)	26 (13)	3 (2)		
Other	8 (8)	8 (4)	3 (2)		

Socioeconomic Assimilation

Table 2 reveals few differences among the three study groups in measurements of assimilation, the process of an immigrant or minority group adopting the characteristics of another culture. Although subjects in the former-refugee control group were more comfortable with speaking English than were more recent refugees ($p < 0.001$), there were no differences between the three groups in the percentage of acquaintances who spoke English. Interestingly, no difference in the type of medical care sought was identified, and all three groups were most likely to choose a private physician who spoke Vietnamese. The number of physician visits in the United States for recent refugees in the 3 yr preceding the study (3.3 and 3.7 for cases and controls, respectively) reflects health-care screening provided as part of the immigration process.

Respondent preferences for American versus Vietnamese television, music, dances, books, magazines, and newspapers were examined in order to evaluate cultural preferences for current and former refugees. Subjects in all three groups preferred Vietnamese to American television, music, books/magazines, and newspapers. Neither Vietnamese nor American dances were rated highly by any group.

Health Status

As indicated in Table 3, more cases and current-refugee controls were ever smokers than were former-refugee controls ($p = 0.01$); however, the percentages of current smokers in each of the three groups were similar. Within each group, almost all subjects who reported a history of smoking were male. All three groups used traditional health-care practices frequently, and adhered to traditional health beliefs. Both cases and current-refugee controls used significantly more oil inhalation than did former-refugee controls. Cases tended to use more bleeding and herbal ingestion than did either control group. Likewise, more cases and current-refugee controls believed in the concepts of hot/cold and yin/yang than did former-refugee controls.

Results of asthma, allergy, and respiratory history questions are presented in Table 4. As expected, significant differences among the three groups were observed for family history of asthma, allergies, asthma signs and symptoms, and history of respiratory disease. Asthma cases had significantly more affected mothers, fathers, siblings, and children with asthma than did the two control groups. Cases also reported significantly more allergic reactions to dust, pollen, and food than did the two control groups. Asthmatic subjects experienced signifi-

TABLE 2
SOCIOECONOMIC ASSIMILATION AMONG VIETNAMESE REFUGEES

	Current Refugees		Former Refugees	χ^2/F^* (df)	p Value
	Cases (n = 97) No. (%)	Controls (n = 194) No. (%)	Controls (n = 124) No. (%)		
English ability					
Comfort speaking English					
Not at all	78 (80)	136 (70)	36 (29)	108.4 (6)	< 0.001
Slightly	17 (18)	55 (28)	53 (43)		
Very comfortable	2 (2)	2 (1)	35 (28)		
Acquaintances speak English					
0–25%	43 (44)	62 (32)	36 (29)	8.3 (6)	0.2
26–50%	21 (22)	48 (25)	34 (27)		
51–75%	5 (5)	15 (8)	14 (11)		
76–100%	28 (29)	68 (35)	40 (32)		
Health resources					
Where seek medical care					
Private doctor	87 (90)	170 (88)	109 (88)	1.9 (4)	0.8
Clinic	4 (4)	14 (7)	10 (8)		
Other	6 (6)	10 (5)	5 (4)		
Ever seen physician in United States for health	62 (64)	146 (75)	118 (95)	33.9 (2)	< 0.001
No. visits in past 3 yr (mean \pm SD)	3.3 \pm 2.5	3.7 \pm 2.8	12.1 \pm 11.6 [†]	31.0 (2)	< 0.001
No. visits in last 3 yr to physician who speaks:					
Vietnamese (mean \pm SD)	2.8 \pm 1.9	3.3 \pm 2.4	9.5 \pm 10.5 [†]	22.4 (2)	< 0.001
English (mean \pm SD)	0.5 \pm 1.5	0.5 \pm 1.4	2.2 \pm 5.2 [†]	5.8 (2)	0.004
Primary means to pay for medical care					
Private insurance	1 (1)	3 (2)	22 (18)	104.7 (10)	< 0.001
HMO	0 (0)	2 (1)	9 (7)		
MediCal	93 (96)	182 (94)	68 (55)		
Medicare	2 (2)	0 (0)	2 (2)		
County medical	0 (0)	2 (1)	1 (1)		
Self pay	1 (1)	5 (3)	22 (18)		
Employment					
Worked before arriving in United States	51 (53)	117 (60)	53 (43)	9.4 (2)	0.009
Worked outside home last 2 yr	35 (36)	94 (48)	57 (46)	4.1 (2)	0.1

* χ^2 for categorical variables and F statistic from one-way ANOVA for continuous variables.

