

The Unusually Poor Physical Health Status of Cambodian Refugees Two Decades After Resettlement

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Abstract To better document the health status of Cambodian refugees, the physical health functioning, disability, and general health status of Cambodian refugees was compared to that of non-refugee Asian immigrants with similar demographic characteristics. Data were collected between October 2003 and February 2005, from 490 face-to-face interviews conducted with a stratified probability sample of households from the Cambodian community in Long Beach, California. Data on the health status of the general adult population ($n = 56,270$) was taken from the California Health Interview Survey, a telephone interview of a representative sample California residents. Cambodian refugees reported exceedingly poor health when compared to both the general population to the Asian participants. This disparity was only slightly reduced when Cambodian refugees were compared to the subsample of Asian immigrants who were matched on gender, age, income, and urbanicity. Although Cambodians refugees are older and poorer than the general population, their poor health cannot be fully attributed to these risk factors. Research is needed to guide health policy and practices aimed at eliminating this health disparity.

Keywords Refugees · Health · Disability · Cambodian · Asian

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Introduction

Asian American and Pacific Islanders (AAPIs) are one of the fastest growing and most diverse ethnic minority groups in the United States (U.S.), and are expected to comprise 10% of the U.S. population by the year 2050 [1]. The 35 AAPI subgroups residing in the US are characterized by great heterogeneity with respect to culture, language, pre- and post-migration experiences, and sociodemographic characteristics [2]. Although AAPIs have been historically depicted as having relatively better health than the general U.S. population [3], wide variation exists across AAPI subgroups. Whereas many AAPI subgroups exhibit health comparable to the general U.S. population, other subgroups are faring much worse [4, 5].

The reasons for this health status heterogeneity are not fully understood and may, in part, be attributable to several risk factors on which AAPI subgroups vary. For example, AAPI subgroups represent both extremes of the income spectrum with certain subgroups demonstrating the highest and lowest poverty rates in the U.S. [6]. AAPI subgroups also differ substantially with regard to demographic dimensions such as age, gender, and urban residence [4]. Inasmuch as these sociodemographic factors have been linked to health outcomes [7–11], differences with respect to these characteristics may explain the heterogeneity in AAPI health status.

Available research provides suggestive evidence that Cambodian refugees have poor health relative to the general U.S. and AAPI population [12]. However, the extent to which this health disparity is attributable to differences in sociodemographic factors is unknown. Our prior research [13], as well as census data, documents that Cambodian refugees have unusually high rates of poverty, are substantially older than the general population, and largely

reside within urban settings. This AAPI subgroup is also more likely to be female due to the disproportionate impact of the civil war on male mortality [14–16]. Thus, Cambodian refugees are disproportionately represented on a variety of demographic factors that have been linked to poor health. It is unclear whether such health disparities would persist when Cambodian refugees are compared to AAPIs who are similar in age, gender, income, and geography.

To understand and address AAPI health disparities, it may be useful to differentiate between disparities that can be explained with reference to common demographic risk factors such as age or income and those that remain even after taking demographic characteristics into account. Thus, AAPIs or specific AAPI subgroups may appear less healthy than the general population simply because its members are, on average, older or poorer than the general population. On the other hand, some AAPIs or AAPI subgroups may have high risk for health problems even when compared to others who are matched on key demographic risk factors. In this case, existing health policies designed to address the needs of vulnerable populations (often identified by age, geography, or income) are likely to be inadequate to address group needs. For example, if the health of Cambodian refugees is the same as similarly poor non-Cambodians living in their community, then interventions to alleviate poverty or to increase access to medical services to poor individuals might be most effective. By contrast, if Cambodian refugees have substantially poorer health than groups which are similar with respect to income, age, and gender composition, then a greater focus on tailoring interventions specifically to Cambodian refugees may be needed.

The current study examines the heterogeneity of health status within the AAPI population. Specifically, we attempt to determine whether Cambodian refugees have poorer health than other AAPI immigrants after adjusting for demographic characteristics previously associated with elevated health risk (i.e., income, age, gender, and urban residence). The scope and contour of successful public health programs to redress ethnic health disparities are likely to differ as a function of whether disparities are linked to the unique characteristics of a specific ethnic subgroup or are attributable to broader demographic risk factors.

