



## Research Report

*John Knodel and Zachary Zimmer*

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

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# **Older Persons AIDS Knowledge and Willingness to Provide Care In an Impoverished Nation: Evidence from Cambodia**

John Knodel  
Research Professor  
Population Studies Center  
University of Michigan  
Ann Arbor, MI

Zachary Zimmer  
Professor, Department of Sociology  
Senior Scholar, Institute of Public and International Affairs  
University of Utah,  
Salt Lake City, UT

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Older Persons AIDS Knowledge and Willingness to Provide Care  
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**Abstract**

In developing countries older persons are often called upon to be primary caregivers for their children who contract AIDS. Consequently, their understanding of the disease and willingness to provide care is critical for AIDS sufferers. We examine this issue among men and women age 60 and older in Cambodia, a country with pervasive poverty. Data primarily come from the 2004 Survey of Elderly in Cambodia with some comparison with 2000 Cambodia Demographic and Health Survey. Results indicate older women are less knowledgeable about AIDS than reproductive aged women but more likely to state a willingness to provide care. Notably, there is a strong relationship between knowledge and willingness. Moreover, although poverty and low education contribute to poor AIDS knowledge, the association is mediated by mass media exposure. Hence, we conclude that facilitating ownership of radios and televisions in poverty-stricken households may be effective for promoting AIDS understanding and caregiving willingness. This has implications both within Cambodia and globally, especially given a current emphasis on IEC campaigns to help combat the epidemic.

## Introduction

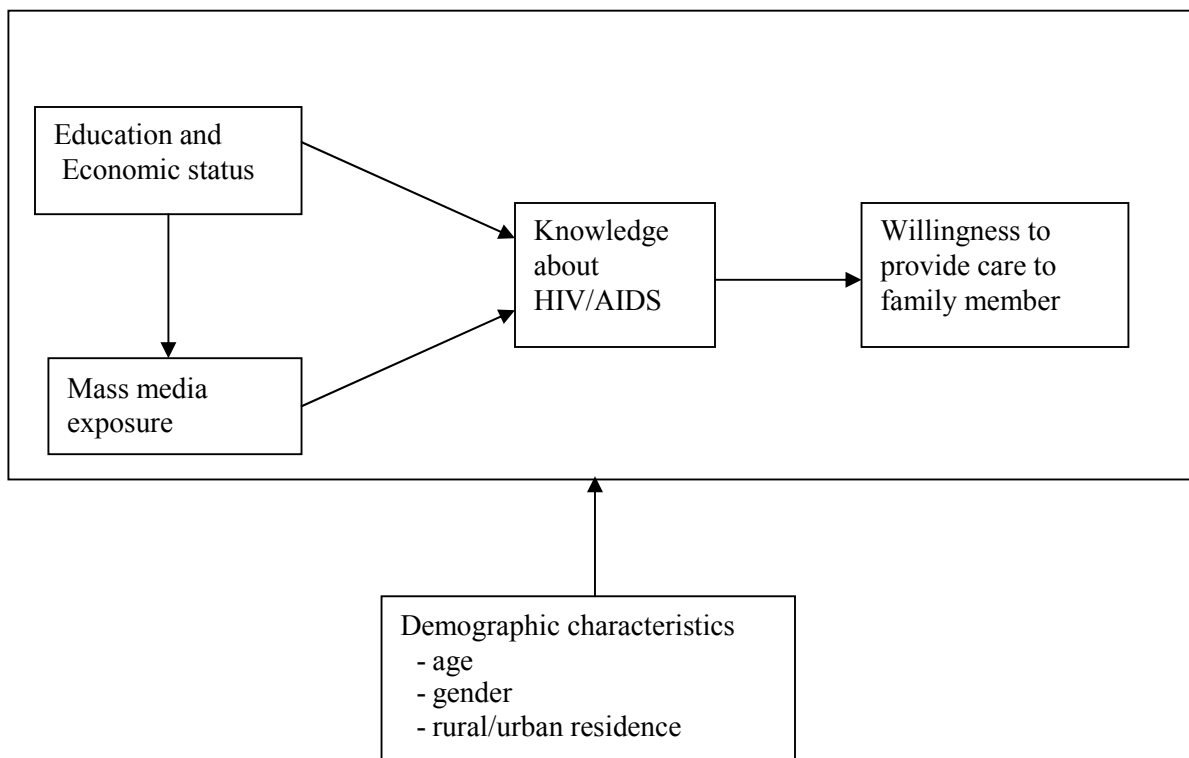
Since the beginning of the global pandemic, assessing knowledge and attitudes regarding AIDS has been an important subject of research and for good reasons. Given the unusual features of HIV/AIDS, there is considerable potential for misunderstanding important aspects that could affect both behaviors 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 aged 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 over 50 constitute a relatively modest share of the total caseload, especially in the developing world (Knodel, Watkins & VanLandingham 2003).

