

Older Persons' AIDS Knowledge and Willingness to Provide Care in an Impoverished Nation: Evidence from Cambodia

*One potentially effective route for the Government and NGOs
to improve AIDS knowledge among Cambodian elderly generally
— and to weaken the link between poverty and poor AIDS knowledge —
would be to facilitate ownership of radios or televisions
for those who do not have them.*

By John Knodel and Zachary Zimmer*

Since the beginning of the global pandemic, assessing knowledge and attitudes regarding AIDS has been an important subject of research and for good

* John Knodel, Research Professor, Population Studies Center, University of Michigan, Ann Arbor, MI, United States of America, e-mail: jknodel@umich.edu and Zachary Zimmer, Professor, Department of Sociology, Senior Scholar, Institute of Public and International Affairs, University of Utah, Salt Lake City, UT, United States, e-mail: Zachary.zimmer@jpi.uatech.edu.

reasons. Given the unusual features of HIV/AIDS, there is considerable potential for misunderstanding important aspects of the disease that could affect both behaviours related to risk exposure, as well as reactions to those known or believed to have contracted HIV. Most research on knowledge and attitudes has focused on young or prime aged adults. Far less common are systematic assessments of knowledge and attitudes among older persons, especially for developing countries, presumably because they are thought to be at less risk of exposure. In fact, older persons are also at risk of infection even if less so than prime age adults and their numbers will grow as effective treatments increasingly allow those infected at earlier ages to survive to old ages. Still, infected persons aged over 50 constitute a relatively modest share of the total caseload, especially in the developing world (Knodel, Watkins and VanLandingham, 2003).

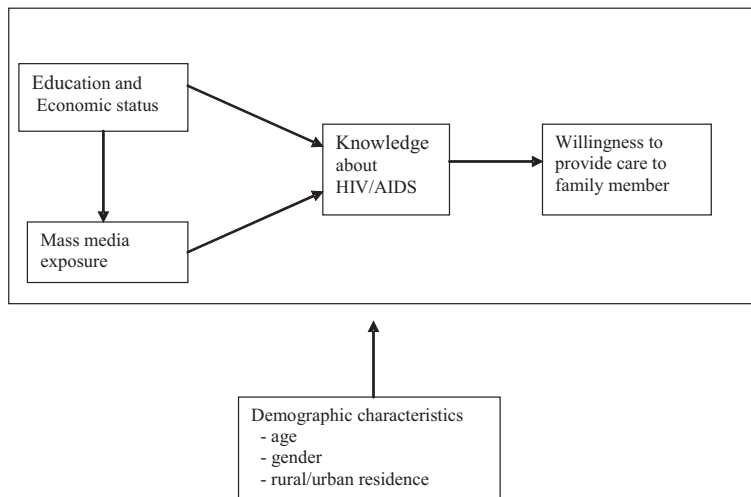
Far more common are older persons who are affected by AIDS indirectly through the illness and death of their grown-up children. In many developing countries, older persons as parents, often assume important caregiving roles for their infected sons and daughters and provide living quarters and support when illness becomes debilitating (Knodel and VanLandingham, 2002; Knodel, forthcoming). Since most adults who die of AIDS have at least one parent alive at the time of death, and because the parents tend to be in their 50s, 60s and 70s, the number of older parents who act as AIDS caregivers is very large. Older persons have considerable potential to contribute to the effort of dealing with the epidemic in other ways as well. As parents they have a high emotional stake in ensuring their grown children's well-being and thus a strong motivation to discourage risky behaviours leading to AIDS, encourage testing and encourage those who become HIV infected to seek treatment and comply with treatment regimes. That many older-aged parents co-reside or live in proximity to adult children, especially in the developing world, enhances their potential to exert such influence. For all these reasons, adequately informing older persons about AIDS is important for efforts to combat and cope with the epidemic.

The present study examines knowledge and attitudes related to HIV/AIDS among persons aged 60 and over in Cambodia, the country with the highest HIV prevalence in Asia. Before presenting results, a brief analytical framework is presented that guides the analysis, as well as some relevant aspects about the country setting, and the data sources and measures used. The presentation of findings examines how age relates to AIDS knowledge and attitudes towards caregiving, the association of knowledge and willingness to provide care, and determinants of knowledge with special attention paid to the role of poverty and mass media exposure. The study ends with a discussion on the implications for efforts to deal with the epidemic in Cambodia.

Analytical framework

A crucial hypothesis addressed in this study and one of considerable policy relevance for programmes dealing with the epidemic is that better knowledge promotes favourable attitudes towards caregiving and subsequently willingness to provide care. This hypothesis is of particular interest with regard to older persons given their importance in providing informal caregiving of adults living with HIV/AIDS, especially in developing country settings. Figure 1 summarizes the conceptual framework that guides the present analysis. The framework first links several presumed predictors to AIDS knowledge and then focuses on the relationship between knowledge and willingness to provide care to a family member with AIDS.

