LIVING ARRANGEMENTS AND THE HEALTH OF OLDER PERSONS IN DEVELOPING COUNTRIES: EVIDENCE FROM RURAL BANGLADESH

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SUMMARY

Background

There is very little information about the impact of living arrangements on patterns of morbidity for older adults in developing countries. The present study uses newly collected comprehensive data to examine the impact of living arrangements (particularly the presence of various family members) on self-reported general health and limitations in activities of daily living for older adults aged 50 and over in rural Bangladesh.

Methods

In 1996, the Matlab Health and Socio-economic Survey collected data on self-reported general health status and limitations in a variety of self-reported activities of daily living (ADLs) for 1,891 men and women aged 50 and older in the Matlab surveillance area in rural Bangladesh. Logistic regression is used to examine the impact of living arrangements as operationalized by the co-residence of a spouse and, in the case of older women, co-residence of a spouse and sons, on both self-reported general health and self-reported ADLs, controlling for age, education and household assets.

Results

For older men, controlling for age, education and household assets, a co-resident spouse does not have any impact on self-reported general health or on self-reported ADLs. On the other hand, for older women, a co-resident spouse has a significant positive impact on self-reported general health but not on ADLs. The presence of co-resident sons does not seem to have any impact on the self-reported general health or ADLs of older women.

Conclusions

The gender difference in the impact of spouses on self-reported general health is consistent with the notion of spouses being more important for older women than for their male peers in a social setting where women have

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limited access to resources. These cross-sectional results need to be viewed with some caution because co-resident spouses appear not to impact on ADLs for both older men and women, and earlier longitudinal prospective mortality studies in the same study population show that the impact of spouses is greatest for older men and is mixed for older women in terms of mortality. These discrepancies reflect either differences owing to variations in study design or differences in various dimensions of health status. They help underscore the complex dynamics of the relationship between living arrangements and the health status of older persons in developing countries.

INTRODUCTION

A number of studies in the developed world have demonstrated that living arrangements as primarily operationalized as the presence or absence of a spouse have a significant impact on the mortality of older individuals, with the currently married having a significant survival advantage relative to their non-currently married peers. Moreover, once access to financial resources is controlled for, the absence of a spouse affects older men more than older women (Seeman and others, 1987; Bowling, 1987; Kaplan and others, 1988; Trovato and Lauris, 1989; Hu and Goldman, 1990; Ross, Mirowski and Goldstein, 1990; Lillard and Waite, 1995). In keeping with the mortality studies, there have also been a number of studies in Europe and the United States of America that have by and large documented higher levels of morbidity for non-currently married individuals compared to their currently married peers, with some differences by type of non-marriage (i.e., never married, widowed, divorced or separated) (Wyke and Ford, 1992; Goldman, Korenman and Weinstein, 1995; Glaser and Grundy, 1997). In general, these studies have shown that widowed individuals have poorer health than do the currently married, with differences being greater for men than for women, and at younger ages. Moreover, in these studies, both divorced men and women report poorer health than do the currently married, while for the never married, only single men report worse health than their married counterparts, but not single women. While the overall trend in the literature has been to document greater morbidity for the non-currently married compared to the currently married, with men suffering more than women, as in the case of the mortality studies, a recent report from the United Kingdom (Arber and Cooper, 1999) was unable to demonstrate any significant impact of marital status for either men or women on morbidity as measured by self-reported poor general health or reported limitations in activities of daily living.

In contrast to the developed world, relatively little is known about mortality and morbidity (especially the latter) for the elderly in the developing world, and even less about how they are impacted by living arrangements and gender differences therein (Martin, 1990; Feachem and others, 1992; Rahman, Menken and Foster, 1992). A priori one could hypothesize that, given differences between the developed and developing world in the nature of social and kin networks (e.g., the importance of patriarchal kin relationships) and in women's access to resources (i.e., the lack of economic opportunities and the greater dependence of women on primary male relatives for economic support in the developing world), the absence of a spouse would have a greater negative impact on the

health and survival of older women than men in the developing world (Cain, 1984, 1986; Ellickson, 1988; Martin, 1990; Rahman, Menken and Foster, 1992; Rahman, 1997).