Far more common are older persons who are affected by AIDS indirectly through the illness and death of their grown 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 & 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 age parents who act as AIDS caregivers is very large. Older persons also have considerable potential to contribute to the effort to deal with the epidemic in other ways. As parents they have a high emotional stake in ensuring their grown children's well-being and thus a strong underlying motivation both to discourage risk behaviors leading to AIDS and to encourage those who become HIV infected to seek treatment and comply with treatment regimes. That many older-aged parents coreside or live in proximity to grown 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 probably the highest HIV prevalence in Asia. Before presenting results, we describe a brief analytical framework that guides our analysis, 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 to the role of poverty and mass media exposure. We conclude the study with a discussion of 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 programs dealing with the epidemic, is that better knowledge promotes favorable attitudes towards caregiving and subsequently willingness to provide care. This hypothesis is of particular interest with regards to older persons given their importance in informal caregiving of adults with HIV/AIDS, especially in developing country settings. Figure 1 summarizes the conceptual framework that guides our 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 Population Division 2002). Economic status has also been linked to AIDS knowledge based on the assumption the poor have less access to information about health risks and perhaps lower incentive to consider it important and act on it (Bloom, River Path Associates & Sevilla 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 we expect a positive association between both education and economic status and AIDS knowledge.

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 (2002) of 39 Demographic and Health Surveys (DHS) throughout the developing world, radio was the most often cited source of knowledge about AIDS. This probably reflects the ability of large segments of the population to possess low cost radios even in very poor countries. 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 et al. 2004; Im-em, VanLandingham, Knodel & Saengtienchai 2001; Montazeri 2005; Porter 1993). Thus mass media exposure is expected to have a positive influence on AIDS knowledge. At the same time, socioeconomic 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, 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 women and that urban residents are much more aware than rural residents (United Nations Population Division 2002). Research in Thailand and the US indicates that knowledge of AIDS declines with age, particularly among older persons (Leblanc 1993).<sup>1</sup> Age, sex and place of residence are also likely 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 UN 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% of persons age 60 and over live in households with no radio and 36% in households with no television (Knodel, Kim, Zimmer & 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 et al. 2006; Chan and Ear 2004). However, the health system's response to the AIDS epidemic has been remarkably aggressive and effective (Buehler et al. 2006).

According to UNAIDS (2006), adult prevalence of AIDS has declined to 1.6% in 2005 down from a peak of 3%, testifying to Cambodia's unusual success in combating the epidemic through an aggressive government program (Buehler et al. 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 & Mun 2005). As is common in much of Southeast Asia, older persons in Cambodia tend to live with adult children and depend on them for much of their support (Kato 2000; Zimmer & Sovan Kiry Kim 2001). Approximately four out of five Cambodians age 60 and older coreside with at least one child (Knodel et al. 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 grown children of older age persons tend to either live with them or nearby with fully 60 percent of those age 18 and over residing within the same locality.<sup>2</sup> It is not surprising then that recent research indicates older aged parents in Cambodia play a major role when an adult child becomes ill with AIDS (Knodel, Zimmer, Kim & Puch 2006). They often share living quarters, provide care, and pay for expenses related to the illness. Specifically, in over 60% of cases in which a grown child died of AIDS, the child lived with parents during the terminal stage of illness. In 80% 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 1273 interviews with persons aged 60 and older. After weighting, the multi-stage probability sample is representative of Phnom Penh and the five most populous provinces that together constitute over 50 percent of the Cambodian population. The complete questionnaire and details about sampling, weighting, and respondent characteristics are provided elsewhere (Knodel et al. 2005). We also draw 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.<sup>3</sup>

In addition to standard issues about economic, social and physical well-being common in surveys of older age 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 ones in the 2000 DHS.<sup>4</sup> The full set of AIDS knowledge questions in the SEC and the distribution of answers are provided in appendix table 1. Basic differentials with respect to age, gender area of residence and education in the percent providing a correct to each question are provided in appendix table 2. Additional questions in the SEC asked about the safety of sharing various items with a person with AIDS.

