WHAT MAKES THEM FEEL HEALTHIER? THE CORRELATES OF SELF-PERCEIVED HEALTH AMONG OLDER ADULTS IN INDIA

Sanjeev Bakshi and Shailendra Kumar Mishra

ABSTRACT

The physical, mental and social well-beings constitute the health of individuals in a population. For the populations passing through demographic transition, life expectancies at various ages show an increasing trend over time. To ensure healthy ageing of such populations, the later part of the life should be free from chronic diseases and impairments. In this context, the prevailing health scenario is best measured in terms of disease and disability free life expectancies. The number of diseases and impairments one suffers gives an account of his/her overall health. Besides these objective measures of health, self-perceived health (also called self-reported health) has received due attention in recent literature. This is due to its strong association with the life expectancy on one hand and with the future state of health on the other. Moreover, including self-perceived health (SPH) in accounting for an individual's health is akin to giving him/her a say in his/her assessment of own health. Furthermore, it is opined that SPH captures those hidden aspects of health that go unnoticed otherwise. The present study investigates the socioeconomic factors associates with the SPH for the older adults in India. Data pertaining to two sample surveys with a country-wide coverage (the 52nd and the 60th round of the National Sample Survey) of the older adults have been used of for this purpose. SPH is usually measured on a 3-5 points ordinal scale in a relative perspective (comparing the present state of health with the state of health in an earlier reference period) or in a global perspective (absolute statement about the present state of health). The present study models the SPH (in a global perspective), measured on a 3-points ordinal scale, for its association with the immediate socioeconomic environment of the older adults using an ordinal logit regression model. The immediate socioeconomic environment of an older adult consists of the living arrangements, financial dependence, marital status, number of children, economic status of the household, caste, religion and the geographic region. Further, these associations have been studied after controlling for the objective measures of health *i.e.* the diseases, the impairments, the immobility and the relative state of health. The results indicate that the objective measures of health (the severity of immobility, the number of impairments and the number of diseases) and the relative change in the state of health during past one year contribute maximum to

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the information on the perception of the present state of health. This is quite obvious. Although, the information provided by immediate socioeconomic environment is lesser, it is not insignificant. SPH was found better for more educated older adults. The financial dependence and poor status of the household reduce the chances of better SPH. On the other hand co-residence and large sized households increase the chances of better SPH. The older adults in rural areas are less likely to perceive a better health status when compared to their urban counterparts. It is quite obvious from the findings that SPH, which is an indicator of the future state of health, is found to be associated not only with the present state of health but also with the prevailing socioeconomic conditions of the older adults. The solution to better health, thus, has socioeconomic components that need appropriate and timely redress.

Keywords: older adults, self–perceived health, social determinants of health, India

INTRODUCTION

Human beings age and so do their populations. An ageing population is characterized by an increasing proportion of the older adults in the population. Unlike the non-older adults, most of the older adults are retired from active economic life, their marital status is at the risk of changing from married to widowhood and they may be dependent on others for care and sustenance (Netuveli and Blane, 2008). Further, prevalence of chronic health conditions is common among the older adults(Idler and Benyamini, 1997; Hoeymans *et al.*, 1997). Among older adult populations, process of demographic transition infuses health transition which is predominated by chronic diseases. These changes have a profound impact on the quality of life of the older adults (Bailis *et al.*, 2003; Babones, 2009). Health being one of the salient integrands of the quality of life is affected by the socioeconomic environment of the older adults (Herd *et al.*, 2008; Giordano and Lindstrom, 2010).

Health as such is a multidimensional concept however the definition given by the World Health Organization that incorporates into health the physical, the mental and the social well-being (WHO, 1999) serves the purpose well. In addition to the definition aggregate measures of health like life expectancies at various ages, the disease free and disability free life expectancies are often used to describe the health conditions prevailing in a population. At the micro level the health of an individual can be assessed by the number of diseases and impairments he/she suffers from. Added to these the self-perception about one's health has also attracted attention in recent literature on health. It is a subjective measure of health if compared with disease and disability free life expectancies. However, its use remained limited owing to several reasons. Person's own perception of his/her health could not get due importance in health studies despite its strong association with the future mortality (Idler and Benyamini, 1997; Bond *et al.*, 2006; Huisman and Deeg, 2010) and future functional status (Mandebacka *et al.*, 2003; Jylhä, 2009).