With regard to mortality, a series of well-controlled longitudinal prospective studies from rural Bangladesh have demonstrated somewhat complex and nuanced results. While all of the studies have unequivocally shown that non-married older males have significantly higher mortality than do their married peers (Rahman, 1997, 1999a, 1999b), the picture with respect to older women is less clear-cut. In some of the research, older non-married women do not have higher mortality than their currently married peers (Rahman, 1999a), while in other studies, the level of mortality disadvantage is strongly related to the degree of decline in economic status suffered as a result of widowhood or divorce, with some women suffering a lot and others hardly at all (Rahman, 1997; Rahman, Menken and Foster, 1992). By and large, the older the woman, the less impact the loss of a spouse has on her mortality. In addition to spouses, recent evidence suggests that other family members, such as sons and brothers, play an important but complex role in affecting the survival of older individuals in the developing world, and it is the existence of family members rather than their proximity to the older individual that determines the impact (Rahman, 1999a).

Until recently, owing to the absence of large-scale population-based data on morbidity, parallel analyses of the impact of living arrangements on morbidity in the developing world and gender differences therein have not been readily available. The present analysis uses newly collected comprehensive data from a surveillance population in rural Bangladesh (Rahman and Liu, 1999; Rahman and others, 1999) to examine the impact of living arrangements on self-reported general health and self-reported difficulties in activities of daily living among older adults aged 50 years and over.

DATA, VARIABLES AND METHODS

Study population

The data for the present analysis come from the Matlab Health and Socio-economic Survey, which, in 1996, collected a comprehensive set of health and socio-economic information on approximately 11,190 individuals aged 15 and over in 4,536 households who were part of an ongoing surveillance population in rural Bangladesh (Rahman and others, 1999). The Matlab data have been used extensively in the demographic literature and are considered to be among the few high-quality (i.e., complete, accurate and up to date) data sources in the developing world. In particular, age reporting is considered to be highly accurate, a feature not found in other South Asian data sources (Menken and Phillips, 1990; Rahman, Menken and Foster, 1992; Rahman and others, 1999).

The present analysis focuses on 1,891 respondents aged 50 and above (981 males and 910 females) who answered questions on self-reported general health status and self-reported limitations in activities of daily living. There are three separate clusters of self-reported ADLs (gross mobility limitations, range of motion and personal care, which are described below).[1]

Variable measurement

All respondents to the Survey were asked to rate their general health status ("What is your current health status?") as "excellent", "good" or "poor". This three-level variable has been dichotomized for the purposes of the present analysis into poor general health status (coded as 1) and non-poor general health status (coded as 0). It is worth noting that several studies have shown reported poor general health to be a good predictor of mortality (Mossey and Shapiro, 1982; Idler and Benyamini, 1997).

A number of researchers have suggested that self-reports of limitations in activities of daily living are less subject to reporting bias than are self-reports of general health, and are good indicators of underlying functional disabilities (Rosow and Breslau, 1969; Katz and others, 1970; Nagi, 1976; Guralnik and others, 1989; Elam and others, 1991; Gijsbers van Wijk and others, 1991; Kelly-Hayes and others, 1992; Merrill and others, 1997). In the Survey, information is available on limitations in 13 separate ADL items, which (following Merrill and others, 1997) are divided for the present analysis into three different clusters: (a) limitations in personal care—four items; (b) gross mobility limitations—three items; and (c) range of motion limitations—six items. In the questionnaire, each ADL item has a three-level score: "can do on their own easily" (scored as 1); "can do on their own with difficulty" (scored as 2); and "unable to do on their own" (scored as 3). For the purposes of this analysis, the three-level score for each ADL item has been initially collapsed into a dichotomous measure: (a) can do on their own easily (scored as 1); vs. (b) can do with difficulty or unable to perform the activity (scored as 0).