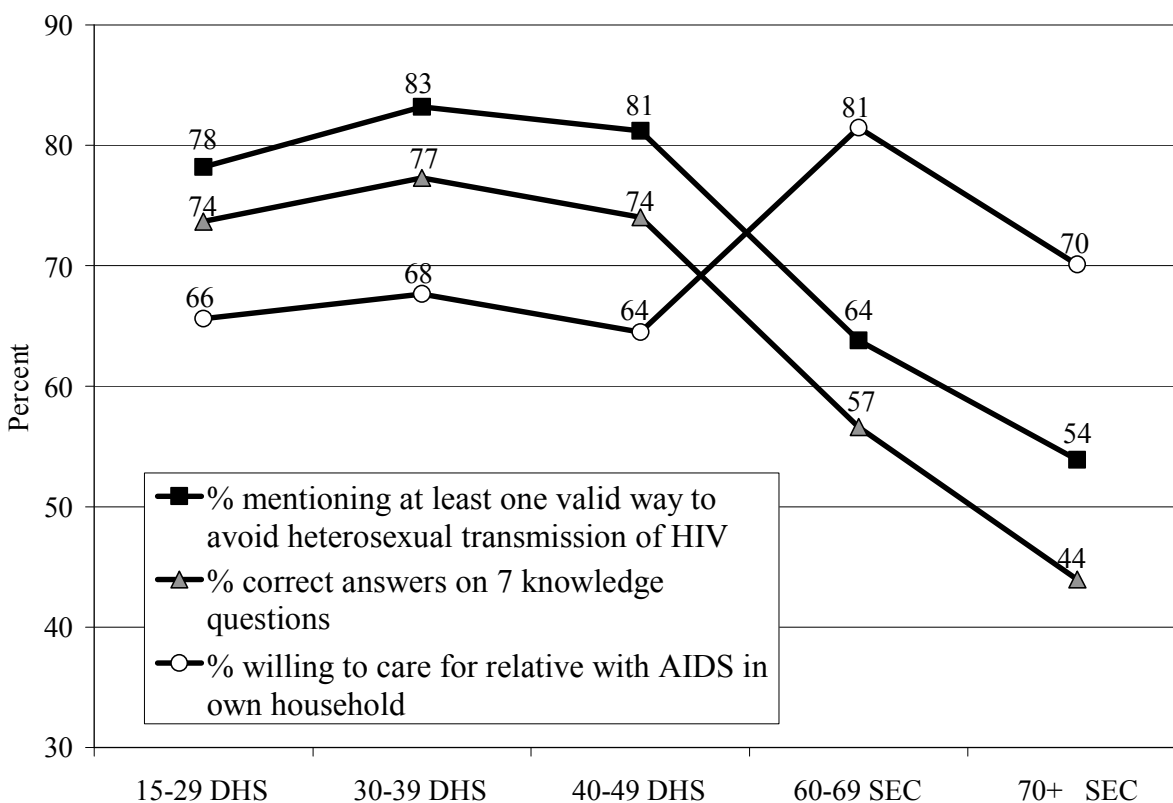
To summarize overall AIDS knowledge, we calculated a score for each SEC respondent that equaled the percent of correct answers to the 15 knowledge questions.<sup>5</sup> For example, a respondent who correctly answered 9 of the 15 questions correctly receives a score of 60 percent. To permit comparisons between the SEC and DHS, we calculated a similar measure for respondents in each survey based on the seven knowledge questions that were common to both.<sup>6</sup> In addition, for both the DHS and SEC, we determine if, in response to the open-end 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). Our measure of caregiving willingness is 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 are age, gender, location, educational attainment, economic status, and mass media exposure. Location is divided into three categories: urban (central Phnom Penh); periurban (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 is based on an interviewer assessment, which is divided into four categories ranging from above average to very poor.<sup>7</sup> Mass media exposure is 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.