[†] Former refugee group statistically different from both current-refugee groups (cases and controls) by Scheffe test for multiple comparisons.

cantly more signs and symptoms of asthma, including cough, wheezing, and dyspnea than did members of either control group. Cases of asthma were also more likely to be scored as moderate, severe, or very severe on the American Thoracic society (ATS) Dyspnea Scale (9) than were members of either control group. Moreover, a history of respiratory illness was observed more frequently among asthma cases than among current or former-refugee controls.

Case-control Study

Several differences between cases and both current- and former-refugee controls were observed in traditional health-care practices and beliefs. Crude ORs with 95% CIs for these differences are shown in Table 5. As compared with current-refugee controls, asthma cases used significantly more bleeding (crude OR: 3.40; CI: 1.06 to 10.80) and herbal ingestion (crude OR: 1.87; CI: 1.08 to 3.19), although the results for bleeding should be interpreted cautiously, given the small number of cases and controls that used this method. The OR for herbal ingestion was unaffected by Mantel-Haenszel adjustment for the covariates examined, including age, education, smoking status, gender, religion, and marital status. In addition, asthma cases were more likely to believe in the concept of hot/cold than were current-refugee controls, although this was not statistically significant. As compared with former-refugee controls, asthma cases reported a significantly greater use of oil inhalation (crude OR: 2.58; CI: 1.45 to 4.62), bleed-

ing (crude OR: 8.64; CI: 1.02 to 73.70), and herbal ingestion (crude OR: 1.93; CI: 1.02 to 3.67). Only use of oil inhalation remained significant after adjusting for the covariates. A significantly greater number of asthma cases reported belief in the concepts of hot/cold (crude OR: 14.83; CI: 5.81 to 38.10) and yin/yang (crude OR: 2.59; CI: 1.39 to 4.81) than did former-refugee controls. These differences in traditional health beliefs remained significant after adjustment for covariates.

DISCUSSION

This study constitutes the first reported systematic descriptive epidemiologic study and evaluation of asthma in a Vietnamese population. The prevalence of asthma, as well as the concept, presentation, and understanding of signs and symptoms of asthma among Vietnamese individuals appear to be similar to those in other populations previously studied. Asthma prevalence estimates vary depending on the population under study and the criteria used for diagnosis. The prevalence rate of asthma in 1987 in the general population of the United States was 40.1 per 1,000 (10). Estimates of asthma prevalence among populations of the Far East range from 2.3% in Indonesia to 19.4% in Singapore (11, 12). Asthma prevalence among Vietnamese has not been reported previously, but our prevalence estimate in a population of new Vietnamese refugees in the United States (49 per 1,000) is similar to that for other populations. Although some Western practitioners have reported an