Limitations in personal care are ascertained using a modified version of the Katz ADL (Katz and others, 1970) and include ability to: (a) bathe; (b) dress; (c) get up and out of bed; and (d) use the toilet. For the present analysis, the dichotomous item measures for each of the four personal care items were summed to construct an aggregate personal care limitation score ranging from 0 to 4. This aggregate score was then dichotomized into: (a) can do all four items easily (scored as 0); vs. (b) can do with difficulty or unable to do one or more items (scored as 1).

Gross mobility limitation items include ability to (a) walk one mile; (b) use a ladder to climb to a storage place at least five feet in height; and (c) sweep the floor or courtyard. These items were adapted to the local conditions of rural Bangladesh from an instrument developed by Rosow and Breslau (1969). For the present

analysis, the dichotomous item measures for each of the three gross mobility items were summed to construct a gross mobility limitation summary score ranging from 0 to 3. This summary score was then dichotomized into: (a) able to do all three items easily (scored as 0); vs. (b) able to do with difficulty or unable to do one or more items (scored as 1).

Range of motion limitation items include ability to: (a) carry a 10 kilogram weight for 20 yards; (b) use a hand pump to draw water; (c) stand up from a squatting position on the floor; (d) sit in a squatting position on the floor; (e) get up from a sitting position on a chair or stool without help; (f) crouch or stoop. These items were adapted from an instrument developed by Nagi (1976) and adapted to the local conditions of rural Bangladesh. For the present analysis, the dichotomous item measures for each of the six range of motion items were summed to construct an aggregate range of motion limitation score ranging from 0 to 6. This summary score was then dichotomized into: (a) able to do all six items easily (scored as 0); vs. (b) able to do with difficulty or unable to do one or more items (scored as 1).

Methodology

It is important to note that respondents reported on in the present analysis were selected in a multi-stage sampling scheme (Rahman and others, 1999). In 1996, the Matlab surveillance area consisted of approximately 200,000 individuals living in about 40,000 households, which were clustered in about 7,440 residential compounds known as *baris* varying from 1 to 26 households. From the computerized population lists of the Matlab surveillance area, the Survey in the first stage selected 2,687 *baris* or household clusters randomly. Within each *bari*, one household was selected at random. In *baris* where there were more than one household, a second household was selected purposively on the basis of relationship to the head of the first selected household. Within each selected household, all individuals aged 50 and over were chosen for interview. For those below age 50, a complex set of decision rules was used to choose respondents.

The present analysis is restricted to 1,891 individuals aged 50 and over chosen from the randomly selected first-pick households in 2,687 *baris*. As all individuals aged 50 and over in the households were selected for interview, the only adjustments required are those for the probability of the *bari* and the household being selected. For the bivariate results (see tables 1, 2 and 3), the actual unweighted figures (for the number of respondents and the percentages reporting limitations in general health and ADLs) are reported. It should be noted that weighted bivariate analyses have been done and do not show any differences from the unweighted bivariate analyses. For the multivariate analyses, the binary logistic regression results shown are those estimated after appropriate adjustments were made for the multistage sampling scheme.

Results

Table 1 shows some general descriptive characteristics for older adults in our study population in rural Bangladesh. There are marked gender differences in marital status, educational status and ownership of assets, with older women being much more likely than older men to be not currently married, to have no education and to own less than or equal to $20 dollars worth of assets. In this study, individual access to financial resources was measured by summing the estimated monetized value of a number of assets that were singly or jointly owned (including land, jewelry, bicycle, watch, radio etc.).