Figure 1. Analytical framework



A virtually universal finding in previous research is a strong positive association between educational attainment and AIDS knowledge (e.g. United Nations, 2002). Economic status has also been linked to AIDS knowledge, based on the assumption that the poor have less access to information about health risks and perhaps a lower incentive to consider it important and act on it (Bloom, River Path Associates and Sevilal, 2002). Moreover, given the association of poverty with social and political exclusion, informational activities may be framed and implemented in ways that are less relevant for persons at the lowest end of the

social and economic scale (Cohen, 2000). Thus, a positive association between both education and economic status and AIDS knowledge is expected.

Numerous studies have pointed to the importance of mass media, especially radio and television, as the primary source of information about HIV/AIDS for the general population. According to an analysis by the United Nations Population Division of 39 Demographic and Health Surveys (DHS) throughout the developing world, radio was the most often cited source of knowledge about AIDS (United Nations, 2002). This probably reflects the ability of large segments of the population even in very poor countries to possess low cost radios. Television was also found to be a very common source of information. In numerous studies in countries or settings where television is widespread (e.g. urban areas), it is often the most commonly cited source (Ayranci, 2005; Henderson and others, 2004; Im-em, VanLandingham, Knodel and Saengtienchai, 2001; Montazeri, 2005; Porter, 1993). Thus, mass media exposure is expected to have a positive influence on AIDS knowledge. At the same time, socio-economic status influences media exposure since those with higher education and with a better economic situation are more likely to own and use radios and televisions. The associations inside the main box therefore suggest a causal structure that leads from education and economic status, and mass media exposure, to AIDS knowledge, and to willingness to provide care. Education and economic status operate both independently and through media exposure.

Previous research has also shown that AIDS knowledge is typically associated with basic demographic characteristics including age, sex and place of residence. Cross-national analysis of DHS data indicates that in most countries awareness of AIDS is higher among men than among women and that urban residents are much more aware than rural residents (United Nations, 2002). Research in Thailand and the United States of America indicates that knowledge of AIDS declines with age, particularly among older persons (Leblanc, 1993).¹ Age, sex and place of residence are also likely to be associated with educational attainment, economic status and mass media exposure and may influence attitudes towards caregiving. Thus, they are incorporated into the multivariate analyses as control variables and are represented outside the main box to signify their simultaneous influence on all factors inside the box.

Setting

Cambodia is well known for the political and civil strife that engulfed the nation during the 1970s and culminated in the brief but devastating rule of the Khmer Rouge during which violence, starvation and disease killed about one

fourth of its population (Heuveline, 1998; Kiernan, 2003). In part as a legacy of this traumatic period and its aftermath, pervasive poverty continues to prevail throughout the country. Cambodia is classified by the United Nations as one of the world's least developed countries and ranks low on the Human Development Index with over three fourths of the population living on less than two dollars a day (Ministry of Planning, 2003). Relevant for the present study, 30 per cent of persons aged 60 and over live in households with no radio and 36 per cent in households with no television (Knodel, Kim, Zimmer and Puch, 2005). Consistent with high levels of poverty, social protection measures in Cambodia are underdeveloped and under-funded and the public health system is generally characterized as poorly functioning (Buehler, Wilkinson, Roberts and Catalla, 2006; Chan and Ear 2004). However, the health system's response to the AIDS epidemic has been remarkably aggressive and effective (Buehler, Wilkinson, Roberts and Catalla, 2006).

According to UNAIDS, adult prevalence of AIDS has declined to 1.6 per cent in 2005, down from a peak of 3 per cent in 1997, testifying to Cambodia's unusual success in combating the epidemic through an aggressive government programme (UNAIDS, 2006). Knowledge about HIV/AIDS is reasonably high among women of reproductive ages, as well as commercial sex clients (National Institute of Statistics, 2001; Hor, Detels, Heng and Mun, 2005). As is common in much of South-East Asia, older persons in Cambodia commonly live with adult children and depend on them for much of their support (Kato, 2000; Zimmer and Kim, 2001). Approximately four out of five Cambodians aged 60 and over co-reside with at least one child (Knodel, Kim, Zimmer and Puch, 2005). Given the lack of health and welfare services, elderly Cambodians have little choice but to depend on material and physical support from their families. Most adult children tend to either live with their parents or nearby with 60 per cent of those aged 18 and over residing within the same locality.² It is not surprising then that recent research indicates that older aged parents in Cambodia play a major role when an adult child becomes ill with AIDS (Knodel, Kim, Zimmer and Puch, 2006). They often share living quarters, provide care and pay for expenses related to the illness. Specifically, in over 60 per cent of cases in which a grown child died of AIDS, the child lived with parents during the terminal stage of illness. In 80 per cent of the cases, a parent was the main source of personal care and in over two thirds a parent helped pay for medical expenses. This high level of parental involvement reflects the lack of alternative sources of assistance, the extensive poverty and the common residential proximity between adult children and their parents that characterize Cambodia.