## Results

*Age Differentials.* In order to examine the age pattern of AIDS knowledge and attitudes within a broad age range, we compare 2004 SEC results for women aged 60 and over with 2000 DHS results for reproductive aged women. DHS results are restricted to the same sample area covered by the SEC to increase comparability. Men are excluded since the DHS only interviewed women. Figure 2 presents results for three measures: the percent who could mention at least one valid way to avoid heterosexual transmission of HIV, the average percent of correct answers given by respondents to the knowledge questions common to the two surveys, and the percent 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, based on the 2000 Demographic and Health Survey (DHS) and the 2004 Survey of Elderly in Cambodia (SEC)**



The two knowledge measures follow a very similar age pattern. Both the percent who can mention a valid way to avoid heterosexual transmission and the percent of the knowledge questions answered correctly do not vary greatly by age group within the reproductive ages but decline sharply with age for older women. Thus knowledge is considerably lower among women above 60 compared to women under 50 and among older women is substantially lower among those 70 and over compared to those in their sixties. In 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 aged women who are more likely to express such willingness than their counterparts of reproductive age. Among older women, however, lower levels of willingness are found among those 70 or older compared to those in their sixties. Still the percent among those 70 and over is higher than any of the three age groups shown for reproductive aged women.

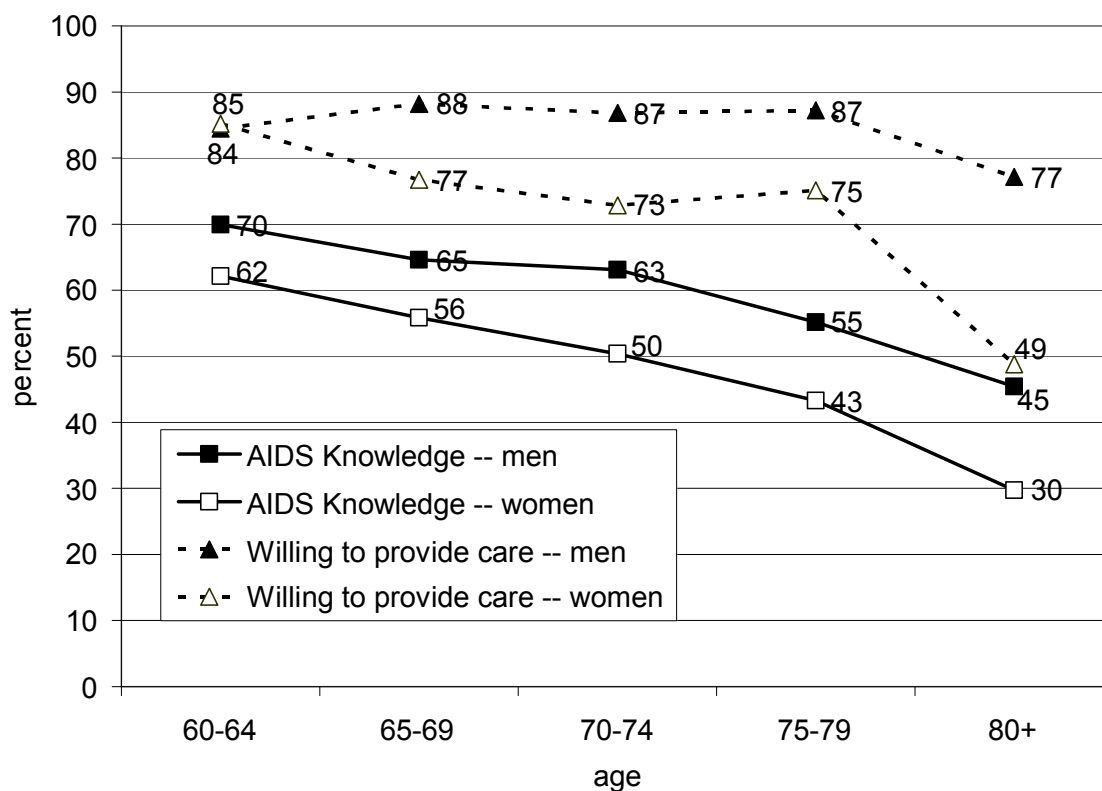
We note that the two surveys are separated by four years and that knowledge and attitudes may have changed during this interval. Presumably knowledge should have increased and thus the lower knowledge of the older women who were interviewed later reinforces the impression that older ages are indeed associated with lower knowledge. In contrast, improving attitudes towards caregiving could possibly help account for the higher levels of willingness among older women found by the SEC compared to reproductive aged women interviewed earlier. We have 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 percent 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 percent of correct answers among men declines from 70 percent for those in ages 60-64 to only 45 percent for men aged 80 and older. For women, the decline is even slightly greater (from an average of 62 to only 30 percent correct answers). Moreover, for every age group, women average fewer correct answers than do men.