(TABLE 1 HERE)

With regard to ownership of assets (results not shown in table), among older males aged 50 and over, the non-married are more likely to have less than $20 dollars worth of assets than are their currently married peers (20 per cent or 12/60 vs. 5 per cent or 45/921). However, among older females, there is no difference in asset ownership by marital status (59 per cent or 294/500 vs. 59 per cent or 244/410). With regard to educational attainment, among older males, there is no difference by marital status (45 per cent of each marital group have no education). However, among older females, the non-married are more likely to have no education than are their currently married peers (83 per cent or 341/410 vs. 76 per cent or 378/500).

Table 2 shows differences in self-reported general health status stratified by age group and marital status for men and women aged 50 and over. For both older men and older women, non-married individuals aged 50 and over taken as a group are more likely to report poor general health relative to their married counterparts. However, once one stratifies by age, these marital status differences by and large disappear. Moreover, older women as a whole are more likely to report poor general health than are older men (42 per cent vs. 32 per cent) (results not shown in table 2).

(TABLE 2 HERE)

Table 3 shows differences in ADL limitations for men and women stratified by 10-year age intervals. As in the case of self-reported general health, older women are significantly more likely to report limitations than are their male counterparts in each ADL item and each of the three summary ADL categories. For the summary categories, the disparity is greatest for the gross mobility limitation ADL scores (75.9 per cent of women vs. 38.4 per cent of men having difficulty or unable), and the smallest for the personal care ADLs (19.9 per cent of women vs. 10.6 per cent of men having difficulty or unable).

(TABLE 3 HERE)

With regard to marital status differences (results not shown in table 3), for both older men and older women aged 50 and over as a group, the non-married report a higher frequency of ADL limitations than do their currently married peers. The relevant figures (non-married vs. currently married) are (a) summary range of motion limitations: males (67 per cent vs. 37 per cent); females (79 per cent vs. 67 per cent); (b) summary gross mobility limitations: males (60 per cent vs. 37 per cent); females (82 per cent vs. 71 per cent); and (c) summary personal care limitations: males (19 per cent vs. 10 per cent); females (29 per cent vs. 13 per cent). It should be noted, however, that once these figures are adjusted for the higher ages of the non-married, the marital status differences in ADL limitations disappear.

Table 4 shows results (separately for men and women) from sequential binary logistic regressions examining the impact of marital status on poor general health status, adjusting for the addition of various controls. For older women, in model 1, the results indicate that controlling for age (measured in calendar years), non-currently married women (the vast majority of whom are widowed) in this study population are significantly more likely to report poor general health than are their currently married counterparts (odds ratio of non-married vs. married = 1.5). In models 2 and 3, additional controls for education and household assets do not appreciably change the impact of marital status on poor general health (odds ratio of married vs. non-married changes from 1.5 to 1.49). Finally, in model 4, introducing further controls for number of co-resident sons does not change the impact of marital status on poor general health for older women (odds ratio of married vs. non-married remains at 1.49 (95 per cent C. I. of 1.00-2.22).

(TABLE 4 HERE)

For older men, in model 1, the results indicate that non-currently married men are no more likely to report poor general health than are their currently married peers. This lack of impact of marital status on poor general health is not affected by the addition of controls for education and household assets in models 2 and 3, respectively (odds ratio of married vs. non-married = 0.98 (95 per cent C. I. of 0.48-2.02).

Table 5 shows results (for men and women separately) from logistic regressions examining the impact of marital status on three different categories of ADL limitations (personal care limitation, gross mobility limitation, and range of motion limitation), controlling for age, education, household assets and (for women, the presence of co-residential sons). In no case is there a statistically significant impact of marital status on any of the ADLs. It should be noted that sequential models were run and no impact was found for marital status on ADL limitations once controls were added for age (results not shown in table 5).