Data sources and measures

The main source of data for this study is the 2004 Survey of Elderly in Cambodia (SEC) involving 1,273 interviews with persons aged 60 and older. After weighting, the multistage probability sample is representative of Phnom Penh and the five most populous provinces that together constitute over 50 per cent of the Cambodian population. The complete questionnaire and details about sampling, weighting and respondent characteristics are provided elsewhere (Knodel, Kim, Zimmer and Puch, 2005). The study is also based on original analysis of the 2000 Cambodia Demographic and Health Survey (DHS), which interviewed over 15,000 women in reproductive ages, to permit comparisons of levels of knowledge among women within a broader age range.³

In addition to standard issues about economic, social and physical well-being common in surveys of elderly populations in the region, the SEC questionnaire included a section on awareness, knowledge and attitudes regarding AIDS. Respondents were asked a set of 15 questions to assess their knowledge. The questions dealt with both valid and invalid modes of transmission, prevention, treatment and detection. Seven of these questions as well as an open-ended question (allowing multiple answers) about what a person could do to avoid AIDS and a question about willingness to care for a relative with AIDS are identical to those in the 2000 DHS.⁴ Additional questions in the SEC concerned the safety of sharing various items with a person infected with AIDS.

To summarize overall AIDS knowledge, a score for each SEC respondent was calculated according to the percentage of correct answers to the 15 knowledge questions.⁵ For example, a respondent who correctly answered 9 of the 15 questions received a score of 60 per cent. To permit comparisons between the SEC and DHS, a similar measure for respondents in each survey was calculated based on the seven knowledge questions that were common to both.⁶ In addition, for both the DHS and SEC, it was determined whether, in response to the open-ended question on ways to avoid AIDS, the respondent could mention at least one valid way to avoid heterosexual transmission of HIV (the predominant mode of transmission in Cambodia). The measure of caregiving willingness was based on a single direct question that asked if the respondent would be willing to care for a relative with AIDS in the respondent's own household.

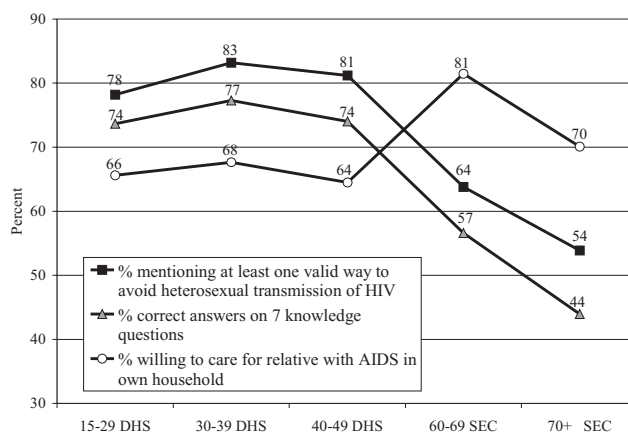
The main covariates examined in the analysis were age, gender, location, educational attainment, economic status and mass media exposure. Location was divided into three categories: urban (central Phnom Penh); peri-urban (peripheral parts of Phnom Penh province); and rural (those in provinces other than Phnom Penh, all of whom were living outside of urban districts). Respondents' economic

status was based on an interviewer assessment, which was divided into four categories ranging from above average to very poor.⁷ Mass media exposure was based on two survey questions asking the frequency of watching television and of listening to the radio. Respondents were coded according to whichever one of the two they were most frequently exposed to.

Results

Age differentials. In order to examine the age pattern of AIDS knowledge and attitudes within a broad age range, the authors compared 2004 SEC results for women aged 60 and over with 2000 DHS results for women of reproductive age. DHS results were restricted to the same sample area covered by the SEC in order to increase comparability. Men were excluded since the DHS only interviewed women. Figure 2 presents results for three measures: the percentage who could mention at least one valid way to avoid heterosexual transmission of HIV, the average percentage of correct answers given by respondents to the knowledge questions common to the two surveys, and the percentage who state they are willing to provide care to a relative with AIDS in their own household.

Figure 2. HIV/AIDS knowledge and willingness to provide care among Cambodian women, by age group



Source: 2000 Demographic and Health Survey and 2004 Survey of Elderly in Cambodia.