TABLE 3
SMOKING STATUS AND TRADITIONAL HEALTH PRACTICES AND BELIEFS OF VIETNAMESE REFUGEES

	Current Refugees		Former Refugees	χ^2/F^* (df)	p Value
	Cases (n = 97) No. (%)	Controls (n = 194) No. (%)	Controls (n = 124) No. (%)		
Smoking history					
Never smoked	61 (63)	123 (63)	97 (78)	8.9 (2)	0.01
Male	14 (29)	31 (32)	35 (56)		
Female	47 (98)	92 (96)	62 (100)		
Ever smoked	36 (37)	71 (37)	27 (22)	8.9 (2)	0.01
Male	35 (71)	67 (68)	27 (44)		
Female	1 (2)	4 (4)	0 (0)		
Smoke now	19 (20)	44 (23)	20 (16)	3.0 (2)	0.2
Male	18 (37)	42 (43)	20 (32)		
Female	1 (2)	2 (2)	0 (0)		
Pack yr (mean \pm SD)	11.4 \pm 14.4	10.4 \pm 13.2	12.1 \pm 13.5	0.2 (2)	0.8
No. people in residence who smoke (mean \pm SD)	1.1 \pm 1.2	0.8 \pm 0.9	0.6 \pm 0.8 [†]	5.2 (2)	0.006
Traditional health practices					
Coining	52 (54)	108 (55)	72 (58)	0.4 (2)	0.8
Male	20 (41)	51 (52)	34 (55)		
Female	32 (67)	57 (59)	38 (61)		
Pinching	43 (44)	94 (48)	46 (37)	4.0 (2)	0.1
Male	16 (33)	43 (44)	20 (32)		
Female	27 (56)	51 (53)	26 (42)		
Cupping	21 (22)	31 (16)	15 (12)	3.7 (2)	0.2
Male	12 (24)	20 (20)	9 (14)		
Female	9 (19)	11 (11)	6 (10)		
Steam inhalation	37 (38)	62 (32)	38 (31)	1.6 (2)	0.4
Male	17 (35)	30 (31)	20 (32)		
Female	20 (42)	32 (33)	18 (29)		
Oil inhalation	68 (70)	132 (68)	59 (48)	16.7 (2)	< 0.001
Male	28 (57)	68 (69)	28 (45)		
Female	40 (83)	64 (67)	31 (50)		
Bleeding	8 (8)	5 (3)	1 (1)	7.5 (2)	0.03 [‡]
Male	2 (4)	1 (1)	1 (2)		
Female	6 (12)	4 (4)	0 (0)		
Acupuncture	13 (13)	16 (8)	11 (9)	2.1 (2)	0.3
Male	8 (16)	10 (10)	5 (8)		
Female	5 (10)	6 (6)	6 (10)		
Herbal ingestion	35 (36)	45 (23)	32 (26)	5.6 (2)	0.06
Male	15 (31)	22 (22)	13 (21)		
Female	20 (42)	23 (24)	19 (31)		
Traditional health beliefs					
Hot/cold	90 (93)	167 (86)	70 (56)	56.4 (2)	< 0.001
Male	46 (94)	83 (85)	35 (56)		
Female	44 (94)	84 (88)	35 (56)		
Yin/yang	44 (45)	94 (48)	30 (24)	19.9 (2)	< 0.001
Male	29 (59)	54 (55)	21 (34)		
Female	15 (32)	40 (42)	9 (14)		

* χ^2 for categorical variables and F statistic from one-way ANOVA for continuous variables.

[†] Cases statistically different from former-refugee controls by Scheffe test for multiple comparisons.

[‡] Yate's correction for small frequencies.

impression that there are few Southeast Asian patients in asthma clinics, these data suggest that Vietnamese patients tend to visit Vietnamese physicians in their local communities and may not be well represented in other health-care settings.

We believe that the asthma prevalence estimate represents that in a population sample of Vietnamese refugees to San Diego. Catholic Charities of San Diego operates the Refugee Preventive Health Services Program under contract with the U.S. Department of Health and Human Services. Health screening services in San Diego are provided by this program free of charge to all refugees residing in San Diego after entry into the United States. As a result, this program encounters nearly all newly arrived Vietnamese refugees in this community.

The data presented in this study document and lend insight into demographic differences between recent refugees and

those who arrived in the United States 5 yr earlier. Although there was no statistical difference in this feature among the three groups, former refugees were more likely to come from a large city and identify themselves as primarily Chinese in ethnicity. Moreover, although there was evidence that former refugees had undergone some assimilation into American society, they were similar to recent refugees in other respects. Refugees who had arrived in the United States 5 yr earlier still preferred Vietnamese entertainment and health services over those of American origin. Both recent and former refugees used traditional health practices, such as coining, steam inhalation, and acupuncture, but former refugees were less likely to adhere to traditional health beliefs such as hot/cold and yin/yang, and to use the traditional health practice of oil inhalation (inhalation of heated oil is a practice consistent with the