The decline in willingness 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 80 and older 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 percent) and thus would have a spouse who can also help while two thirds of the older women are widowed (Knodel et al. 2005). Also women may be more aware than men that even if married most of the caregiving burden is likely to fall on them (Knodel et al. 2006).

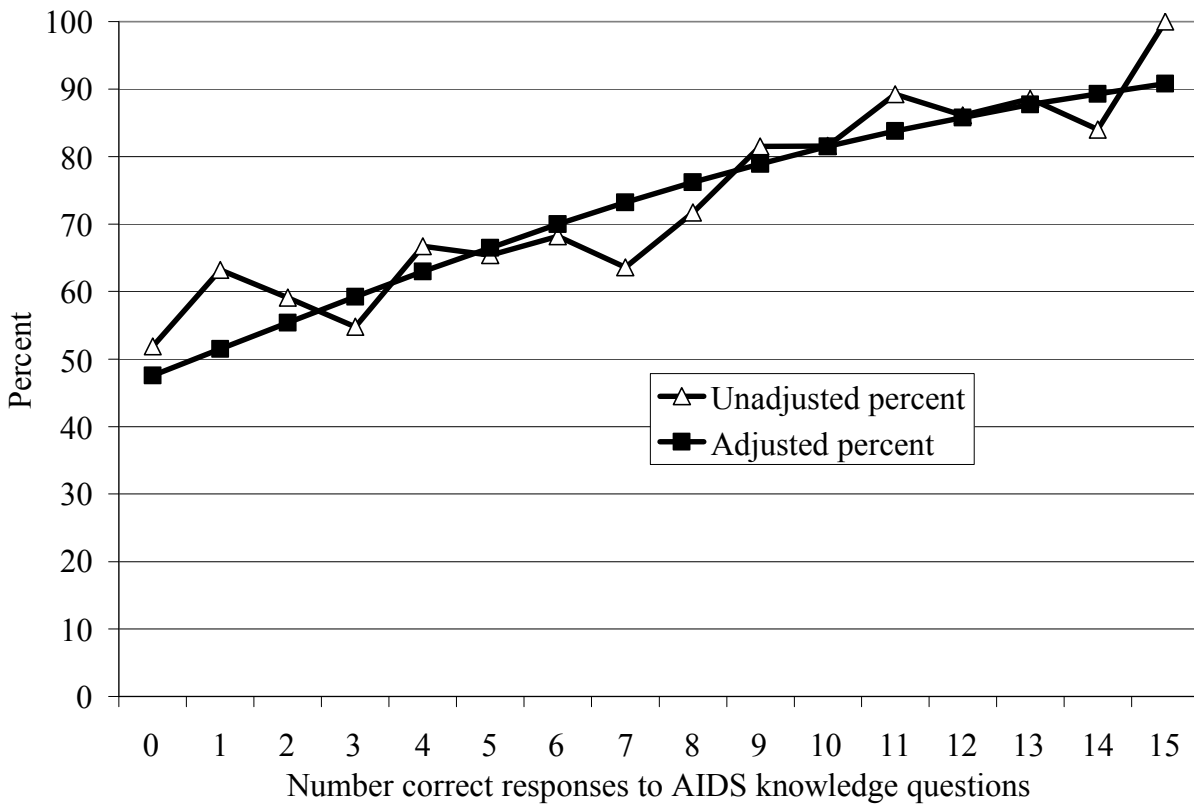
*Caregiving Willingness and AIDS Knowledge.* As already noted, the informal system of caregiving for persons with AIDS in Cambodia depends heavily on older age parents. In many cases, a person with AIDS would have nowhere else to turn if parents were unwilling to take on this responsibility. Results from the SEC indicate that many older Cambodians feel that parents should provide care if a grown child becomes ill with AIDS, especially if the child has no spouse. When asked to whom should a non-married person with AIDS turn for care, 78% of respondents said to parents. Most respondents (70%) said a married person with AIDS should be cared for by the spouse but even for such cases 16% 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% versus 51%) and for married persons with AIDS (18% versus 10%). 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 3. AIDS knowledge (% correct of 15 questions) and percent expressing willingness to provide care if a relative had AIDS, by age and gender, Cambodia, 2004**



