The Health Status of Cambodia's Elderly in a Context of Gendered Violence

Yana van der Meulen Rodgers

This article uses Cambodia's 2005 Demographic and Health Survey to explore differences in health status and healthcare access among elderly women and men, in the historical context of gendered violence during the Khmer Rouge regime. Results point to small disadvantages for women in becoming sick and seeking treatment, which are explained by their relatively lower socioeconomic status. However, no gender differences are found in the extent to which women and men take precautions to guard against ill-health, or in the types of treatment they seek. The study also confirms that there is an extremely low number of men in older age groups, a high incidence of female widowhood, and a greater likelihood of elderly women living by themselves.

Keywords: women, gender, widows, Asia, living arrangements, healthcare.

The author thanks Günseli Berik, Jane Miller, Stephanie Seguino, and Gale Summerfield for their useful suggestions, and Victoria Wang for her careful research assistance.

Introduction

Cross-disciplinary research has contributed to a better understanding of why poverty rates among the elderly tend to be higher for women, how the caring labour of working-age women plays an important role in meeting the daily needs of elderly adults, and how disproportionately higher rates of widowhood among elderly women contribute to difficulties in meeting their health-care needs (see, for example, McLanahan and Kelly 1999; and Smeeding *et al.* 2005).

However, much of this research has focused on issues of aging in higher-income countries, with relatively less information about gender differences in well-being among the elderly in very poor countries and why they occur. Developing countries with recent histories of war and violent conflict are particularly prone to a lack of knowledge about the well-being of elderly women and men, given the major interruptions to data collection efforts and the international isolation associated with violent conflict. Ironically, such knowledge is all the more crucial for policy reforms to address the needs of elderly adults given that the devastating effects of war, including the disruptions to family life and the destruction of educational and health services, can take years to rectify.

To better understand the health status of elderly people in developing countries with a history of war, this article explores whether elderly men and women in Cambodia differ in their health status and access to healthcare, and how socioeconomic status contributes to such differences.

Not only is Cambodia one of the poorest countries in East Asia, it also has a recent history of extreme violence, genocide, and terror. Between 1975 and 1979, the Khmer Rouge regime destroyed infrastructure, businesses, and homes; split up families through killings and forced relocation to labor camps; and initiated wide-spread disease and famine. The violence and killings were disproportionately targeted toward men, resulting in a relatively high number of female widows in Cambodia's current elderly population.

Previous studies have documented that Cambodia's history of violence has entailed long-term repercussions for the country's demographic structure, healthcare system, and poverty. These longer-term repercussions - particularly the losses of spouses and children as sources of support and the damage to the health care infrastructure - have constrained the ability of today's elderly population to meet their health-care needs. Cambodia's women have faced additional difficulties as they age, in a context of increased domestic violence after the Khmer Rouge, as well as patriarchal norms that prioritized men over women in access to resources and decision-making power.

The analysis uses secondary data from the Cambodian Demographic and Health Survey (DHS) for 2005, a large nationally-representative sample of households. This database is part of an international collection of DHS datasets on population, health, and nutrition for more than 75 developing countries. The datasets are managed by the MEASURE DHS project, which provides technical assistance to the data collection and data use by policy makers, advocates, and researchers. This is the first study to use the Cambodian DHS to examine the gender differences in health status and healthcare access among the elderly. The analysis begins with an updated examination of the demographic composition of Cambodia's population, with a focus on male-to-female ratios across cohorts, as well as differences in basic indicators of socioeconomic status across age groups. The analysis then estimates how indicators of educational attainment, household structure, health status, and health care access vary by gender among elderly Cambodians.

Historical background: war and genocide

Cambodia has a recent history of enormous disruptions to family structures, social well-being, and economic prosperity. Following independence from France in 1953, years of internal disputes and challenges from leftist opposition groups to the leadership of Prince Norodom Sihanouk ultimately led to a military coup led by General Lon Nol in 1970 (Neupert and Prum 2005; Zimmer *et al*. 2006). However, the military's control was weakened by civil war and the U.S. bombing raids in Cambodia during the Vietnam War, and a revolutionary group, the Khmer Rouge, overturned the regime in April 1975. Led by Pol Pot, the Khmer Rouge envisioned an ideal agrarian state under Communist principles. It forced people from urban areas into labour camps, eliminated the national currency, did away with private property, restricted freedom of movement, abolished religious ceremonies, and destroyed most of the country's health and educational infrastructure. Not only did the Khmer Rouge separate family members, but it brutally executed hundreds of thousands of dissenters, teachers, suspected loyalists of the Lon Nol government, and people with higher education. The violence and destruction contributed to rampant disease and famine, leading to more deaths. Almost four years later, in January 1979, Vietnamese forces attacked and defeated the Khmer Rouge. Vietnamese forces occupied

Cambodia for more than ten years as they continued to fight remnant Khmer Rouge groups and tried to support a stable and autonomous Cambodian government. In 1991 the Paris Peace Accords marked the formal end to the conflict and Cambodia's re-entry into the global political system (Neupert and Prum 2005).