Self perceived health is a simple to measure yet it has been criticized for being culture specific (Mossey and Shapiro, 1982; Liu and Zhang, 2004). Each person has a different frame of reference while evaluating his/her health status. Nevertheless, a universally consistent relationship is found between lower health status and high

risk of future mortality.According to Jylhä, (2009) the SPH is "crossroad between the social world and psychological experiences on one the hand and the biological world on the other."

The social conditions prevailing at childhood also affect perception about health at older ages (Nicholson, 2005).

Only few studies are carried out pertaining to social aspects associated with the health of older adults (Sudha *et al.*, 2006). The studies on their self-perceived health are scarce. Considering the increasing share of older adults in the demographic space of India, studies on their health status and well-being are warranted (Netuveli and Blane, 2008). It is obvious that perceptions regarding health are modeled by the present state of physical health. Never the less, such studies are of potential interest to the social policy makers as they can establish how social factors contribute to self-perceived health that is an integral component of health related quality of life (HRQoL). The present study investigates perceived health status of older adults and its association with their socioeconomic characteristics using data collected by the National Sample Survey Organization in years 1994-95 and 2004.

METHODS

Data

At present the nationwide information on the socioeconomic characteristics and status of health of older adults in India is available in the three rounds of the National Sample Surveys conducted during 1985-86, 1994-95 and 2004. The latter rounds contain information on the self-perceived health as well.

Conceptual framework

Similar to the social determinants of health there is a social perspective to the self-perceived health. The immediate social environment constituted of the living arrangements of older adults, their marital status, the number of children, their economic dependency, place of residence and the economic status of their household. The caste, region and religion constitute the next immediate environment that may guide their perception about health.

SPH is generally measured on a 2, 3, 4 or 5 points ordinal scales either in a global perspective or in a relative perspective.

The missing values were imputed assuming a Poisson distribution of the count of chronic diseases require diagnosis. The improvement in status of health was considered as an additional indicator of health.

The older adults were asked to rate their health on a 5 points ordinal scale. Due to low frequencies in the lowest and highest categories these categories were collaged with their next higher/lower categories respectively. Eventually, the variable measuring perception about health remained ordinal with three states namely poor,

good and excellent representing an ascending order of sound health. It is assumed that an underlying scale which measures the perception about healthhas a threshold T_2 above which an older adult perceives his/her health as *excellent* (Figure 1). There is another threshold T_1 ($T_1 < T_2$) below which an older adult perceives his/her health as *poor*. In between T_1 and T_2 he/she perceives his/her health as *good*. Letting p_1, p_2 and p_3 denote the probabilities that an older adult perceives his/her health as poor, good and excellent respectively. The model associating the probabilities of perception about state of health and various potential factors is given by the following ordinal logit model (Agresti, 2002; McCullagh, 1980)

$$\ln(\frac{p_2 + p_3}{p_1}) = \alpha_1 + \sum_{i=1}^{k} \beta_i x_i$$

$$\ln(\frac{p_3}{p_1 + p_2}) = \alpha_2 + \sum_{i=1}^{k} \beta_i x_i + \sum_{i=1}^{k} \gamma_i x_i$$

where, β_i is the effect of factor x_i. Let the odd $\dfrac{p_2 + p_3}{p_1}$ be denoted by O_1 and the

odd $\dfrac{p_3}{p_1 + p_2}$ be denoted by O_2. In case the effect of x_i is identical for the two odds

(O_1 and O_2) γ_i is 0 (the proportional odds assumption). The deviation from the

proportional odds assumption is reflected in the non-zero values of $\gamma_i's$.

The changes in the effect of the associated variables may be felt when there is a significant change in the values of β_is over time. Significant changes may also occur
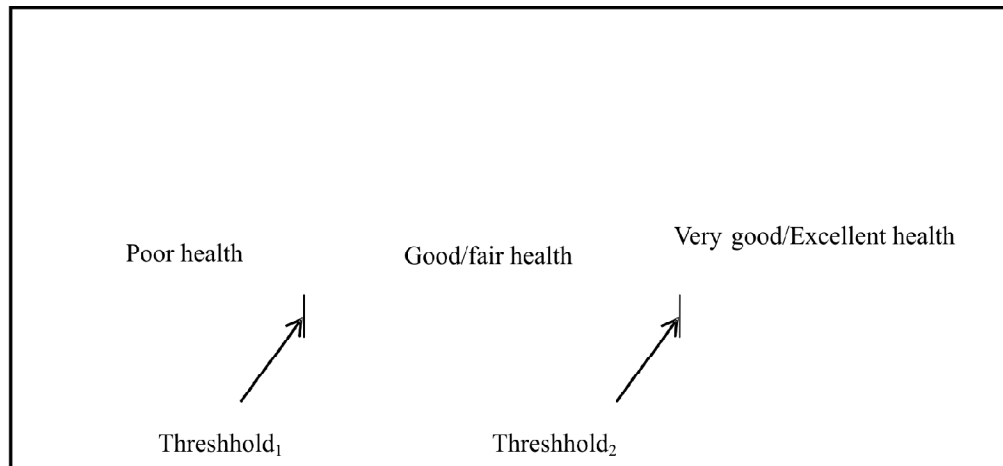