In order to assess if knowledge about HIV/AIDS promotes willingness to care for a family member who is ill from the disease, we examine the association between the number of the 15 AIDS knowledge questions answered correctly in the SEC and an affirmative response to the question about willingness. The association is shown in Figure 4. The unadjusted percent is simply based on a bivariate cross-tabulation, and demonstrates the existence of a strong positive relationship. For instance, while about 50% of those who did not answer any question correctly stated a willingness to provide care (N=52), the same is true of about 65% of those answering five questions correctly (N=52), about 82% of those answering ten correctly (N=136) and all of those answering fifteen correctly (N=24). The adjusted percent is 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 does little to alter the strong association between knowledge and willingness to provide care. Using the logistic curve, we predict that a little less than 50% of those without any knowledge, based on the fifteen questions, are willing to provide care other things being equal. This percent rises steadily to about 90% for those with full knowledge.

**Figure 4. Percent willing to care for a person with AIDS by number of correct responses to 15 AIDS knowledge questions**



*Poverty, Media Exposure and AIDS Knowledge.* Table 1 examines potential determinants of AIDS knowledge among older Cambodians as measured by the average percent of knowledge questions answered correctly in the 2004 SEC. In line with our analytical framework, we included the respondent's economic situation and mass media exposure with additional controls introduced for educational attainment, gender, location and age.<sup>8</sup> Since the covariates are correlated among themselves, it is also useful to statistically adjust results to assess the net effect of each. 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.

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, and 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% of the knowledge

questions correctly compared to 63% for those with an above average economic situation. All associations are statistically significant at the .001 level. Values of the Eta statistic indicate the strongest relationships are with education and exposure to radio or television.

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

	Unweighted Number of cases	% of correct answers to 15 questions about HIV/AIDS		
		Unadjusted	Statistically adjusted <sup>(a)</sup>	
			Model 1 (excluding mass media exposure)	Model 2 (including mass media exposure)
<b>Total</b>	1242	57.6	57.6	57.6
<b>Economic situation</b>				
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>		.176	.118	.075
<i>Statistical significance</i>		***	***	*
<b>Exposure to radio/TV</b>				
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>		.322	--	.198
<i>Statistical significance</i>		***	--	***
<b>Education</b>				
no school	699	50.7	54.2	54.7
pagoda only	157	60.0	59.0	58.9
primary	247	68.0	62.7	61.6
beyond primary	139	75.4	65.9	64.9
<i>Eta/Beta</i>		.342	.166	.140
<i>Statistical significance</i>		***	***	***
<b>Gender</b>				
men	453	63.8	61.1	60.1
women	789	53.3	55.2	55.8
<i>Eta/Beta</i>		.203	.113	.083
<i>Statistical significance</i>		***	***	**
<b>Location</b>				
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>		.137	.090	.077
<i>Statistical significance</i>		***	**	*

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

<sup>a</sup>adjusted by MCA (Multiple Classification Analysis)

Significance levels: \* = .05; \*\* = .01; \*\*\* = .001; n.s. = not significant at .05 level; n.a. = not applicable