The two knowledge measures follow a very similar age pattern. The percentage of respondents who can mention a valid way to avoid heterosexual

transmission and the percentage of those who answered correctly to the knowledge questions do not vary greatly by age group within the reproductive ages but decline sharply with age for older women. Knowledge is therefore considerably lower among women above 60 years compared with women under the age of 50, while among older women it is substantially lower among those aged 70 and over than among those in their sixties. By contrast, the age pattern with respect to willingness to provide care to a relative with AIDS is very different. Although it is noteworthy that in both surveys the majority of women say they are willing to provide care, it is the older women who are more likely to express such willingness compared with their counterparts in their reproductive years. Among older women, however, lower levels of willingness are found among those 70 or older compared to those in their sixties. The percentage among those aged 70 and over is however, still higher than any of the three age groups shown for women of reproductive age.

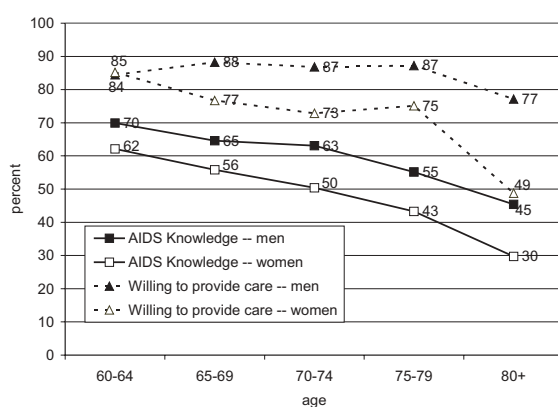
It is to be noted that the two surveys were conducted four years apart and that knowledge and attitudes may have changed during this interval. Presumably knowledge should have increased and thus the lower knowledge of the older women who were interviewed later reinforces the impression that older ages are indeed associated with lower knowledge. By contrast, improving attitudes towards caregiving could possibly account for the higher levels of willingness among older women found by the SEC compared to the women of reproductive age who were interviewed earlier. There is no evidence, however, that this is the case.

A more detailed examination of the relationship between age with both AIDS knowledge and willingness to provide care among older Cambodians – based on the full SET sample that includes both men and women – is provided in figure 3. In this case, AIDS knowledge is measured by the percentage of correct answers to all 15 HIV/AIDS knowledge questions asked in SET. For both men and women, AIDS knowledge declines steadily with age. For example, the average percentage of correct answers among men declines from 70 per cent for those aged 60-64 to only 45 per cent for those aged 80 and over. For women, the decline is even slightly greater (from an average of 62 to only 30 per cent of correct answers). Moreover, for every age group, women average fewer correct answers than do men.

The decline in willingness is relatively modest through ages 75-79, but a sharper decline occurs thereafter, especially for women. The lower levels of willingness to provide care among those aged 80 and over perhaps reflects increased frailness associated with very advanced age and a related sense of physical inability to carry on tasks that would be required by caregiving. For all age groups shown except 60-64, men are more likely to say they are willing to provide care than women. This may reflect the fact that most older men in the sample are married (82 per cent) and

would thus have a spouse who can also help, while two thirds of the older women are widowed (Knodel, Kim, Zimmer and Puch, 2005). Also women may be more aware than men as most of the caregiving burden is likely to fall on them, even if they were married. (Knodel, Kim, Zimmer and Puch, 2006).

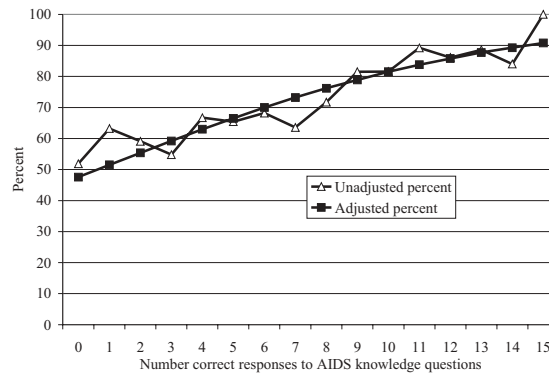
Figure 3. AIDS knowledge (percentage of correct answers to 15 questions) and percentage expressing willingness to provide care if a relative had AIDS, by age and gender, among persons aged 60 and over



Source: 2004 Survey of Elderly in Cambodia.

Caregiving willingness and AIDS Knowledge. As already noted, the informal system of caregiving for persons with AIDS in Cambodia depends heavily on older parents. In many cases, a person with AIDS would have nowhere else to turn to if parents were unwilling to take on this responsibility. Results from the SEC indicate that many older Cambodians feel that parents should provide care if an adult child becomes ill with AIDS, especially if the child has no spouse. When asked who a non-married person with AIDS should turn to for care, 78 per cent of respondents said it should be their “parents”. Most respondents (70 per cent) said a married person with AIDS should be cared for by the spouse but even for such cases, 16 per cent felt that parents would be the most appropriate caregivers. Interestingly, respondents who said they were willing to provide care to a family member were considerably more likely than those who did not to indicate parents as the appropriate caregiver both for non-married persons (85 per cent versus 51 per cent) and for married persons with AIDS (18 per cent versus 10 per cent). Such consistency between responses to the questions about willingness to provide care and endorsement of parental caregiving is an encouraging sign of response reliability.