Methods

Sampling Design and Procedures

Cambodian Refugee Survey

Face-to-face household interviews were conducted with a multi-stage, stratified, probability sample of 511

Cambodian immigrants residing in Long Beach, California, which has the largest single concentration of Cambodian refugees in the US. We sampled from four contiguous census tracts with the largest proportion of Cambodians in Long Beach, containing approximately 15,000 total households. The sampling design consisted of a three-stage random sample of individuals within households within blocks. Completion rates were 97 percent for the screener and 90 percent for the interview. For additional details regarding sampling, stratification of households as well as a participant flow diagram, see Marshall et al. [13].

Individuals between the ages of 35 and 75 who had lived in Cambodia during the Khmer Rouge regime (April 1975 to January 1979) were eligible for interview. The present analyses excluded 37 individuals who came to the US as immigrants rather than as refugees. The resulting sample is low in socioeconomic status, with extremely low levels of education, family income, English proficiency, and employment. On average, participants arrived in the US in 1983, were 52 years of age, and reported experiencing 15 out of 35 types of trauma prior to migration. For additional sample description, see Marshall et al. [13].

Fully structured interviews were conducted in participants' homes, in Khmer, by bilingual interviewers who were themselves Cambodian refugees. Interviewers received extensive training and active supervision throughout data collection. The interview took approximately 2 h to complete. Informed consent was obtained prior to the interview. Following the interview, participants received a nominal incentive payment. The RAND Institutional Review Board approved the protocol.

The survey instrument was translated and back-translated following recommended procedures to ensure content, conceptual, and semantic equivalence [17]. Two bilingual, bicultural Khmer translators translated all English measures into Khmer. The Khmer version of the survey was then back-translated into English by a third bilingual, bicultural Khmer translator to ensure equivalency and identify discrepancies between the two English versions. Discrepancies were reconciled with the aid of the original translators and an additional translator not involved in the initial translations.

California Health Interview Survey

We also drew upon data from the California Health Interview Survey (CHIS) 2001. The CHIS surveyed California households regarding demographic characteristics, health status and conditions, and health-related behaviors as well as other topics, using a two-stage, geographically stratified, random-digit-dial telephone strategy. The CHIS randomly selected one adult from each household for interview. In 2001, 56,270 adults completed the survey, with interviews

conducted in English, Spanish, Vietnamese, Korean, Chinese and Khmer [18]. Only a small proportion of adult respondents were interviewed in Khmer (less than 1 percent). The CHIS sample was weighted to California Department of Finance 2001 population estimates to represent the community dwelling, civilian, non-institutionalized population. See CHIS methodology reports for additional details [19–23]. Analysis of the demographic composition of participants indicates that CHIS 2001 respondents were highly representative of the California population [24].

The weighted adult completion rates were 59 percent for the screener and 64 percent for the interview. This response rate is comparable to other large RDD telephone surveys (e.g., the California sample of the Behavioral Risk Factor Surveillance System) [25]. The CHIS was approved by the UCLA Institutional Review Board and the California State Committee for the Protection of Human Subjects.

Measures

Sociodemographic information including age, marital status, education, and household income was obtained. For analytic purposes, income was expressed as a proportion of the federal poverty level.

Health Status

Health status was assessed using items drawn from the physical component summary scale of the SF-12 [26]. The SF-12 is one of the most widely used measures of health status [27, 28]. Studies attest to the validity and cross-cultural applicability of the SF-12 [26, 29–32]. The SF-12 physical component summary scale measures the degree to which physical health impairs daily activities and role functioning. Three indexes of health status were derived. *General health status* was assessed with a single-item: “In general, would you say that your health is: excellent, very good, good, fair, or poor.” This measure has been used in major US studies such as the National Health Interview Survey [33] and the Medical Outcomes Study [34]. Self-rated health has been shown to be a more robust predictor of mortality than physician-assessed health [35]. A self-rating of poor or fair health has been associated with a twofold increase in mortality risk [36]. Responses to this item were dichotomized such that persons who categorized their health as “poor” or “fair” were combined into one category and those who rated their health as “good”, “very good”, or “excellent” were combined into another. A continuous measure of physical functioning score was derived by averaging 5 SF-12 items measuring physical functioning, role limitations due to physical health, and bodily pain. Items were transformed to a linear scale

ranging from 0 (poorest physical functioning) to 100 (no impairments in physical functioning). To make this scale more clinically descriptive, we also present a dichotomized version in which scores lower than 50 were classified as indicative of probable disability [37].