(TABLE 5 HERE)

Discussion

The fact that older non-currently married women report worse general health status than do their married peers in rural Bangladesh mirrors the bulk of the findings on this issue from Europe and the United States. These results also fit with earlier longitudinal research in the same study population that shows that non-married older women have higher mortality than do their married peers (Rahman, Menken and Foster, 1992; Rahman, 1997, 1999b). However, these results are somewhat at odds with other longitudinal research that show that the absence of a spouse does not have any impact on mortality for older women (Rahman, 1999a). An explanation for this discrepancy may lie in the fact that cross-sectional differences in health status between married and non-married women reflect health conditions that cause distress but do not affect mortality (e.g., migraine and arthritis). A number of studies have suggested a similar explanation for the paradox of high female morbidity coupled with low female mortality relative to men (Wingard, 1984; Verbrugge and Wingard, 1987; Kandrack, Grant and Segall, 1991). The discrepancy between the self-reported general health results and the ADL results (the latter showing no impact of marital status) also suggests that the different measures of health status are tapping into different dimensions of health and that ADLs may be more reflective of mortality risks than self-reported general health.

There are a number of possible explanations that one can invoke to understand why the presence of a spouse may be associated with better health for older women, even though, as discussed above, it may not lead to better survival. These explanations fall into two conceptually different approaches to understanding the association between marital status and health. The first and most often cited approach posits a so-called "protective effect", that is having a spouse is deemed to directly cause an improvement in one's health, which is mediated through a variety of proximate factors such as increased access to financial resources, improved caregiving, emotional buffering, better diet and less risk-taking behaviour (Bowling, 1987; Ross, Mirowski, Goldstein, 1990). The second explanation posits a "selection effect", whereby one's marital status per se does not have any causative impact on one's health (Goldman, 1993; Rahman and others, 1994; Goldman, Korenman and Weinstein, 1995). Instead, the association between marital status and health status is merely a marker of some underlying process by which intrinsically healthier people, for example, may be more likely to be currently married. This distinction between "protection" and "selection" has bedevilled the interpretation of associations between marital status and heath (particularly cross-sectional comparisons) and the resolution of this debate relies at least partially on detailed longitudinal data on early health prior to marriage, which is most often not available.

From the protective effect point of view, as commented on above, one of the more obvious explanations for why non-married older women have worse health than their married peers is that the non-married have decreased access to financial resources. This is thought to be particularly true in a setting such as rural Bangladesh, where

women have limited economic mobility and are dependent on their husbands and sons primarily for economic support (Cain, 1984, 1986; Ellickson, 1988). Thus, loss of a husband may result in a decrease in the availability of financial resources. The decrease in financial resources associated with the loss of a husband may come about in two ways, directly and indirectly. The direct consequence would be from the loss of the income-generation capability of the husband. The indirect adverse consequence would be in the diminution of the receipt of resources from other earning household members, typically sons. In the social setting of rural Bangladesh, where sons often live together with parents and contribute financially to the joint household income, the death of a father usually precipitates household splitting and the resultant loss of income from the son who moves away (Aziz, 1979; Foster, 1993). Regardless of how the decrease in financial resources occurs, it is hypothesized to lead to poorer health. The potential mechanisms include decreased access and use of health-care services, worse nutrition and lifestyle and increased environmental and occupational hazards (Ross, Mirowski and Goldstein, 1990; Wyke and Ford, 1992).

In the present study, an individual woman's access to financial resources is proxied in two ways, first by household asset ownership, and second by the presence of co-residential sons. Our results show that, having less than or equal to US$20 worth of household assets is not a statistically significant predictor of poor general health (controlling for age and marital status) and, moreover, does not account for any of the marital status difference in health. The fact that asset ownership does not have a significant impact on general health status in this population may be explained by the fact that the measured assets are relatively long term and not very liquid (i.e., they cannot easily be transformed into cash to be used for health services, medication or nutritional needs) and thus do not quite capture the availability of financial resources at the individual level. Moreover, controlling for the number of sons co-resident in the household also does not account for any of the marital status differences in self-reported general health among older women. Parenthetically, it should be noted that the number of co-resident sons does not have any impact on an older woman's health status. The lack of impact of co-resident sons on marital status differences in self-reported general health and, indeed, on the health status of older women is broadly consistent with earlier longitudinal research on mortality that showed that non-co-resident sons may be just as important as co-resident sons and that proximity does not necessarily confer any particular advantage. The lack of impact of proximity is due to two possible reasons: the first is that there may be a selection effect, whereby sick mothers move in with sons and healthy mothers do not. The second reason is that if remittances of income are the mechanism by which sons improve their mother's health, distant sons (for example, living in the city where there are more income-earning opportunities) may be better able to impact their mother's health than co-resident sons in a stagnant village economy.