The genocidal Khmer Rouge regime caused the deaths of approximately 1.5 to 2 million people due to political violence, lack of healthcare and food, exhaustion, and disease. This amounted to about a quarter of Cambodia's total population at the time of the Khmer Rouge takeover (Heuveline and Poch 2007). In addition, close to one million people fled Cambodia to seek safe havens in other countries, especially Thailand (Zimmer and Kim 2002). Further evidence indicates that during this period, there were a disproportionate number of male deaths among adults, with men constituting about two-thirds of the excess deaths (de Walque 2005). The difference between male and female deaths for children and teenagers was considerably smaller since these deaths were attributed to indirect causes that did not directly discriminate by sex, while adults were more likely to experience targeted violent deaths. Adult men also suffered disproportionately from disability, mostly due to their greater risk of experiencing conflict-related injuries caused by landmines and artillery (de Walque 2006).

The Khmer Rouge violence had long-term repercussions for today's elderly population, not only in terms of high overall poverty and inadequate health and social services, but also for family support arrangements. More than 40 per cent of elderly adults surveyed in 2004 had experienced the death of a child between 1975 and 1979, compared to just 7 per cent in the four-year period thereafter (Zimmer *et al.* 2006). More than half of these elderly adults lost a spouse during the Khmer Rouge period, with two-thirds of women and one-third of men reporting the loss of a spouse. Over 10 per cent of current households with elderly adults consist of older women who reside with their widowed daughters, a proportion that is high compared to other countries, and is probably due to the deaths of their husbands, and their daughters' husbands, during the 1970s (Zimmer *et al.* 2006). Among the elderly adults who were living in urban areas during the Khmer Rouge period, virtually all reported that they had been forced to move, and almost 40 per cent said they had gone through a separation from their families as a result of the forced evacuations from urban centres. These family losses caused not only intense grief and suffering, but also increased the risk of economic insecurity as the survivors aged; exchanges across generations serve as an important source of support for the elderly when very few receive a pension, have accumulated savings, or are covered by health insurance.

While Cambodia's men were subjected to a disproportionate amount of violence during the Khmer Rouge regime, domestic violence against women appears to have increased after the genocide. Women reported that the abuse they experienced from their husbands after the Khmer Rouge grew in intensity and scale, and they blamed this change in their husbands' behaviour on the psychological stresses of the war (Pickup *et al*. 2001). This increase in domestic violence and men's engagement in socially destructive activities after war has been documented in other post-conflict countries, including Bosnia and South Africa (Pickup *et al*. 2001). More recent data based on Cambodia's 2005 Demographic Health Survey (DHS) indicates that close to one quarter of ever-married women in Cambodia aged 15-49 have experienced some sort of emotional, physical, or sexual violence since they were 15 years old. About half of these women had experienced violence during the twelve months preceding the survey, and about two-thirds

of women had experienced violence during the first five years of marriage (NIPH/NIS/ORC 2006). Although Cambodia's elderly women were not surveyed about domestic violence for the particular DHS module which is the focus of this article, the data point to the pervasiveness of violence against women in a society that still tolerates and even rationalises this abuse.

Women have faced additional gender-specific constraints as they have aged in achieving sound health and meeting their healthcare needs given the country's patriarchal and hierarchical social structure, which gives higher status to men and lower status to unmarried women (USAID 2006). Although there is a widespread perception that Cambodia is a matrilineal society, recent ethnographic studies suggest that the country has more of a bilateral social system in which women have influence over social life while patriarchy still functions strongly in making women subordinate to men in schooling, access to resources, and decision-making power (Öjendal and Sedara 2006).