Statistical Analyses

For the Cambodian refugee survey, analyses employed design weights and corrected for the design effects of both weighting and clustering. Inverse-probability design weights accounted for the underrepresentation of certain persons (e.g., those living in households with multiple eligible adults). For the CHIS, analyses used weights to account for sample selection probabilities, non-residential status, non-telephone households, multiple telephone households, and screener non-response rates. These weights also account for the variance inflation due to clustering [38].

For comparison purposes, findings from the survey of Cambodian refugees were compared to three CHIS reference populations: the general California adult population, a subsample consisting of all California AAPI adults, and a second AAPI subsample that was selected to closely match the demographic characteristics of the Cambodian refugee group. The latter subsample was confined to a subset of CHIS respondents ($n = 2,486$) who (a) lived in urban areas, (b) were of Asian ethnicity, (c) were between 35 and 75 years old, and (d) were born outside of the US. To improve the match between samples, weights were developed to yield the exact cross-tabulated distributions of gender, age (four categories) and household income (three categories) that characterized the Cambodian refugee sample. These weights were integrated with the CHIS replicate weights. Using this procedure, a matched subsample was identified that did not differ from the Cambodian refugee sample with respect to urban residence, categorized household income, categorized age, gender, immigrant status, and Asian ethnicity, or any of the joint distributions of these characteristics.

We report prevalence estimates, sample means, and associated 95 percent confidence intervals (CI) within each of the four samples as well as simple logistic and linear regressions to compare pairs of samples, all accounting for weights and clustering as described above. All analyses were performed using STATA version 9 (StataCorp, College Station, TX).

Results

As expected, Cambodian refugees were much more likely than the general adult population of California to have

demographic characteristics that have been linked to increased risk of poor physical health status. In particular, Cambodian refugees were more likely to be female, urban residents, impoverished, and older (Table 1).

On all three indicators of health status, refugees had considerably worse self-rated health and functioning than did their demographically similar AAPI counterparts (see Table 2). In terms of general health status, 89% (95 percent CI: 86, 92) of Cambodian refugees rated their health as either fair or poor. This rate was approximately twice that found in the demographically matched AAPI population, and more than four times higher than that found in the general California population. Both groups had worse physical health than did the general adult population of California and the full AAPI population. Cambodian refugees reported significantly worse physical functioning (mean = 41.7; 95 percent CI: 38.7, 44.6) than the demographically matched AAPI sample (mean = 70.5; 95 percent CI: 67.7, 73.3). In addition, both the Cambodian refugee sample and the demographically matched AAPI sample had significantly impaired physical functioning relative to the general California adult population (mean = 79.8; 95 percent CI: 79.5, 80.1). To insure that these differences were in overall physical functioning rather than a more specific problem (e.g., pain), we verified that these effects were consistent across the individual items that comprise the scale. Cambodian refugees had significantly worse health than both the AAPI matched

sample and the general population on each of the five items used to indicate physical functioning ($P < .01$).

Nearly 70% of Cambodian refugees met screening criteria for probable disability. By comparison, only 26% of the demographically matched AAPI population exceeded this cut-point (95 percent CI: 22, 31) (Table 2). Disability rates for both of these populations were higher than that of the general California population (18%; 95 percent CI: 17, 18).

Discussion

The current study documents that Cambodian refugees residing in California bear a substantial health burden. In particular, nearly 90% endorsed poor or fair health status and approximately 70% met screening criteria for probable disability. By comparison, only 18% of the overall AAPI population and 19% of all California adults endorsed poor or fair health status. Similarly, a mere 12% of the broader AAPI population and 17% of all adult Californians met criteria for probable disability.