As discussed above, the association between marital status and health may reflect the possibility that currently married older women in this social setting are intrinsically in better health than are their non-married peers. In this traditional rural society, where near-universal marriage is the norm, and divorce is rare, the essence of this

argument is that intrinsically healthier women are less likely to become widowed and the difference in reported health status by marital status among older women reflects differences in underlying early health prior to marriage, which has nothing to do with their current marital status. To test this proposition, one should ideally have some marker for early health, that is, health prior to marriage. In the absence of such data, educational attainment (which is completed prior to marriage) may be a crude but effective proxy to the extent that higher educational attainment prior to marriage reflects better health prior to marriage. While individual educational attainment significantly reduced the risk of mortality, it did not account for any of the marital status differences in health.

Thus, the present study provides little support for either protective effects (e.g., changes in financial resources) or selective effects (early educational attainment) in understanding the mechanism by which the absence of a spouse among older women is associated with poorer general health.

As to the case of older men in the study population, the present analysis shows that, among older men, marital status does not affect self-reported general health status or ADL limitations. This result is somewhat puzzling as it is at odds with earlier longitudinal work in this population (Rahman, 1997, 1999a, 1999b) and in Europe and North America, which clearly demonstrates that older men without spouses are at a significantly increased risk of dying relative to their currently married counterparts (Bowling, 1987; Ross, Mirowski and Goldstein, 1990). It is also at odds with evidence from several studies in the developed world that have documented increased morbidity for older non-married men (particularly widowers) compared to their currently married peers (Wyke and Ford, 1992; Goldman, Korenman and Weinstein, 1995; Glaser and Grundy, 1997). One possible explanation for this disjunction in results between the cross-sectional and the longitudinal studies may be related to differential mortality selection by marital status. The thinking here is that we can only observe individuals who have survived to enter our study. Thus, if sick non-married younger men die earlier than their sick married counterparts (presumably owing to differences in caregiving), one is left with a residual pool of fairly robust non-married older men. In a cross-sectional comparison such as the one reported on in the present study, this differential mortality by marital status would artefactually decrease the morbidity differences between currently married and non-married older men (Rahman and others, 1994; Goldman, Korenman and Weinstein, 1995; Rahman, 1999a). Another possibility (though less likely) is that health conditions that would lead to higher mortality for one group may not be manifested in symptoms that would be differentially reported. Thus, for example, if the bulk of old-age mortality is from conditions that have relatively few preceding symptoms, one may not observe differences in self-reported health.

As the above discussion suggests, there appears to be a complex dynamic relationship between living arrangements and health status, with differences by gender, by the outcome measure of health (morbidity vs. mortality and different measures of morbidity), by various measures of living arrangements (i.e., spouses vs. sons) and by study design (cross-sectional vs. longitudinal). Moreover, the possible mechanisms by which living

arrangements may affect health status remain thus far unelucidated. Further progress in this line of inquiry requires more detailed information on a variety of measures of health status (both self-reported and measured), indicators of early health, the ability to track both changes in living arrangements (e.g., by the presence of various co-residential family members) and health status over time, and better measures of access to financial resources and changes in caregiving.