TABLE 4
ASTHMA, ALLERGY, AND RESPIRATORY HISTORY OF VIETNAMESE REFUGEES

	Current Refugees		Former Refugees		χ^2 (df)	p Value
	Cases (n = 97) No. (%)	Controls (n = 194) No. (%)	Controls (n = 124) No. (%)			
Family history of asthma						
Mother	14 (14)	2 (1)	1 (1)		34.7 (2)	< 0.001
Father	14 (14)	2 (1)	3 (2)		28.4 (2)	< 0.001
Sibling (if have)	23 (24)	13 (7)	9 (7)		22.1 (2)	< 0.001
Children (if have)	17 (18)	1 (0.5)	3 (2)		42.6 (2)	< 0.001
Allergic reaction						
Food	37 (38)	41 (21)	16 (13)		21.0 (2)	< 0.001
Medicine	9 (9)	23 (12)	4 (3)		7.1 (2)	0.03
Pollen	24 (25)	11 (6)	13 (10)		23.1 (2)	< 0.001
Dust	38 (39)	24 (12)	14 (11)		36.8 (2)	< 0.001
Ever have skin rashes or allergies	27 (28)	47 (24)	14 (11)		15.4 (2)	< 0.001
Ever receive allergy shots	1 (1)	5 (3)	2 (2)		0.9 (2)	0.6
Chest wheezy or whistling						
With a cold	60 (62)	24 (12)	26 (21)		83.8 (2)	< 0.001
Apart from colds	14 (14)	1 (0.5)	1 (1)		38.1 (2)	< 0.001
Most days/nights	30 (31)	2 (1)	3 (2)		82.9 (2)	< 0.001
During/after exercise	21 (22)	6 (3)	0 (0)		48.7 (2)	< 0.001
Shortness of breath with wheezing	47 (48)	4 (2)	1 (1)		148.7 (2)	< 0.001
ATS Dyspnea Scale						
None	53 (55)	179 (92)	118 (95)		89.4 (8)	< 0.001
Slight	5 (5)	2 (1)	1 (1)			
Moderate	24 (25)	10 (5)	1 (1)			
Severe	11 (11)	3 (2)	2 (2)			
Very severe	4 (4)	0 (0)	1 (1)			
Cold goes to chest	53 (55)	36 (18)	15 (12)		60.3 (2)	< 0.001
Chest illness in past 3 yr	11 (11)	6 (3)	1 (1)		15.8 (2)	< 0.001
History of						
Pneumonia	24 (25)	17 (9)	7 (6)		22.5 (2)	< 0.001
Hay fever	19 (20)	12 (6)	2 (2)		25.1 (2)	< 0.001
Chronic bronchitis	23 (24)	12 (6)	1 (1)		38.3 (2)	< 0.001
Attacks of bronchitis	16 (16)	6 (3)	3 (2)		24.4 (2)	< 0.001
Any other chest illness	27 (28)	33 (17)	5 (4)		23.6 (2)	< 0.001

health concept of imbalance between hot and cold influences causing disease). The difference between current and former refugees in their adherence to traditional health beliefs may be due to several factors. Recent refugees from Vietnam tend to come from less urbanized areas, have lower socioeconomic status, and to be less educated than earlier refugees. As a result, they may have less access to Western medical treatment.

TABLE 5

CRUDE ODDS RATIOS WITH 95% CONFIDENCE INTERVALS

	Cases Compared with:			
	Current-Refugee Controls		Former-Refugee Controls	
	Crude OR	95% CI	Crude OR	95% CI
Health practices				
Coining	0.92	0.56–1.52	0.84	0.47–1.51
Pinching	0.85	0.51–1.39	1.35	0.76–2.41
Cupping	1.45	0.76–2.74	2.08	0.96–4.22
Steam inhalation	1.31	0.78–2.20	1.45	0.78–2.69
Oil inhalation	1.10	0.64–1.90	2.58*	1.45–4.85
Bleeding	3.40*	1.06–10.80	8.64*	1.02–73.70
Acupuncture	1.71	0.77–3.82	2.35	0.83–6.62
Herbal ingestion	1.87*	1.08–3.19	1.93*	1.02–3.67
Health beliefs				
Hot/cold	2.42	0.95–6.23	14.83*	5.81–38.10
Yin/yang	0.90	0.55–1.49	2.59*	1.39–4.81

* p < 0.05.