Moreover, although Cambodian refugees are both older and poorer than both the general population and the AAPI population in California, these differences in health risk factors accounted for only a portion of the observed health disparity. Cambodian refugees endorsed poor or fair health status at almost twice the rate of other Asian immigrants

Table 1 Weighted sample characteristics of Cambodian refugees in Long Beach, California (2003–2005), and CHIS subsamples (2001)

Characteristics	Cambodian refugees (n = 490)				CHIS AAPI matched subsample (n = 2,486)				CHIS All AAPIs (n = 4,798)				CHIS adult Californians (n = 56,270)			
	N	%	95% CI		N	%	95% CI		N	%	95% CI		N	%	95% CI	
Women	319	61.4	55.3	67.4	1,419	61.4	56.6	66.0	2,707	53.2	52.9	53.4	32,894	51.1	51.1	51.1
Age																
18–34	–	–	–	–	–	–	–	–	1,517	37.9	36.1	39.6	13,631	34.5	34.2	34.8
35–44	118	23.0	17.7	28.4	982	23.0	19.6	26.8	1,195	22.5	21.3	23.8	12,485	22.0	21.7	22.3
45–54	178	35.8	30.8	40.7	764	35.8	30.9	41.1	950	17.1	15.9	18.3	11,495	18.1	17.9	18.2
55–64	122	27.5	22.0	33.1	446	27.5	22.6	33.0	519	9.6	8.6	10.6	7,537	11.0	10.9	11.1
65–74	72	13.6	10.0	17.2	294	13.6	11.2	16.5	388	7.7	7.0	8.5	5,897	7.6	7.5	7.7
75–85	–	–	–	–	–	–	–	–	229	5.2	4.5	6.0	5,225	6.9	6.8	7.0
Family income																
<100%	340	68.8	64.0	73.8	461	68.9	65.3	72.2	766	13.4	12.3	14.6	7,224	15.7	15.2	16.2
100–200%	116	24.1	19.7	28.4	486	24.1	21.1	27.3	867	18.7	17.3	20.3	11,180	20.4	19.9	20.9
>200%	34	7.1	4.7	9.4	1,539	7.1	6.2	8.0	3,165	67.8	66.2	69.4	37,866	63.9	63.4	64.4
Urban residence	490	100.0	100	100.0	2,486	100.0	100	100.0	4,621	97.3	96.7	97.7	43,489	87.9	87.6	88.1
Immigrant	490	100.0	100	100.0	2,486	100.0	100	100.0	3,833	78.8	72.2	80.3	13,406	33.3	32.9	33.7
Asian	490	100.0	100	100.0	2,486	100.0	100	100.0	4,798	100.0	100.0	100.0	4,798	12.0	11.9	12.1

Note: Unweighted sample sizes are given along with weighted percentages
 CHIS California health interview survey, CI confidence interval

Table 2 Physical health outcomes for the Cambodian refugees in Long Beach, California (2003–2005), and CHIS subsamples (2001)

Physical health outcomes	Cambodian refugees		CHIS AAPI matched sample ^a				CHIS AAPI sample			CHIS adult Californians		
	Mean/percent	95% CI	Mean/percent	95% CI	Mean/percent	95% CI	Mean/percent	95% CI	Mean/percent	95% CI		
Poor/fair health	89.1	85.9 92.2	46.3	41.1 51.5	17.8	16.5 19.0	19.4	18.9 19.8				
Physical functioning	41.7	38.7 44.6	70.5	67.7 73.3	83.7	82.9 84.6	79.8	79.5 80.1				
Probable disability	69.5	65.0 74.0	26.2	21.6 30.8	12.1	10.9 13.3	17.5	17.1 17.9				

CHIS California health interview survey, CI confidence interval

^a Matched on cross-tabulations of age, gender, income, urban residence, Asian ethnicity, and immigrant status

even after matching on age, income, gender, and foreign-born status. Further, approximately 70% of Cambodian refugees met criteria for probable disability compared to only 26% of the matched AAPI sample.