Figure 1: Conceptual framework for the study

in the values of the γ parameters over time. Further, it may also happen that some of the γ parameters may appear over time or some of the γ parameters may disappear over time.

RESULTS

The association between the self-perceived health and various potentially associated factors is studied for two reference periods namely 1995-96 and 2005. Proportions of older adults had reduced for financial dependence, co-residence, reporting chronic diseases, impairments with of the time (Table 1). It can also be noted that during both time references of the study, self-perceived health showed significant association with difficulty in mobility, frequencies of chronic diseases and impairments as well as relative health status (Table 2-5).

It is evident from the analysis of the pseudo R^2 (Table 6) that the objective measures of health (the severity of immobility, frequencies of impairments and the number of diseases) and the relative change in the state of health during past one year contribute maximum to the information on the perception of the present state of health. Although, the information provided by other factors such as individual, household and social characteristics is small however it is not insignificant. The distributions of the self-perceived health over the two time points do not differ significantly is noteworthy. The section below discusses the findings for the reference period 2005 and the changes in effects over the two reference periods.

The perception of good or excellent state of health (not-poor) *vs.* the perception of poor state of health

Among the older males and the older females, the likelihood of perceiving health as *good or excellent* reduces with increase in the severity of immobility, frequency of impairments, frequency of diseases and the age. Forthe older females, odds in favour of the perception of *good or excellent* health increases as 6.64, 35.89, 68.65, and 98.40 times for the relative states of health *viz.* somewhat worse, nearly the same, somewhat better and much better respectively. This indicates that the changes in the status of health during an immediately preceding reference period have a lot to say about the perception about the current state of perceived health. The corresponding values of odds for older males are 9.68, 53.70, 77.14 and 139.62 respectively.

Education affects the perception about health in a way that the Non-literate and the below-matriculation among the older adults are less likely to perceive their health as *good or excellent* when compared to the group having higher education. In other words higher education implies better perception about sound health. A change in marital status from married to widowhood/widowerhood with time is a obvious phenomenon. Among older males the odds in favour of perceiving *good or excellent* state of health is 1.16 times higher among the widowers than their currently married counterparts. On the contrary, among the others (never married/ divorces/separated) the odds in favour of *good or excellent* state of health are 0.58 times lower when compared to their married counterparts. Such association

between the marital status and perception about health is not discernible among the older females.

Economic conditions of the older adults both individual (economic dependence on others) and household (the economic stratum a household belongs to) influence theirperception about own health in a significant way. The older adults who are completely dependent on others are less likely to perceive a *good or excellent* state of health when compared to their not-dependent counterparts. This effect is more felt among older males (0.61) as compared to the older females (0.74). Interestingly, among the older males, those who are financially supporting others are 1.65 times more likely to perceive their health as *good or excellent* when compared to the ones who are not-dependent and not-supporting.

The household's economic condition is found to be directly associated with the perception of sound health. When compared to the highest economic stratum (the fifth quintile) the odds of perceiving good *or excellent* state of health reduce by 0.96, 0.89, 0.68 and 0.59 times among older females from fourth to the first quintile. The corresponding figures for the older males are 0.88, 0.71, 0.71 and 0.56 respectively.

Living alone lowers the likelihood of perception of *good or excellent*health by 0.86 times among older females and 0.77 times among older males when compared to living as a co-resident. Here, the relative decrease is more for older males than the older females. It is also observed that during the earlier reference period (1995-96) the likelihood of the perception of *good or excellent* health did not differ with respect to the living arrangements. In addition to living arrangements, the size of the household plays a significant role in making older adults feel healthier. The odds in favour of the perception of *good or excellent* health increase by 1.03 times for older males and 1.04 times for older females with each unit increase in the size of the household.