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 percent of questions correctly answered across categories of each determinant. For instance, when controlling for other covariates, those with a very poor economic situation answer an average of 49% of questions correctly compared to 60% for those with an above average situation, reducing the unadjusted difference of 18 percentage points to 11 percentage points. Still all covariates included except for location remain statistically significant at the .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 .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 Population Division 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 behavior of the risk prone as well as those who are likely to be the caregivers to persons who become ill with the disease. As noted above, older persons in Cambodian (and elsewhere in the developing world) not only are commonly the main caregivers for their sons and daughters who become infected but also have potential to influence their adult children to avoid risk behavior. Thus it is of some concern that we find substantially less knowledge among Cambodian women aged 60 and over interviewed in the 2004 SEC than among reproductive aged women 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%) 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%) 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 caring for their grown sons and daughters with AIDS (Knodel, Zimmer, Kim & Puch 2006). Thus the importance of improving AIDS knowledge among older Cambodians is underscored by our finding that willingness to provide care to a family member increases with the level of correct knowledge. One mechanism likely underlying 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.<sup>9</sup> Also willingness to care is positively associated with the number of the household items that respondents

correctly indicate are safe to share with a person with AIDS (results not shown). Thus older persons not only need correct knowledge about risks inherent in caregiving and how to minimize them but also 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 & 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 reproductive aged women even after the influence of education was taken into account (Bloom et al. 2002). Results from the SEC also find an association between lower economic status and poorer knowledge among older Cambodians net of education. However, our 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% judged as being very poor had a radio or TV in their household compared to 99% 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 neighbor'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 Cambodian government 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). Thus it is not surprising that our research, similar to that in settings as diverse as Thailand and the US, finds knowledge about HIV/AIDS is lower for older persons than younger adults and declines with advancing age among older persons themselves (Im-Em et al. 2002; Leblanc 1993; McCraig & Winn 1991). That this situation should be remedied and that future IEC campaigns on AIDS need to incorporate older persons as part of the target group is particularly true in settings such as Cambodia where older persons play a critical role as caregivers and can potentially influence their grown children's risk behavior.

The significance of our findings may well extend far 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 these countries persons ill with AIDS usually depend on informal care arrangements, typically within the family. Further testing of the associations we find in the current study in other settings around the world is an important task to add to the research agenda. If they confirm, as our Cambodian results indicate, knowledge and awareness about AIDS are related to media exposure, and 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.

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## Endnotes

- <sup>1</sup> Thailand results from original tabulations; for a description of the source see Im-Em et al. 2002.
- <sup>2</sup> Original tabulation from the 2004 Survey of Elderly in Cambodia.
- <sup>3</sup> See National Institute of Statistics (2001) for a description of that survey.
- <sup>4</sup> 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 we treated "depends" as correct.
- <sup>5</sup> The 30 respondents who had never heard of AIDS were treated as not knowing the correct answers to all knowledge questions.
- <sup>6</sup> For both surveys, respondents who said they never heard of AIDS were not asked the knowledge questions. For our knowledge measures, we treat these respondents 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 these respondents gave correct answers to some of 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. To be able to include these respondents in results for both surveys, we adjusted the DHS results by assigning respondents who said they did not know a way to avoid AIDS, and therefore skipped 4 of the 7 common items, the same probability of a correct answer for each of these items as was found for their counterparts in the SEC.
- <sup>7</sup> The questionnaire allowed for an additional top category of well off but since only two respondents were so classified they are combined with the above average category.
- <sup>8</sup> 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.
- <sup>9</sup> For example, according to bivariate Pearson correlation coefficients, willingness to care (coded 0,1) is correlated .280 with the number of correct answers to the four knowledge items dealing with casual transmission compared to .197 with the number of correct answers to the 11 knowledge items not dealing with casual transmission.



**Appendix Table 1. Percent distribution of answers to questions on knowledge regarding HIV/AIDS, 2004 Survey of Elderly in Cambodia**