These results document a large gap between the health status of Cambodian refugees and that of other AAPIs that can not be fully explained by reference to differences in demographic characteristics. Thus, these data suggest the existence of a disparity that is attributable to other characteristics of Cambodian refugees. Clearly, existing broad-based policies on refugee resettlement have been less effective than desired on improving the health of U.S. Cambodian refugees. For example, though the U.S. Office of Refugee Resettlement provides a multitude of resources (e.g., social services, job training, monetary and medical assistance), Cambodian refugees continue to experience many challenges to becoming fully integrated members of American society. It may be necessary to design interventions that specifically target this AAPI subgroup in order to reduce this disparity. More recent efforts have been made to provide culturally specific interventions for U.S. Cambodian refugees [39, 40]. More generally, these findings highlight the perils of viewing the exceedingly diverse AAPI population as a single ethnic group. Potentially important health disparities are likely to be obscured by treating AAPIs as a homogeneous group.

The reasons underlying the distinctly poor health of Cambodian refugees are not well-studied. These individuals experienced years of civil war as well as the material scarcity and other challenges of residence in refugee camps prior to arrival in the U.S. [13, 41]. Exposure to starvation, physical injury, and infection as well as multiple psychologically-traumatizing life events may have enduring physical health consequences [42–45]. Few studies have focused on the physical health outcomes of refugee populations. To the extent that poorer health status affects Cambodian refugees exclusively versus refugees more broadly has implications for the scope of future research and interventions that are needed. Of the limited studies available, findings have been mixed with respect to whether U.S. Cambodian refugees are faring worse than other

refugee populations on various physical health outcomes [42, 46–48].

Although factors associated with refugee status are plausible explanations of the observed health disparity, other factors may also come into play. For example, genetic risk factors or aspects of Cambodian American culture—particularly as manifested in health-related behavior—might be involved. Given that virtually all US-residing Cambodian Americans greater than 35 years of age arrived as refugees, it is difficult to disentangle refugee effects from those of ethnic ancestry. To clarify factors that may underlie the large health disparity between Cambodian refugees and demographically similar Asian immigrants, additional research is needed to examine factors such as dietary behaviors, tobacco use, physical exercise, and medical service utilization.

In weighing these findings, several methodological differences between the Cambodian refugee study and the CHIS study warrant mention. First, the CHIS used a telephone, rather than face-to-face, interview which may cause some differences in measured physical health status. Similarly, although relatively high for a study relying on telephone interviews, the CHIS response rate was lower than in the Cambodian study. These methodological and sampling differences could affect estimates of physical health status. It seems unlikely, however, that these factors can explain the magnitude of the observed differences. If anything, it is likely that our use of CHIS for comparative norms may have underestimated the extent of the actual health differences. Relative to at least one other national survey that relied on in-person interviews (i.e., the National Health Interview Survey 2001, a face-to-face, household survey with an 84 percent response rate), CHIS found higher rates of self-reported poor or fair health (19% vs. 12%). In addition, observed differences may have been further underestimated given that the CHIS did not assess for refugee status. It is unknown whether the CHIS comparison samples contained refugees. To the extent that the matched CHIS subsample contained refugees, this may have resulted in lower physical health ratings, which would have narrowed the disparity in health status relative to Cambodian refugees.

This study also relied on self-assessed health status rather than objective indicators of physical health. For this reason, additional inquiry is needed to understand the nature of the apparent health disparity. Specifically, research is required to examine how refugees are faring with regard to objective physical health indices, including physical findings consistent with specific medical conditions and observable functional limitations. Finally, both the Cambodian refugee and general population surveys were restricted to California residents. Insofar as these samples may not be representative of other Asian refugee communities or host populations, future research is indicated.

In conclusion, striking disparities in physical health status exist between Cambodian refugees and demographically matched AAPI immigrants residing in California. This finding not only attests to the dire physical health of Cambodian refugees but also underscores the heterogeneity of AAPIs with respect to health status. Research is needed to guide health policy and practices aimed at ameliorating this health disparity.