NOTES

[1]For one of them (gross mobility limitations), the data set has information on nearly the full complement of 1,891 individuals (i.e., 1,887 subjects). For the second (range of motion) and third (personal care), however, owing to interviewer misinterpretation, there is missing information on specific items and complete data are available for only 1,813 of the 1,891 eligible respondents. The 78 individuals for whom ADL data are missing on specific items have been analysed and found to be no different from the rest of the 1,813 in terms of age, gender and other self-reported health status measures.

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TABLE 1. DESCRIPTIVE CHARACTERISTICS OF OLDER ADULTS IN RURAL BANGLADESH

Males				*Females*			
Percentage with different characteristics				*Percentage with different characteristics*			
Age category	*Ncmar*[a]	*noedu*[b]	*<=$20 asset*[c]	*Age category*	*ncmar*[a]	*noedu*[b]	*<=$20 asset*[c]
50-59 n=411	1[d]	42[d]	5[d]	50-59 n=520	30	75	56
60-69 n=375	6[d]	49[d]	5[d]	60-69 n=283	55	80	61
70-79 n=162	16[d]	46[d]	6[d]	70-79 n=76	89	93	67
80-95 n=33	21[d]	51[d]	18[d]	80-95 n=31	100	100	74
Total n=981	6[d]	46[d]	6[d]	Total n=910	45	79	59

[a]Not currently married.
[b]Never had formal schooling.
[c]Owns less than or equal to US $20 worth of assets, either singly or jointly.
[d]Gender difference significant at the 5 per cent level.

TABLE 2. DIFFERENCES IN SELF-REPORTED POOR GENERAL HEALTH FOR OLDER ADULTS IN RURAL BANGLADESH

	Male		*Female*	
Age category	*Currently married*	*Not currently married*	*Currently married*	*Not currently married*
50-59	n=407 % in ph, 23	n=4 % in ph, 25	n=364 % in ph, 35	n=156 % in ph, 37
60-69	n=352 % in ph, 33	n=23 % in ph, 35	n=128 % in ph, 44	n=155 % in ph, 50
70-79	n=136 % in ph, 45	n=26 % in ph, 42	n=8 % in ph, 50	n=68 % in ph, 56
80-95	n=26 % in ph, 58	n=7 % in ph, 100[a]	n=0 % in ph, not applicable	n=31 % in ph, 74
Total[a]	n=921 % in ph, 31	n=60 % in ph, 45[a]	n=500 % in ph, 37	n=410 % in ph, 48[a]

Notes: % in ph = percentage in poor general health.
[a] Marital status difference significant at the 5 per cent level.

TABLE 3. SELF-REPORTED ADL LIMITATIONS FOR OLDER ADULTS IN RURAL BANGLADESH

ADL limitations	*Men*		*Women*	
	Number	*Percentage*	*Number*	*Percentage*
Personal care items (percentage having difficulty or unable) (n=1,811)	937		874	
Bathing	85	9.1	148	16.9[a]
Dressing	52	5.6	93	10.6[a]
Getting up and out of bed	61	6.5	131	14.9[a]
Using the toilet	68	7.3	106	12.1[a]
Percentage having difficulty or unable to do one or more items	99	10.6	175	19.9[a]
Gross mobility items (percentage having difficulty or unable) (n=1,812)	938		874	
Walk one mile	291	31.1	607	69.1[a]
Use a ladder to climb at least five feet in height	251	26.8	479	54.6[a]
Sweep the floor or courtyard	267	28.5	499	56.8[a]
Percentage having difficulty or unable to do one or more items	359	38.4	667	75.9[a]
Range-of-motion items (percentage having difficulty or unable) (n=1,891)	981		910	
Carry 10 kg weight for 20 yards	336	34.4	629	69.1[a]
Use a hand pump to draw water	246	25.2	507	55.7[a]
Stand up from a squatting position on the floor	131	13.4	245	26.9[a]
Sit in a squatting position on the floor	157	16.1	295	32.4[a]
Stand up from sitting on a chair or stool	113	11.6	221	24.3[a]
Crouch or stoop	175	17.9	321	35.3[a]
Percentage having difficulty or unable to do one or more items	378	38.7	660	72.5[a]

[a] $P<0.001$ in chi-square tests of gender differences.