Figure 4. Percentage of people who are willing to care for a person with AIDS by number of correct responses to 15 AIDS knowledge questions



Source: 2004 Survey of Elderly in Cambodia.

Note: Adjusted percentages represent logistic regression results that control for age, sex, location, economic situation and education.

In order to assess if knowledge about HIV/AIDS promotes willingness to care for a family member who is ill from the disease, the authors examined the association between the number of the 15 AIDS knowledge questions answered correctly in the SEC and an affirmative response to the survey question that asked about willingness. The association is shown in figure 4. The unadjusted percentage is simply based on a bivariate cross-tabulation and demonstrates the existence of a strong positive relationship. For instance, while about 50 per cent of those who did not answer any question correctly stated a willingness to provide care (N=52), the same is true of about 65 per cent of those who answered five questions correctly (N=52), about 82 per cent of those who answered ten correctly (N=136) and all of those who answered fifteen correctly (N=24). The adjusted percentage was based on a logistic regression equation that predicts the probability of caregiving willingness by number of correct answers (entered as a continuous variable), controlling for age, sex, residence, economic situation and education. Adjustment for these additional controls did little to alter the strong association between knowledge and willingness to provide care. Using the logistic curve, it was expected that a little less than 50 per cent of those without any knowledge, based on the 15 questions, were willing to provide care, other things being equal. This percentage rose steadily to about 90 per cent for those with full knowledge.

Poverty, media exposure and AIDS knowledge. Table 1 examines potential determinants of AIDS knowledge among older Cambodians, as measured by the average percentage of knowledge questions answered correctly in the 2004 SEC. In line with the analytical framework used, the respondent's economic situation and mass media exposure were included with additional controls introduced for educational attainment, gender, location and age.⁸ Since the covariates were correlated, it was also useful to statistically adjust results to assess the net effect of each covariate. Thus in addition to unadjusted results, two sets of results statistically adjusted by multiple classification analysis (MCA) are shown. The first MCA model adjusts results net of all other covariates in the table, plus age, but excludes exposure to radio/TV. The second model adds exposure. Values of the *eta* and *beta* statistics are included in order to show strength of association between knowledge and each variable; *eta* refers to the strength of the bivariate associations while *beta* refers to the strength of associations holding constant the other covariates.

Table 1. HIV/AIDS knowledge by economic status, education, gender, location and exposure to mass media among persons aged 60 and over in Cambodia, 2004

	Unweighted number of cases	Percentage of correct answers to 15 questions on HIV/AIDS		
		Unadjusted	Statistically adjusted ^a	
			Model 1 (excluding mass media exposure)	Model 2 (including mass media exposure)
Total	1,242	57.6	57.6	57.6
Economic situation				
Very poor	91	44.7	48.5	51.6
Below average	407	55.6	56.5	57.1
About average	647	60.1	59.4	58.7
Above average	97	63.0	59.7	58.2
<i>eta/beta</i>		0.176	0.118	0.075
Statistical significance		***	***	*
Exposure to radio/TV				
Rarely or not at all	326	44.7	..	49.6
Weekly but not daily	159	59.5	..	58.8
Everyday	757	63.3	..	61.1
<i>eta/beta</i>		0.322	..	0.198
Statistical significance		***	..	***

.../

Table 1. (Continued)

	Unweighted number of cases	Percentage of correct answers to 15 questions on HIV/AIDS		
		Unadjusted	Statistically adjusted ^a	
			Model 1 (excluding mass media exposure)	Model 2 (including mass media exposure)
Education				
Never attended school	699	50.7	54.2	54.7
Pagoda only	157	60.0	59.0	58.9
Primary school	247	68.0	62.7	61.6
Beyond primary	139	75.4	65.9	64.9
<i>eta/beta</i>		0.342	0.166	0.140
Statistical significance		***	***	***
Gender				
Men	453	63.8	61.1	60.1
Women	789	53.3	55.2	55.8
<i>eta/beta</i>		0.203	0.113	0.083
Statistical significance		***	***	**
Location				
Urban	255	67.0	63.9	62.9
Peri-urban	205	62.5	60.6	60.2
Rural	782	56.1	56.6	56.7
<i>eta/beta</i>		0.137	0.090	0.077
Statistical significance		***	**	*

Notes: MCA results also adjust for age as a continuous variable.