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References

- Barnes JS, Bennett CE, Bureau USC. The Asian population, 2000: US Dept. of Commerce, Economics and Statistics Administration, US Census Bureau. 2002.
- Sue DW, Sue D. Counseling the culturally diverse: theory and practice. 4th ed. New York: John Wiley & Sons; 2003.
- Ghosh C. Healthy people 2010 and Asian Americans/Pacific Islanders: defining a baseline of information. *Am J Public Health*. 2003;93(12):2093–8.
- Barnes M, Adams PF, Powell-Griner E. Health characteristics of the Asian adult population, United States, 2004–2006: US Dept. of Health & Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. 2008.
- Frisbie WP, Cho Y, Hummer RA. Immigration and the health of Asian and Pacific Islander adults in the United States. *Am J Epidemiol*. 2001;153(4):372–80.
- Min PG. Asian Americans: contemporary trends and issues. Thousand Oaks, CA: Pine Forge Press; 2006.
- Gorman BK, Read JG. Gender disparities in adult health: an examination of three measures of morbidity. *J Health Soc Behav*. 2006;47(2):95–110.
- Kiuiola O, Mieszkowski P. The effects of income, education and age on health. *Health Econ*. 2007;16:781–98.
- Rahman O, Strauss J, Gertler P, Ashley D, Fox K. Gender differences in adult health: an international comparison. *Gerontologist*. 1994;34(4):463–9.
- Singer A, Wilson J. From 'There' to 'Here': refugee resettlement in metropolitan America. Washington, DC: Brookings Institution; 2006.
- Verbrugge LM, Wingard DL. Sex differentials in health and mortality. *Women Health*. 1987;12(2):103–45.
- Koch-Weser S, Liang SL, Grigg-Saito DC. Self-reported health among Cambodians in Lowell, Massachusetts. *J Health Care Poor Underserved*. 2006;17(Suppl 2):133–45.
- Marshall GN, Schell TL, Elliott MN, Berthold SM, Chun C-A. Mental health of Cambodian refugees 2 decades after resettlement in the United States. *JAMA*. 2005;294(5):571–9.
- Buvinic M, Gupta GR. Female-headed households and female-maintained families: are they worth targeting to reduce poverty in developing countries? *Econ Dev Cult Change*. 1997;45(2):259–80.
- Ellis R. Help for single-parent refugee families. *Refugees Magazine*. The UN Refugee Agency, Issue 95. 1994. <http://www.unhcr.org/cgi-bin/texis/vtx/search?page=search&docid=3b53f4494&query=help%20for%20single-parent%20refugee%20families>.
- Go CG, Le TN. Gender differences in Cambodian delinquency: the role of ethnic identity, parental discipline, and peer delinquency. *Crime Delinq*. 2005;51(2):220.
- Brislin RW. Back-translation for cross-cultural research. *J Cross Cult Psychol*. 1970;1(3):185.
- Ponce NA, Lavarreda SA, Yen W, Brown ER, Disogra C, Satter DE. The California health interview survey 2001: translation of a major survey for California's multiethnic population. *Public Health Rep*. 2004;119(4):388–96.
- California HIS. CHIS 2001 methodology series: report 1—sample design. Los Angeles, CA: UCLA Center for Health Policy Research; 2002.
- California HIS. CHIS 2001 methodology series: report 2—data collection methods. Los Angeles, CA: UCLA Center for Health Policy Research; 2002.
- California HIS. CHIS 2001 methodology series: report 3—data processing procedures. Los Angeles, CA: UCLA Center for Health Policy Research; 2002.
- California HIS. CHIS 2001 methodology series: report 4—response rates. Los Angeles, CA: UCLA Center for Health Policy Research; 2002.
- California HIS. CHIS 2001 methodology series: report 5—weighting and variance estimation. Los Angeles, CA: UCLA Center for Health Policy Research; 2002.
- California HIS. Technical paper no. 1—the CHIS 2001 sample: response rate and representativeness. Los Angeles, CA: UCLA Center for Health Policy Research; 2003.
- Prevention CfDca. Behavioral risk factor surveillance system summary data quality report. In: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. 2001.
- Ware J Jr, Kosinski M, Keller SD. A 12-item short-form health survey: construction of scales and preliminary tests of reliability and validity. *Med Care*. 1996;34(3):220–33.
- Gandek B, Ware JE, Aaronson NK, Apolone G, Bjorner JB, Brazier JE, et al. Cross-validation of item selection and scoring for the SF-12 health survey in nine countries: results from the IQOLA project. *International quality of life assessment*. *J Clin Epidemiol*. 1998;51(11):1171–8.
- Salyers M, Bosworth HB, Swanson JW, Lamb-Pagone J, Osher FC. Reliability and validity of the SF-12 health survey among people with severe mental illness. *Med Care*. 2000;38(11):1141–50.
- Aaronson NK, Acquadro C, Alonso J, Apolone G, Bucquet D, Bullinger M, et al. International quality of life assessment (IQOLA) project. *Qual Life Res*. 1992;1(5):349–51.
- Hoffmann C, McFarland BH, Kinzie JD, Bresler L, Rakhlin D, Wolf S, et al. Psychometric properties of a Russian version of the SF-12 health survey in a refugee population. *Compr Psychiatry*. 2005;46(5):390–7.