	Yes	No	depends/ maybe	don't know /not sure	Total
Can AIDS be transmitted through a blood transfusion that includes blood from someone infected by the AIDS virus?	82.8	1.4	1.2	14.6	100
*Can AIDS be transmitted from a mother who is infected to her child during breastfeeding?	82.0	1.9	1.8	14.3	100
*Can AIDS be transmitted from a mother who is infected to her child during pregnancy?	80.0	1.5	3.3	15.2	100
Can AIDS be transmitted by attending the funeral of someone who has died from the AIDS virus?	4.7	76.7	2.8	15.8	100
Can AIDS be transmitted by having sexual relations with a person who has AIDS without using a condom?	75.2	1.6	2.0	21.2	100
Is someone who gives care to a person with AIDS likely to get infected as a result	15.2	49.3	13.8	21.7	100
Is it possible to get a medical test to tell if a person has AIDS?	64.9	1.9	2.6	30.7	100
*Can people protect themselves from getting AIDS by having just one sex partner who has no other partners?	51.6	29.4	5.4	13.6	100
*Can people get AIDS by sharing food with a person who has AIDS?	13.8	57.9	4.2	24.0	100
Can AIDS be transmitted by eating a meal prepared by someone who has the AIDS virus?	14.7	52.5	6.5	26.3	100
*Can people protect themselves from getting AIDS by using a condom every time they have sex?	41.3	19.5	6.4	32.9	100
*Can people get AIDS from mosquito bites?	27.7	37.3	4.6	30.5	100
Are there modern drugs/medicine(s) that can lengthen the life of a person infected with the AIDS virus?	32.0	14.9	1.6	51.5	100
Are there traditional drugs/herbs/concoctions that can lengthen the life of a person infected with AIDS	11.4	31.6	2.2	54.8	100
*Is it possible for a healthy looking person to be infected with AIDS?	22.7	30.5	11.3	35.5	100

\* Indicates questions that were also included in the 2000 Cambodia DHS.

**Appendix Table 2. Percent providing a correct answer to questions on knowledge regarding HIV/AIDS, 2004 Survey of Elderly in Cambodia**

	Total	Age		Gender		Area		Education	
		60-69	70+	men	women	urban	rural	none	some
Can AIDS be transmitted through a blood transfusion that includes blood from someone infected by the AIDS virus?	82.8	88.7	73.8	87.1	79.9	82.6	82.8	79.4	91.7
Can AIDS be transmitted from a mother who is infected to her child during breastfeeding?	82.0	86.6	74.9	88.3	77.7	73.3	83.7	80.0	87.2
Can AIDS be transmitted from a mother who is infected to her child during pregnancy?	80.0	83.9	74.0	85.8	76.0	74.8	81.0	77.6	86.4
Can AIDS be transmitted by attending the funeral of someone who has died from the AIDS virus?	76.7	82.4	68.1	82.8	72.6	77.7	76.5	72.4	88.3
Can AIDS be transmitted by having sexual relations with a person who has AIDS without using a condom?	75.2	83.1	63.3	83.4	69.7	80.2	74.3	71.1	86.2
Is it possible to get a medical test to tell if a person has AIDS?	64.9	71.3	55.1	73.8	58.9	68.4	64.2	59.7	78.8
Is someone who gives care to a person with AIDS likely to get infected as a result	63.1	69.2	53.9	71.5	57.5	76.4	60.5	58.0	76.8
Can people get AIDS by sharing food with a person who has AIDS?	57.9	66.1	45.3	66.2	52.3	73.0	54.9	50.0	79.0
Can people protect themselves from getting AIDS by having just one sex partner who has no other partners?	57.0	59.0	54.1	59.5	55.4	76.2	53.2	51.2	72.6
Can AIDS be transmitted by eating a meal prepared by someone who has the AIDS virus?	52.5	59.4	42.0	61.5	46.5	63.5	50.3	45.9	70.0
Can people protect themselves from getting AIDS by using a condom every time they have sex?	47.7	54.3	37.5	52.6	44.3	65.9	44.0	42.0	62.7
Can people get AIDS from mosquito bites?	37.3	41.2	31.4	42.7	33.7	51.2	34.5	30.0	56.7
Are there modern drugs/medicine(s) that can lengthen the life of a person infected with the AIDS virus?	32.0	36.2	25.5	38.7	27.4	40.7	30.2	26.2	47.5
Are there traditional drugs/herbs/concoctions that can lengthen the life of a person infected with AIDS	31.6	33.6	28.5	37.4	27.7	39.4	30.0	28.1	40.9
Is it possible for a healthy looking person to be infected with AIDS?	22.7	26.6	16.7	26.1	20.3	32.7	20.7	19.6	30.8



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Population Studies Center  
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PO Box 1248, Ann Arbor, MI 48106-1248 USA  
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