Data and methodology

As Cambodia emerges from international isolation, new sources of data have become available to assess the long-term repercussions of the Khmer Rouge genocide and the current well-being of Cambodia's population. Cambodia's DHS is one such database. Cambodia's National Institute of Public Health, Ministry of Health, and National Institute of Statistics have collaborated to conduct three waves of this nationally representative survey, in 1998, 2000, and 2005, with answers collected orally or in written format (NIPH/NIS/ORC 2006). This study uses the most recent wave of the Cambodian DHS, which has extensive information on demographic characteristics of all household members for 73,000 individuals aged 0 to 98 living in more than 14,000 households.

The first part of the analysis uses the full household member sample to present an updated demographic profile and to conduct tests for variations in key demographic characteristics and health factors across different age groups. The second part of the analysis uses a sub-sample of elderly adults (ages 60 and above) to conduct tests for differences in demographic characteristics and health factors by gender. This sub-sample consists of about 4,500 individuals, representing close to 7 percent of the full sample. The final part of the analysis uses a sub-sample of the elderly who had reported an illness or injury in the previous month and tests for gender differences in treatment-seeking behavior. All statistical analyses are weighted to the national level using the sampling weights provided with the 2005 DHS in order to make them representative of the population as a whole, and detailed statistical results are available from the author upon request.

Demographic profile and socioeconomic characteristics

An overall profile of Cambodia's population by age and gender is illustrated in Figure 1's population pyramid, with each bar representing the percentage of the total population that is male or female and belongs to a particular age group. One of the most striking features of Cambodia's population pyramid is the extremely large population of children: about half the sample is below the age of 20. The population shares drop dramatically for the 45-49 year old age groups and beyond. In addition, the population shares by gender are virtually the same for the younger age groups, and do not begin to show appreciable differences by gender until the age groups aged 30

and beyond, when every age group is skewed heavily towards women. For example, women aged 45-49 constitute 2.6 per cent of the Cambodian population, compared to just 1.8 per cent for men, a difference of about three quarters of a percentage point. There is a similar decline in the representation of all individuals aged 50-54 in the total population, again with far fewer men. Both of these age groups were working-age adults during the Khmer Rouge genocide and, as argued in Patrick Heuveline and Bunnak Poch (2007), were heavily targeted in the killings, especially men. Also of note in Figure 1 are the sizeable elderly population and an extremely large population of children relative to a fairly small working age population. Cambodia has an age-dependency ratio (the number of dependents relative to working-age population) of 0.64, one of the highest among all Asian countries (World Bank 2007). As illustrated in the figure, about three quarters of Cambodia's relatively high age-dependency ratio is explained by children.

(Insert Figure 1 here)

Cambodia's gender imbalance in the overall population is further illustrated in Figure 2 with the male-to-female sex ratio across age groups. This ratio refers to the comparative number of men to women in the population. It is as low as 61 percent for the oldest cohort, compared to a national average of 92 percent. Male-to-female sex ratios remain close to 100 for the younger age groups, drop slightly for younger adults in their twenties, and then fall to below 90 percent and remain low. These sex ratios are comparable to those reported in Zachary Zimmer and Sovan Kiry Kim (2002), who argue that the sex ratios for all the adult age groups are unusually low compared to other countries due to the excess male mortality in the Khmer Rouge period.

(Insert Figure 2 here)

The next part of the analysis goes beyond age and gender to present a richer picture of the socioeconomic and health status of the full population. The analysis has summarized the values for a series of socioeconomic characteristics by age groups, comparing children (ages 0-17), working-age adults (18-59 years), and elderly adults (60+). Results indicate that the percentage of an age group that is female increases with age: half of children are female while close to 60 per cent of people aged 60 and above are female. In terms of educational attainment, only 19 per cent of all individuals have a secondary school education or higher, compared to 51 per cent with primary school and 30 percent with no education. Yet there are dramatic differences by age groups: Cambodia's elderly are three times more likely than working-age adults to have no schooling. Consistent with patterns among other low-income countries, the bulk of Cambodia's population lives in rural areas.

Among the measures for household composition, approximately one fifth of individuals live in female-headed households, and the vast majority of the sample lives in fairly large households, with more than half of all individuals living in households with at least 6 members. However, there are marked differences between children and the elderly: the elderly are almost five times as likely as children to live in smaller households consisting of one to three people, and the elderly are almost twice as likely to live in female-headed households compared to children. Not surprisingly, marital status is strongly correlated with age: 43 per cent of Cambodia's elderly report that they are widowed, about ten times the rate for working-age adults. The calculations for household headship support findings in earlier studies that high rates of female widowhood

from the Khmer Rouge killings have contributed to a high incidence of female-headed households compared to other countries, especially among households with an elderly adult present (Zimmer and Kim 2002).