31. Jenkinson C, Layte R, Jenkinson D, Lawrence K, Petersen S, Paice C, et al. A shorter form health survey: can the SF-12 replicate results from the SF-36 in longitudinal studies? *J Public Health*. 1997;19:179–86.
32. Leplège A, Ecosse E, Verdier A, Perneger TV. The French SF-36 health survey translation, cultural adaptation and preliminary psychometric evaluation. *J Clin Epidemiol*. 1998;51(11):1013–23.
33. Adams KM, Gardiner LD, Assefi N. Healthcare challenges from the developing world: post-immigration refugee medicine. *BMJ*. 2004;328(7455):1548–52.
34. Stewart AL, Ware JE, editors. *Measuring functioning and well-being: the medical outcomes study approach*. Durham, NC: Duke University Press; 1992.
35. Mossey JM, Shapiro E. Self-rated health: a predictor of mortality among the elderly. *Am J Public Health*. 1982;72(8):800–8.
36. McGee DL, Liao Y, Cao G, Cooper RS. Self-reported health status and mortality in a multiethnic US cohort. *Am J Epidemiol*. 1999;149(1):41–6.
37. Stewart AL, Hays RD, Ware JE Jr. The MOS short-form general health survey. Reliability and validity in a patient population. *Med Care*. 1988;26(7):724–35.
38. California HIS. CHIS 2001 methodology series: revised CHIS 2001 weights. Los Angeles, CA: UCLA Center for Health Policy Research; 2005.
39. Amodeo M, Peou S, Grigg-Saito D, Berke H, Pin-Riebe S, Jones LK. Providing culturally specific substance abuse services in refugee and immigrant communities: lessons from a Cambodian treatment and demonstration project. *J Soc Work Pract Addict*. 2004;4(3):23–46.
40. Grigg-Saito D, Och S, Liang S, Toof R, Silka L. Building on the strengths of a Cambodian refugee community through community-based outreach. *Health Promot Pract*. 2008;9(4):415.
41. Rummel RJ. *Death by government*. New Brunswick, NJ: Transaction Publishers; 1994.
42. Mollica RF, McInnes K, Sarajlic N, Lavelle J, Sarajlic I, Massagli MP. Disability associated with psychiatric comorbidity and health status in Bosnian refugees living in Croatia. *JAMA*. 1999;282(5):433–9.
43. Palinkas LA, Pickwell SM. Acculturation as a risk factor for chronic disease among Cambodian refugees in the United States. *Soc Sci Med*. 1995;40(12):1643–53.
44. Uba L, Chung RC. The relationship between trauma and financial and physical well-being among Cambodians in the United States. *J Gen Psychol*. 1991;118(3):215–25.
45. Weinstein HM, Sarnoff RH, Gladstone E, Lipson JG. Physical and psychological health issues of resettled refugees in the United States. *J Refug Stud*. 2000;13(3):303.
46. Gerritsen AA, Bramsen I, Deville W, van Willigen LH, Hovens JE, van der Ploeg HM. Physical and mental health of Afghan, Iranian and Somali asylum seekers and refugees living in the Netherlands. *Soc Psychiatry Psychiatr Epidemiol*. 2006;41(1): 18–26.
47. Kinzie JD, Riley C, McFarland B, Hayes M, Boehnlein J, Leung P, et al. High prevalence rates of diabetes and hypertension among refugee psychiatric patients. *J Nerv Ment Dis*. 2008; 196(2):108–12.
48. Pickwell SM. Health of Cambodian refugees. *J Immigr Health*. 1999;1(1):49–52.