The place of residence, caste and region also has significant variations with respect to the perception of health. Older adults residing in rural areas are less likely to perceive their health as *good or excellent* when compared to their urban counterparts. The older adults belonging to scheduled tribes are more likely to perceive a state of good *or excellent* health whereas the older adults belonging to the scheduled castes are less likely to do so when compared to the older adults belonging to the other castes.

The perception of excellent health *vs.* the perception of fairor good (not-excellent) health

The effects for the log odds $\ln(\frac{p_3}{p_1 + p_2})$ are similar to the log odds $\ln\left(\frac{p_2+p_3}{p_1}\right)$ except for a few independent variables. Among the older females, the odds in favour of perceiving health status as *excellent* reduce by 0.38 times with a unit increase in number of diseases. Also, the older females with lower economic status of their

households are less likely to perceive their health status as excellent. Those who report relative improvement in health status as *much better* are 1074.92 times more likely to report excellent health than those who report the relative improvement in health status as *worse*.

Unlike older females, the effects of odds differ for impairments, perception about relative state of health, individual characteristics, region and caste among older males. The odds in favour of perceiving the health status as excellent reduce 0.34 times with a unit increase in the number of impairments. The role of change in relative state of health over the past one year is significantly evident. Those older males, who experienced *nearly the same*, *somewhat better* or *much better* state of health, when compared to their health a year ago, are respectively 11.94, 16.44 and 139.77 times more likely to report their health as excellent when compared to those older males whose health has deteriorated to worst.

With each year of increase in the age odds in favour of perceiving health status as excellent is reduced by 0.62 times. Non-literate older males are also less likely to perceive their health status as excellent as compared to their matriculate counterparts. The economic dependency and the number of children also reduce the chances of perceiving an *excellent* status of health.

DISCUSSION

The investigation of the effect of relative state of health and the role of household and the individual socioeconomic status on the self perceived health of older adults is distinctive feature of the present study. Study results are analogous with the finding of other studies (Hildebrand and Kerm, 2009; Giordano and Lindstrom, 2010). It is found that not only the objective measures of health dictate the perception but also the relative change in the health status as experienced by an older adult during last one year effects their perception about health. The relative improvement in health status over last one year shapes perception about health in a significant way.

Apart from the individual characteristics, household composition and economic conditions along with various cultural factors determines the perception about own health (Vuorisalmi*et al.*, 2008; Hildebrand and Kerm, 2009). Among the individual characteristics the roles of education and economic dependency are imperative. Results of the study suggest that the higher level of education helps in perceiving a better status of health whereas economic dependency forces an older adult to perceive a poorer health status. Similar results have been noted in studies carried out in other parts of globes (Liu and Zhang, 2004).

Older adults in poorer households perceive poor health status. The finding that older adults living in poor households are more likely to report better health status (Theorell and Vogel, 2003) is not supported by the present population of older adults. It also comes out from the present analysis that co-residence and larger size households are congenial for perception of better health status. To put it in another terms, living in multigenerational households enhances the chances of feeling

healthier. In fact, older adults in India traditionally love to stay with their family, especially when they need daily help. Moreover, provision of social health services is inadequate in India, even in the urban areas (Sen, 2002; Sudha*et al.*, 2006).

The older adults in rural areas are less likely to perceive a better state of health when compared with their urban counterparts. Poorer availability and accessibility of healthcare facilities as well as limited affordability for healthcare expenditure could be major reasons for the perception of poor health in rural settings.

A large number of solutions may be proposed to improve the health status of older adultswithin the available health infrastructure of a society (Mossey and Shapiro, 1982; Nicholson *et al.*, 2005). Yet the present investigation emphasizes thatsocioeconomic dimensions are also equally important in addressing the question of perception of better health status among the older adults. Comparison of perceived health status of the older adults and its correlates at two time references considered for the present study hardly showed any difference signifying that the scenario of their health status remained unchanged over the period of time.

Limitations of the study

Though the self perceived health is assuming strength among the indicators of HRQoL, it is not an objective entity. Thus, it cannot be measured objectively. It is quite possible that a state of health which is perceived as *good* by one may be perceived as *very good* or *excellent* by the other. Thus, there is always an underlying assumption that a state which is perceived as good by one will be perceived as good by all, and similarly the perception about other states of health also remains uniform among the study population. This assumption may not be valid always. The studies that use only the information about the present socioeconomic status may be incomplete in the sense that the exposures during the childhood and adulthood may contribute to shape the perceptions at the older ages. The lack of data on these aspects prevents the present study to incorporate and investigate the effects of these factors.