^a adjusted by MCA (Multiple Classification Analysis)

Significance levels: * = 0.05; ** = 0.01; *** = 0.001; n.s. = not significant at 0.05 level;

n.a. = not applicable

The unadjusted results indicate strong associations between levels of AIDS knowledge and each of the covariates in the table. As expected from studies elsewhere, as well as from prior analysis of the Cambodia 2000 DHS, AIDS knowledge increases with economic status, exposure to radio or television, while educational attainment is higher for men than for women, and higher for urban than rural residents. For instance, those with a very poor economic situation answered an average of 45 per cent of the knowledge questions correctly compared to 63 per cent for those with an above average economic situation. All associations are statistically significant at the 0.001 level. Values of the *eta* statistic indicate the strongest relationships are with education and exposure to radio or television.

As results for model 1 show, adjusting for covariates effectively reduces the strength of associations. This is reflected both in lower values of the *beta* statistic compared to the *eta* values for the unadjusted results and in the reduction in the variation of the percentage of questions correctly answered to across categories of each determinant. For instance, when controlling for other covariates, those with a very poor economic situation answered an average of 49 per cent of questions correctly compared with 60 per cent for those with an above average situation, reducing the unadjusted difference of 18 to 11 percentage points. Still all covariates included, except for location, remain statistically significant at the 0.001 level.

When exposure to mass media is also included in the analysis, as shown in results for model 2, *beta* values decrease further, particularly with regards to the respondent's economic situation. The difference in the AIDS knowledge score between the very poor and those whose economic situation is above average is further reduced to less than 7 percentage points. Only education and mass media exposure remain statistically significant at the 0.001 level. Moreover, the net association between mass media exposure and knowledge is stronger than that between education and knowledge.

Discussion and conclusions

According to a recent United Nations study, information, education and communication (IEC) campaigns are the most commonly adopted policy to combat the AIDS epidemic (United Nations, 2005). Such IEC campaigns need to target not just persons thought to be at high risk of infection but also those who can influence the behaviour of risk-prone persons, as well as that of those who are likely to be the caregivers to persons who become ill with the disease. As noted above, older persons in Cambodia (and elsewhere in the developing world) are not only commonly the main caregivers for their sons and daughters who become infected but also have potential to influence their adult children to avoid risky behaviour. It is therefore of some concern that substantially less knowledge was found among Cambodian women aged 60 and over interviewed in the 2004 SEC than among women of reproductive age covered by the DHS four years earlier. Given the almost negligible risk of transmission through caregiving (Friedland, 1990) and the advent of effective anti-retroviral therapy, it is particularly disconcerting that under half (49 per cent) of older Cambodians deny that someone who gives care to a person with AIDS is likely to get infected as a result and that less than a third (32 per cent) affirm that there are modern medicines that can prolong the life of an HIV infected person.

Analysis of the Survey of Elderly in Cambodia and a supplemental survey, presented elsewhere, make clear that older aged parents commonly play a key role in the care of their grown sons and daughters living with AIDS (Knodel, Zimmer, Kim and Puch, 2006). Thus, the importance of improving AIDS knowledge among older Cambodians is underscored by the finding that willingness to provide care to a family member increases with the level of correct knowledge. One mechanism which may underpin this relationship is that correct knowledge reduces unfounded fear concerning risks of contagion associated with caregiving. This interpretation gains some support from the fact that willingness to care is more closely associated with knowledge dealing with casual transmission than with other aspects of HIV/AIDS.⁹ Also, willingness to care is positively associated with the number of household items that respondents correctly indicated as safe to share with a person with AIDS (results not shown). Older persons therefore not only need correct knowledge about the inherent risk in caregiving and how to minimize them but also about how one does not contract AIDS so that they do not unnecessarily worry about contagion and avoid interaction with an infected family member (Im-Em, VanLandingham, Knodel and Saengtienchai, 2002).

A recent analysis of AIDS knowledge based on the 2000 Cambodia DHS found that lower levels of wealth were associated with poorer AIDS knowledge among women in reproductive age, even after the influence of education was taken into account (Bloom, River Path Associates and Sevilla, 2002). Results from the SEC also find an association between lower economic status and poorer knowledge among older Cambodians even after controlling for educational levels. However, the present analysis also indicates that lower exposure to mass media (radio and television) accounts for much of the association between poverty and poor AIDS knowledge. One very important reason why poorer Cambodian elderly have low mass media exposure, and hence poor knowledge of HIV/AIDS, is that many live in households with neither a television nor radio. According to the SEC, only 48 per cent judged as being very poor had a radio or TV in their household compared to 99 per cent of those judged to be above average economically. While the absence of a radio or television in a household does not preclude access (e.g. television can be viewed at a neighbour's home), it almost certainly decreases exposure. Thus, one potentially effective route for the Government and NGOs to improve AIDS knowledge among Cambodian elderly generally – and to weaken the link between poverty and poor AIDS knowledge – would be to facilitate ownership of radios or televisions for those who do not have them. The likely impact of such an approach is all the more enhanced by the fact that the Government of Cambodia is encouraging the mass media to provide information about HIV/AIDS to the broader public (*People's Daily*, 2006).