TABLE 4. ODDS RATIOS OF POOR GENERAL HEALTH FOR OLDER MEN AND WOMEN IN RURAL BANGLADESH

	Males			*Females*			
	Model 1	*Model 2*	*Model 3*	*Model 1*	*Model 2*	*Model 3*	*Model 4*
Variables							
Not currently married	0.99 ns [0.48--2.01]	0.96 ns [0.47--1.96]	0.98 ns [0.48--2.02]	1.50 [a] [1.00--2.23]	1.49 [a] [1.00--2.22]	1.49 [a] [1.00--2.22]	1.49 [a] [1.00--2.22]
Age in years	1.05 [a] [1.03--1.08]	1.05 [a] [1.03--1.08]	1.05 [a] [1.03--1.08]	1.03 [a] [1.01--1.06]	1.03 [a] [1.00--1.05]	1.03 [a] [1.01--1.05]	1.03 [a] [1.01--1.05]
No education	--	1.80 [a] [1.22--2.67]	1.80 [a] [1.22--2.67]	--	1.77 [a] [1.13--2.80]	1.78 [a] [1.13--2.81]	1.78 [a] [1.13--2.83]
<= $20 dollars of assets	--	--	0.92 ns [0.42--2.04]	--	--	0.98 ns [0.67--1.43]	0.98 ns [0.67--1.43]
# co-resident sons	not applicable	not applicable	not applicable	--	--	--	1.00 ns [0.85--1.18]
# parameters	2	3	4	2	3	4	5
-2 log likelihood	1 201.9	1 184.1	1 184.0	1 204.28	1 194.6	1 194.6	1 194.6
n	980	980	980	909	909	909	909

Notes:
ns = not statistically significant.
[ ] = 95% C.I.
[a] P< = 0.05.

TABLE 5. ODDS RATIOS OF ACTIVITY OF DAILY LIVING LIMITATION FOR OLDER ADULTS IN RURAL BANGLADESH

	Personal care limitation		*Range of motion limitation*		*Gross mobility limitation*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*
Variables						
Not currently married	0.42 ns [0.16--1.15]	1.40 ns [0.80--2.45]	1.54 ns [0.72--3.33]	0.86 ns [0.54--1.38]	1.55 ns [0.73--3.31]	0.91 ns [0.55-1.52]
Age in years	1.12[a] [1.08--1.16]	1.08 [a] [1.05--1.12]	1.12 [a] [1.09--1.15]	1.12 [a] [1.08--1.17]	1.12 [a] [1.08--1.15]	1.12 [a] [1.06--1.14]
No education	1.17 ns [0.63--2.17]	0.94 ns [0.44--2.01]	1.40 ns [0.94--2.07]	0.92 ns [0.54--1.58]	1.21 ns [0.81--1.82]	1.19 ns [0.68-2.07]
<= $20 dollars of assets	0.70 ns [0.27--1.82]	1.09 ns [0.63--1.89]	0.63 ns [0.29--1.37]	1.47 ns [0.93--2.31]	0.61 ns [0.27--1.40]	1.29 ns [0.80-2.10]
# of co-resident sons	not applicable	0.88 ns [0.71--1.09]	not applicable	0.84 ns [0.70--1.00]	not applicable	0.84 ns [0.70-1.01]
# parameters	4	5	4	5	4	5
-2 log likelihood	538.0	782.2	1 114.1	936.5	1 079.1	853.5
n[b]	936	873	980	909	937	873

Notes:
ns = not statistically significant -- P>0.05.
[ ] = 95 % C. I.
[a]P< = 0.05
[b]The different figures for the various ADLs reflect the different numbers of respondents aged 50 years and above who had valid responses for the questions.