Among the health factors, 80 per cent of people use some sort of a bed net, predominantly untreated with insect repellent, and almost one fifth of all individuals had been sick or injured in the month prior to the survey. (1) While just 28 per cent of individuals are in households with access to an improved toilet facility, close to two-thirds are in households that treat their water before drinking and cooking. Again, these health factors are each strongly associated with age. Consistent with patterns that reduce the risks of disease among the elderly, more than 80 per cent of the elderly use a bed net compared to three quarters of working-age adults, and three quarters of the elderly have access to safe drinking water compared to two-thirds of working-age adults. However, the elderly are twice as likely to have experienced illness or an injury in the past 30 days compared to the other cohorts. Finally, just one third of Cambodia's working-age adults and the elderly, and even fewer children, have access to improved toilet facilities.

Gender differences among the elderly

The next part of the analysis examines how socioeconomic status and health factors for elderly adults differ by gender. Quite striking is the enormous difference between elderly women and men in educational attainment: more than three quarters of women have no schooling compared to a quarter of men, and men are seven times more likely than women to have attained secondary schooling. Elderly women and men also differ substantially in their wealth distributions, with men relatively more concentrated in the middle, and women relatively more concentrated at both tails of the distribution.

In terms of household structure, there are dramatic differences between women and men in household headship and widowhood. More than 60 per cent of elderly women are widowed, which exceeds the rate of widowhood for elderly men by a factor of four. Elderly women are also more than six times as likely to live in a female-headed household relative to men. High female widowhood translates into a relatively higher incidence of women living alone compared to men: 10 per cent of elderly women are the sole adults in the household, compared to only 2 per cent of elderly men. Men in turn are more likely to live in larger households with at least three other adults present as a potential source of support, while elderly women are relatively more likely to be living with three or more children for whom they potentially need to provide care. These results are consistent with earlier findings in Zachary Zimmer and Sovan Kiry Kim (2002) that Cambodia's elderly population tends to live with a child in a diverse set of household arrangements, with a greater likelihood of living with never-married children, and with daughters.

Interestingly, very few gender differences emerge in the health factors, with about the same proportions of women and men using bed nets, having access to safe drinking water, and having improved toilet facilities (Figure 3, Panel A). However, women are more likely to have been sick or injured in the month prior to the survey (30 per cent versus 26 per cent). A closer investigation into the channels through which elderly women are at a greater risk of being sick or injured points to women's disadvantages in wealth, their tendency to live with fewer other adults, and

their greater incidence of living in female-headed households as the most important determining factors.

(Insert Figure 3 here)

The final part of the analysis explores illness and treatment patterns for the sub-sample of elderly who did report an illness or injury in the month prior to the survey. Tests indicate no gender differences in the seriousness of the illness or injury, with about a third of women and men reporting a slight ailment, another half reporting a moderately severe ailment, and about 16 percent of women and men reporting a serious ailment. Similarly, for those who sought treatment, there are no gender differences in the type of treatment sought, with both women and men favoring private over public health facilities by a factor of about three (Figure 3, Panel B). Even other sources such as shops and traditional healers known as *kru khmer* tend to be favored over public health facilities. (2) Women and men also show very similar patterns in how they finance healthcare, with roughly equal amounts coming from wages/pocket money, savings, and gifts/loans. However, we do see a statistically significant gender difference in the likelihood of seeking treatment: 92 per cent of elderly men sought treatment when they were sick or injured, compared to 88 per cent of elderly women. A more detailed investigation points to women's relatively lower educational attainment, and their greater tendency to live with multiple children for whom they may need to care, as the main reasons for their lower likelihood of seeking medical treatment when they are sick or suffer an injury.

Discussion and policy implications

This study has used data from Cambodia's 2005 Demographic and Health Survey to explore the socioeconomic status, household structure, and health status of Cambodia's elderly population, and how these characteristics differ by gender. The study found small disadvantages for elderly women in becoming sick and seeking treatment, which are explained by their relatively lower educational attainment and wealth, as well as their greater likelihood of living in female-headed households and having to care for children. Because of Cambodia's strongly functioning patriarchal norms and women's unequal access to resources, female-headed households are less likely to be able to afford quality housing, and provide adequate health-care for their residents. In other aspects of health-care, the findings pointed to no gender differences in types of treatment sought, or in forms of behaviour intended to prevent ill-health. Private health facilities were three times as popular as public health facilities. Even though the elderly are far less likely than children and working-age adults to have any schooling at all, they are just as or more likely to engage in healthy forms of behaviour - such as using a bed net, drinking clean water, and using an improved toilet – as the younger age groups. Consistent with previous studies using earlier survey data to examine the longer-term repercussions of the Khmer Rouge, (Heuveline and Poch 2007; Zimmer and Kim 2002), this study has found extremely low male-to-female sex ratios for older cohorts and a high incidence of female widowhood and female-headed households.