Most efforts to promote awareness and knowledge of AIDS have been oriented towards youth or prime age adults with little or no attempt to reach older persons (HAI, 2003). It is therefore not surprising that the present research, similar to that in settings as diverse as Thailand and the United States, finds that knowledge about HIV/AIDS is lower for older persons than younger adults and declines with advancing age among older persons themselves (Im-Em, VanLandingham, Knodel and Saengtienchai, 2002; Leblanc, 1993; McCraig and Winn, 1991). This situation should be remedied and future IEC campaigns on AIDS need to incorporate older persons as part of the target group in countries such as Cambodia where older persons play a critical role as caregivers and can potentially influence their adult children's risky behaviour.

The significance of the present findings may extend well beyond Cambodia. Many countries with high HIV/AIDS prevalence rates are characterized by extreme poverty and low levels of education, similar to Cambodia. Moreover, in those countries, persons ill with AIDS usually depend on informal care arrangements, typically within the family. Further testing of the associations found in the current study in other settings around the world would be an important task to add to the research agenda. If they confirm, as the Cambodian results indicate, that knowledge and awareness about AIDS are related to media exposure, and that, subsequently, willingness to provide care is strongly related to knowledge, then facilitating correct knowledge and understanding of the nature of the disease and its causes through the ownership of radios or televisions could be an important route towards encouraging care within the family, mediating the consequences of AIDS, and ultimately weakening the link between poverty and AIDS in the global fight against the disease.

Acknowledgements

This research was supported by grants from the National Institute on Ageing (sub p/g F009700, sub p/g F010799, R01 AG20063-01) and from UNFPA Cambodia. The authors wish to thank their Cambodian colleagues Souvan Kiry Kim and Sina Puch for their tireless efforts in data collection.

Endnotes

1. Thailand results from original tabulations; for a description of the source, see Im-Em, VanLandingham, Knodel and Saengtienchai, 2002.
2. Original tabulation from the 2004 Survey of Elderly in Cambodia.
3. See National Institute of Statistics (2001) for a description of that survey.
4. Unlike the DHS, the SEC permitted “depends” as a pre-coded answer in addition to “yes”, “no” and “don’t know” for the seven identical knowledge questions. For two questions for which qualifications could legitimately alter what would otherwise be a correct yes-no answer “depends” was treated as correct.
5. The 30 respondents who had never heard of AIDS were treated as not knowing the correct answers to all knowledge questions.
6. For both surveys, respondents who indicated that they had never heard of AIDS were not asked the knowledge questions. For knowledge measures, these respondents were treated as not knowing each item. One difference between the two surveys, however, was that respondents in the DHS who said they knew no way to avoid AIDS were not asked 4 of the 7 common items while in the SEC they were asked all 7. Tabulations from the SEC indicated that some of these respondents who would have been skipped according to the DHS skip pattern gave correct answers to these items, although less so than those who said they knew a way to avoid AIDS. Thus, excluding these respondents would overstate knowledge levels while treating them as not knowing the correct answer would underestimate their knowledge. In order to be able to include these respondents in results for both surveys, the DHS results were adjusted by assigning respondents who said they did not know a way to avoid AIDS the same probability of a correct answer for each of the four skipped items as was found for their counterparts in the SEC.
7. The questionnaire allowed for an additional top category of well-off but since only two respondents were so classified they were combined with the above average category.
8. Age is entered as a continuous variable and thus not shown in the table. Its association with knowledge is highly statistically significant, both before and after statistical adjustment for other covariates.
9. For example, according to bivariate Pearson correlation coefficients, willingness to care (coded 0,1) is correlated 0.280 with the number of correct answers to the four knowledge items dealing with casual transmission compared to 0.197 with the number of correct answers to the 11 knowledge items not dealing with casual transmission.