CONCLUSION

The results of present study clearly demonstrate importance of socioeconomic characteristics in determining perception of older adults about their health status. In coming decades bigger and bigger cohorts will enter into this age group owing to increase in life expectancy of the population. Ensuring healthy aging of older age cohort is a burgeoning public health challenge for all the stakeholders including researchers, policy makers and healthcare practitioners.Indentifying roles of socio-demographic characteristics in determining health status among older adults can add substantially in devising future health programs.Despite contradictory views among public health researchers, self perceived health is seemingly a simple straightforward measure of health. On a closer inspection, it appears to be complex measure however its importance as a measure of those aspects of health that are related to the morality and survival is beyond any doubts.The results of our study also subscribe its importance as a cost-effective measure of health status.

Table 1: Distribution of older adults withtheir demographic and socioeconomic characteristics for the reference periods 1995-96 and 2004

Variable	1995-96	2004
Sample size	28543	29102
Gender		
Older male	50.1	50.5
Older female	49.9	49.5
Place of residence		
Rural	78.0	75.8
Urban	22.0	24.2
Difficulty in mobility		
Severe	1.7	1.4
Partial	8.4	6.6
No difficulty	89.8	92.0
Marital status		
Never married/ divorced / separated	0.9	0.8
Widowed	37.9	38.0
Currently married	61.2	61.2
Financial dependence		
Dependent	53.1	52.9
Partially dependent	16.0	13.7
Not dependent	30.9	33.4
Living arrangements		
Alone	13.2	16.1
Co-residence	86.8	83.9
Education		
Non-literate	69.7	65.7
Below 10 years of schooling	24.6	25.8
10 years of schooling or higher	5.8	8.5
Caste		
Scheduled tribe	6.7	6.4
Scheduled caste	16.8	17.3
Other castes	76.4	76.3
Frequency of chronic diseases		
Nil	40.0	73.2
One	32.3	22.5
Two or more	27.7	4.3
Frequency of impairments		
Nil	60.4	84.1
One	23.9	14.4
Two or more	15.7	1.5
Self perceived health		
Poor	18.9	23.1
Good/fair	72.0	71.5
Excellent/very good	9.1	5.4
Relative health		
Worse	3.9	2.3
Somewhat worse	22.1	18.2
Nearly the same	67.5	66.2
Somewhat better	5.0	1.3
Much better	1.5	3.0

Table 2: Contingency table for self perceived health *vs*. difficulty in mobility and gamma measure of association between them for reference periods 1995-96 and 2004

Self perceived health	Difficulty in mobility					
	1995-96			2004		
	Severe	*Partial*	*No difficulty*	*Severe*	*Partial*	*No difficulty*
Poor	394	1303	3646	349	1335	S4871
Good/fair	85	976	19330	50	503	19676
Excellent / very good	8	98	2481	3	13	1498
Gamma (p - value)	0.72 (0.00)			0.84 (0.00)		

Table 3: Contingency table for self perceived health *vs*. frequency of self reported chronic diseases and gamma measure of association between them for reference periods 1995-96 and 2004

Self perceived health	Frequency of self reported chronic diseases					
	1995-96			2004		
	Nil	*One*	*Two or more*	*Nil*	*One*	*Two or more*
Poor	952	1587	2835	3576	2351	642
Good/fair	8937	6824	4746	15789	3959	576
Excellent / very good	1492	785	327	1367	143	11
Gamma (p - value)	-0.47 (0.00)			-0.49 (0.00)		

Table 4: Contingency table for self perceived health *vs*. frequency of self reported impairments and gamma measure of association between them for reference periods 1995-96 and 2004

Self perceived health	Frequency of self reported impairments					
	1995-96			2004		
	Nil	*One*	*Two or more*	*Nil*	*One*	*Two or more*
Poor	1642	1672	2059	4551	1753	266
Good/fair	13392	4770	2346	17870	2282	172
Excellent / very good	2108	343	154	1459	61	1
Gamma (p - value)	-0.56 (0.00)			-0.54 (0.00)		

Table 5: Contingency table for self perceived health *vs*.relative health and gamma measure of association between them for reference periods 1995-96 and 2004