These findings amount to new evidence from one of Asia's poorest countries on the health status of Cambodia's elderly population. Up-to-date statistical evidence on the well-being of ageing adults in Cambodia is particularly important given the heavy weight the government has placed on meeting the needs of the elderly, reducing overall poverty, and improving societal well-being.

Cambodia still has some of the poorest development and health indicators in Asia. Cambodia's per-capita GDP of $1,802 in 2007 ranked lowest among its Southeast Asian neighbours, and close to the bottom in comparison with other East, Central, and South Asian countries (World Bank 2007). In terms of health indicators across the entire Asian region, Cambodia has the lowest female life expectancy at birth (61 years), and the second-lowest percentage of the population with access to an improved water source (65 percent). At the other extreme, Cambodia has the highest prevalence of undernourishment (33 percent of the population) in Asia, and maternal mortality and HIV prevalence are also relatively high.

Furthermore, Cambodia's poverty rate of 35 per cent is high, both absolutely, and when compared to the other Asian countries that have reported poverty rates (World Bank 2007). Elderly adults living in rural parts of Cambodia face particularly difficult economic conditions, with rural households in the lowest parts of the wealth distribution on average owning nothing, and households higher up in the wealth distribution only slightly better off. Recent findings suggest that elderly Cambodians have lower health status than older adults in neighbouring Asian countries, and that even small marginal reductions in wealth can result in a substantial rise in health problems among the elderly (Zimmer 2008; Zimmer et al. 2006).

Cambodia's Ministry of Health has placed priority emphasis on the needs of the elderly in its *Health Sector Strategic Plan 2003-2007*, and access to free or low-cost health care remains a top government priority. The carpet bombing during the Vietnam War and the Khmer Rouge actions led to the destruction of most of the country's education and health systems infrastructure in terms of both human resources and physical infrastructure (Clayton 1998, Lanjouw *et al.* 1999). In the case of health-care, Heng and Key (1995) argue that the Khmer Rouge's purging of professional workers reduced the total number of doctors in the country to 25, with just three staff members in the government's ministry of health. These results of the war, combined with the ramifications of structural poverty and displacement, meant that most of Cambodia's population had extremely limited access to education and healthcare services during the conflict and post-conflict years, with lasting effects on human capital investment and health that were not easily reversed.

Furthermore, international aid efforts during the 1980s and 1990s failed to develop a systematic analysis of the major problems in the healthcare sector and an effective strategy of allocating resources to those problems (Lanjouw *et al.* 1999). Because resource allocation during the post-conflict years was driven more by the priorities of donors than the needs of the Cambodian health care system, the rehabilitation of Cambodia's health care system has progressed slowly. Health services in the public sector remained woefully underfunded compared to the private sector, with healthcare workers receiving inadequate training and pay, healthcare facilities undergoing insufficient maintenance and repair, and health professionals often resorting to the use of expired or improperly-monitored pharmaceuticals (Heng and Key 1995).

Policy reforms to achieve more cost-effective and efficient health services include greater emphasis on government contracting of health services to NGOs, as indicated by an analysis in Indu Bhushan *et al.* (2002) of the Cambodian government's pilot programme to contract with NGOs for healthcare delivery. In addition, findings in the Ministry of Planning's (2005) progress report in achieving the Millennium Development Goals indicate that economic growth and

public investment need to become more rural-focused, with the adoption of deliberate policies to accelerate poverty reduction and provide more preventative and curative health care services in the rural sector. Another policy priority to improve access to health care for marginalized individuals is to remove cultural barriers to healthcare, with indigenous communities in remote parts of the country reporting that they faced discrimination and a lack of flexibility and sensitivity when they sought health care at public facilities (Brown *et al.* 2006). Collectively, these reforms could go a long way in stretching tight budgets to meet the universal healthcare needs of Cambodia's elderly men and women.