References

- Ayranci, U. (2005). "AIDS knowledge and attitudes in the Turkish population: an epidemiological study", *BMC Public Health*, No. 5, pp. 95-104.
- Buehler, M., D. Wilkinson, J. Roberts and T. Catalla (2006). *Turning the Tide: Cambodia's Response to HIV & AIDS 1991-2005*, Phnom Penh: UNAIDS Country Office.
- Bloom, D.E., River Path Associates and Jaypee Sevilla (2002). "Health, Wealth, AIDS and Poverty", Paper prepared for ADB/UNAIDS.
- Chan, S. and S. Ear (2004). "Towards understanding social protection in Cambodia", *Cambodia Development Review*, vol. 8, No. 4, pp. 9-13.
- Cohen, D. (2000). *Poverty and HIV/AIDS in sub-Saharan Africa*, UNDP HIV and development programme. Issues paper No. 27, New York: United Nations.
- Cohen, J. (2003). "Two hard hit countries offer rare success stories", *Science*, No. 301, pp. 1658-1662.
- Friedland, G. (1990). "Risk of transmission of HIV to home care and health care workers", *Journal of the American Academy of Dermatology*, No. 22, pp. 1171-1174.
- HelpAge International (HAI) (2003). *HIV/AIDS and Ageing: A Briefing Paper*. HAI, London.
- Henderson, S.J. and others (2004). "Older women and HIV: How much do they know and where are they getting their information?", *Journal of the American Geriatrics Society*, vol. 52, No. 9, pp. 1549-1553.
- Heuveline, P. (1998). "Between one and three million: Towards the Demographic Reconstruction of a Decade of Cambodian History (1970-79)", *Population Studies-a Journal of Demography*, vol. 52, No. 1, pp. 49-65.
- Hor L. B., R. Detels, S.H. Heng and P. Mun (2005) "The role of sex worker clients in transmission of HIV in Cambodia", *International Journal of STD & AIDS*, vol. 16, No. 2, pp. 170-174.
- Im-em W., M. VanLandingham, J. Knodel, C. Saengtienchai (2001). "Knowledge and attitudes of older people about HIV/AIDS in Thailand: A comparison with young adults", *PSC Research Report*, No. 01-464, University of Michigan, Population Studies Center, Ann Arbor, Michigan.
- _____ (2002). "HIV/AIDS-related knowledge and attitudes: A comparison of older persons and young adults in Thailand", *AIDS Education and Prevention*, vol. 14, No. 3, pp. 246-262.
- Kato, E.U. (2000). "Ageing in Cambodia: Tradition, change and challenges", In *Ageing in the Asia-Pacific Region*, Phillips D.R. (eds.), pp. 363-374, New York, NY : Routledge.
- Kiernan, B. (2003). "The demography of genocide in Southeast Asia - the death tolls in Cambodia, 1975-79, and East Timor, 1975-80", *Critical Asian Studies*, vol. 35, No. 4, pp. 585-597.
- Knodel, J. (forthcoming). "Parents of persons with AIDS: Unrecognized contributions and unmet needs", *Journal of Global Ageing*.

- Knodel, J. and M. VanLandingham (2002). The impact of the AIDS epidemic on older persons. *AIDS* 2002, No.16 (suppl. 4), pp. S77-S83.
- Knodel, J., S. Watkins and M. VanLandingham (2003). "AIDS and older persons: An international perspective", *Journal of Acquired Immunodeficiency*, Supplement 2, vol. 33, pp. S153-S165.
- Knodel, J., S.K. Kim, Z. Zimmer and S. Puch (2005). "Older persons in Cambodia: A profile from the 2004 Survey of Elderly", Royal University of Phnom Penh and UNFPA, Phnom Penh. (Also available as Research Report 05-576, University of Michigan, Population Studies Center, Ann Arbor, Michigan).
- _____ (2006). The Impact of AIDS on Older-age Parents in Cambodia, Research Report No. 06-594, University of Michigan, Population Studies Center, Ann Arbor.
- Leblanc, A.J. (1993). "Examining HIV-related knowledge among adults in the United States", *Journal of Health and Social Behavior*, vol. 34, No. 1, pp. 23-36.
- McCraig, L. and D. Winn (1991). "Knowledge about AIDS and HIV in the US adult population: influence of the local incidence of AIDS", *American Journal of Public Health*, vol. 81, No. 12, pp. 1591-1595.
- Ministry of Planning, Cambodia (2003). *Cambodia Millennium Development Goals Report 2003*, Phnom Penh: Ministry of Planning.
- Montazeri, A. (2005). "AIDS knowledge and attitudes in Iran: results from a population-based survey in Tehran", *Patient Education and Counseling*, No. 57, pp. 199-203.
- National Institute of Statistics, Cambodia (2001). *Cambodia Demographic and Health Survey 2000*, Phnom Penh, Cambodia and Calverton, MD, National Institute of Statistics and OR Macro.
- People's Daily (2006). Cambodia urges media to help raise public awareness on HIV/AIDS, Beijing: People's Daily.
- Porter, S.B. (1993). "Public knowledge and attitudes about AIDS among adults in Calcutta", *AIDS Care*, vol. 5, No. 2, pp. 169-176.
- UNAIDS (2006). *2006 Report on the Global HIV/AIDS Epidemic*, UNAIDS, Geneva.
- United Nations (2002). *HIV/AIDS Awareness and Behaviour*, United Nations Population Division, New York.
- United Nations (2005). *Population, Development and HIV/AIDS with Particular Emphasis on Poverty: the Concise Report*, United Nations Population Division, New York.
- Zimmer, Z. and S.K. Kim (2001). "Living arrangements and socio-demographic conditions of older adults in Cambodia", *Journal of Cross-Cultural Gerontology*, vol. 14, No. 4, pp. 353-381.