Also, earlier refugees may be more assimilated into western culture and be more likely to have given up their beliefs.

The results of this study highlight some of the important differences and challenges for any health-care provider who treats a patient from another culture. As pointed out by Patcher (13), a cultural group is a "collective of individuals that share common beliefs, ideas, experiences, knowledge, attitudes and behaviors." In this sense, physicians and other health-care providers represent a cultural group, as do various groups of patients. When a health-care provider and a patient come from different cultural groups, they may view and deal with illness in quite different ways. Recognizing and acknowledging the differences are essential first steps in building trust between the provider and the patient (4, 14).

Cultural characteristics in practice and beliefs about asthma were obvious in the Vietnamese refugee population in this study. Although the signs and symptoms of asthma were well recognized, traditional health beliefs and practices had a significant influence on the approach to the disease. For a health-care provider not familiar with these cross-cultural differences, it is important to understand the patient's beliefs and practices, not just for improving communication but also because certain practices may interfere with recommended treatments and produce significant barriers to compliance. For instance, treating an asthma patient who eats live lizards to clear excess mucous may not be a problem if the health-care provider accepts this practice and the patient, in turn, is willing to use western medications as well.

The asthmatic subjects in the present study used a combi-

nation of traditional and Western practices to treat their asthma symptoms. Although almost all of those interviewed used Western medications, few reported the use of steroids as asthma treatment. Whether this reflects unwillingness to use steroids or lack of access by patients to physicians cannot be determined. Among Vietnamese, the risk factors for asthma, including family history and allergies to food, pollen, and dust, were similar to those reported in other populations (15). In addition, case asthmatic subjects reported signs and symptoms expected of asthmatic individuals. This suggests that the questionnaire used in our study identified cases of asthma in this Vietnamese population, and that the concepts of the disease process were recognized appropriately. This finding is important because one cannot assume that the translation of health concepts from one culture to another is simply related to language. Prior to this study, we could not be certain that Western concepts of asthma and lung disease would have the same meaning as for Westerners or be recognized similarly by Vietnamese individuals.

Significant differences between cases of asthma and both current- and former-refugee controls were observed in the use of traditional health-care practices. Specifically, herbal ingestion, oil inhalation, and bleeding (although bleeding was used by very few individuals) were used more commonly by asthmatic subjects than by controls.

The prevalence rates of cigarette smoking we observed were consistent with those in other studies of Vietnamese individuals. Other investigators have reported that smoking prevalence among Vietnamese males ranged from 35 to 56%, and among Vietnamese females from 1 to 9% (16–18). Similarly, we found that the smoking rate among male Vietnamese refugees was higher than that of the general California male population, whereas the rate of cigarette smoking among female refugees was lower than that of the general California female population (16). The high smoking prevalence across the three study groups argues for more diligent public-health efforts directed toward smoking cessation in the Vietnamese population. Interestingly, we found that current refugees were more likely to report a history of smoking and had a higher smoking prevalence than were former-refugee controls. This may have been due to differing demographics between the two groups, reflected in the rural origins and fewer years of college education among the current refugees.

The information presented in this study is specific to the Vietnamese refugee population in San Diego. These data cannot necessarily be extrapolated to other groups of Asians or Southeast Asians, who are very heterogeneous and represent many different cultural groups. In fact, the U.S. Bureau of the Census recognizes 28 different ethnic groups for "Asians" residing in the United States (15). Individuals classified as Asian and Pacific Islander currently constitute the third largest and the

fastest growing minority group in the United States (15). There are limited data describing diseases and health issues for these various populations. Therefore, it is increasingly important for all practitioners in the United States to become more familiar with, and learn more about, these various cultures.

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