Yana Rodgers is Associate Professor of Women's and Gender Studies at Rutgers University. Correspondence to: Yana Rodgers, Department of Women's and Gender Studies, Rutgers University, 162 Ryders Lane, New Brunswick, NJ 08901. Tel: (732) 932-1151; email yrodgers@rci.rutgers.edu.

Endnotes

(1) Note that as of 2006, almost half of Cambodia's total population of 14.2 million people lived in areas with high malaria transmission, and the country had about 262,000 reported cases of malaria (WHO 2008).

(2) These other sources, which are not considered part of the public sector or private sector medical system, include shops or markets that sell drugs, *kru khmer* (a general term for different types of traditional healers in Cambodia) and magicians, monks and religious leaders, and traditional birth attendants (NIPH/NIS/ORC 2006).

References

Bhushan, I., S. Keller, and B. Schwartz. (2002) 'Achieving the Twin Objectives of Efficiency and Equity: Contracting Health Services in Cambodia', Asian Development Bank, Economics and Research Department Policy Brief No. 6.

Brown, E., C. Godden, and N. Sopheak (2006) Uniting Indigenous Communities in Cambodia to Claim the Right to Maternal Healthcare. *Gender and Development* 14(2): 211-22.

Clayton, T. (1998) 'Building the new Cambodia: educational destruction and construction under the Khmer Rouge, 1975-1979', *History of Education Quarterly* 38(1): 1-16.

de Walque, D. (2005) 'Selective mortality during the Khmer Rouge period in Cambodia', *Population and Development Review* 31(2): 351-68.

de Walque, D. (2006) 'The socio-demographic legacy of the Khmer Rouge period in Cambodia', *Population Studies* 60(2): 223-31.

Heng, M. B. and P. J. Key (1995) 'Cambodian health in transition', *British Medical Journal* 311(12): 435-7.

Heuveline, P., and B. Poch (2007) 'The Phoenix population: demographic crisis and rebound in Cambodia', *Demography* 44(2): 405-26.

Lanjouw, S., J. Macrae, and A. Zwi (1999) 'Rehabilitating health services in Cambodia: the challenge of coordination in chronic political emergencies', *Health Policy and Planning* 14(3): 229-42.

McLanahan, S., and E. Kelly (1999) 'The feminization of poverty: past and future', in J. S. Chafetz (ed.) *The Handbook of the Sociology of Gender*, New York: Springer, 127-45.

Ministry of Planning, Kingdom of Cambodia (2005) 'Achieving the Cambodia Millennium Development Goals: 2005 Update', Phnom Penh: Ministry of Planning.

Neupert, R., and V. Prum (2005) 'Cambodia: reconstructing the demographic stab of the past and forecasting the demographic scar of the future', *European Journal of Population* 21(2-3): 217-46.

National Institute of Public Health, National Institute of Statistics, and ORC Macro (2006) 'Cambodia Demographic and Health Survey 2005', Phnom Penh, Cambodia and Calverton, MD: National Institute of Public Health, National Institute of Statistics, and ORC Macro.
Öjendal, J. and K. Sedara (2006) '*Korub, kaud, klach*: in search of agency in rural Cambodia', *Journal of Southeast Asian Studies* 37(3): 507-26.

Pickup, F., S. Williams, and C. Sweetman (2001) Ending Violence Against Women: A Challenge for Development and Humanitarian Work. Oxford: Oxfam GB.

Smeeding, T., S. Sandström, L. Shaw, S. Lee, and K. Chung (2005) 'Explorations gender and aging: cross-national contrasts', *Feminist Economics* 11(2): 163-98.

United States Agency for International Development (USAID) (2006) 'Gender Analysis and Assessment, USAID/Cambodia, Volume I: Gender Analysis', Washington, DC: USAID.

World Bank (2007) 'World Development Indicators Database', Washington, DC: World Bank.

World Health Organization (WHO) (2008) 'World Malaria Report 2008', Geneva: WHO.

Zimmer, Z. (2008) 'Poverty, wealth inequality and health among older adults in rural Cambodia', *Social Science & Medicine* 66(1): 57-71.

Zimmer, Z., and S. K. Kim (2002) 'Living arrangements and socio-demographic conditions of older adults living in Cambodia', *Journal of Cross-Cultural Gerontology* 16(4): 353-81.

Zimmer, Z., J. Knodel, K. S. Kim, and S. Puch (2006) 'The impact of past conflicts and social disruption on the elderly in Cambodia', *Population and Development Review* 32(2): 333-60.