Self perceived health	Relative health					
	1995-96			2004		
	Worse / somewhat worse	*Nearly the same*	*Somewhat better / much better*	*Worse / somewhat worse*	*Nearly the same*	*Somewhat better / much better*
Poor	3829	1451	79	3567	2694	307
Good/fair	3498	16224	766	2232	15222	2867
Excellent / very good	56	1522	1025	28	898	593
Gamma (p - value)	0.84 (0.00)			0.72 (0.00)		

Table 6: Results of ordinal logistic regression showing association between self perceived health and demographic and socioeconomic characteristics of the older adults

Variables	2004			1994-95		
	Effect (p-value)	95% C.I. for effect	Odds ratio	Effect (p-value)	95% C.I. for effect	Odds ratio
Immobility						
Severe	-2.36(0.00)	(-2.73, -1.99)	0.09	-1.89(0.00)	(-2.23, -1.56)	0.15
Partial	-1.59(0.00)	(-1.72, -1.46)	0.20	-0.99(0.00)	(-1.11, -0.87)	0.37
No difficultyâ						
Number of impairments	-0.60(0.00)	(-0.68,-0.53)	0.55	-0.31(0.00)	(-0.35, -0.28)	0.73
Number of chronic Diseases	-0.75(0.00)	(-0.80,-0.69)	0.47	-0.46(0.00)	(-0.49, -0.43)	0.63
Perception about the Relative State of Health						
Worse	-6.44(0.00)	(-6.82, -6.06)	0.00	-7.55(0.00)	(-7.90, -7.20)	0.00
Somewhat worse	-4.32(0.00)	(-4.49, -4.15)	0.01	-5.15(0.00)	(-5.39, -4.90)	0.01
Nearly the same	-2.60(0.00)	(-2.75, -2.44)	0.07	-3.24(0.00)	(-3.48, -3.01)	0.04
Somewhat better	-2.15(0.00)	(-2.33, -1.97)	0.12	-0.75(0.00)	(-1.00, -0.49)	0.47
Much better â						
Age	-0.04(0.00)	(-0.04, -0.03)	0.96	-0.03(0.00)	(-0.04, 0.03)	0.97
Level of Education						
Non-literate	-0.31(0.00)	(-0.44, -0.17)	0.74	-0.39(0.00)	(-0.54, -0.24)	0.68
Below matriculation	-0.17(0.01)	(-0.30, -0.04)	0.84	-0.18(0.02)	(-0.33, -0.04)	0.83
Matriculation and aboveâ						
Gender						
Male	0.00(0.98)	(-0.08, 0.08)	1.00	-0.32(0.00)	(-0.40, -0.24)	0.72
Femaleâ						
Marital Status						
Others	-0.41(0.02)	(0.12, 1.10)	0.66	-0.21(0.22)	(-0.56, 0.13)	0.81
Widowed	0.02(0.60)	(-0.05, 0.09)	1.02	-0.10(0.01)	(-0.17, -0.03)	0.90
Currently marriedâ						
Dependence						
Dependent	-0.71(0.00)	(-0.79, -0.63)	0.49	-0.80(0.00)	(-0.89, -0.71)	0.45
Partially dependent	-0.39(0.00)	(-0.49, 0.29)	0.68	-0.36(0.00)	(-0.46, -0.26)	0.70
Not dependentâ						
Household Economic Condition						
First quintile	-0.58(0.00)	(-0.68, -0.47)	0.56	-0.61(0.00)	(-0.72, -0.50)	0.54
Second quintile	-0.37(0.00)	(-0.47, -0.28)	0.69	-0.37(0.00)	(-0.47, -0.26)	0.69
Third quintile	-0.27(0.00)	(-0.36, -0.17)	0.77	-0.16(0.00)	(-0.26, -0.06)	0.85
Fourth quintile	-0.12(0.01)	(-0.22, -0.03)	0.88	-0.21(0.00)	(-0.31, -0.11)	0.81
Fifth quintileâ						
Living Arrangements						
Alone	-0.42(0.00)	(-0.51, -0.34)	0.65	-0.32 (0.00)	(-0.42, 0.22)	0.73
Co-residenceâ						
Place of Residence						
Rural	-0.29(0.00)	(-0.37, -0.21)	0.75	-0.19(0.00)	(-0.27, -0.10)	0.83
Urbanâ						
Model χ² (d.f.)		9878.20 (22)			12993.61 (22)	
(p-value)		(0.00)			(0.00)	
Pseudo R²(Nagelkerke)		0.395			0.490	

Note: p-value corresponds to the test of hypothesis that the corresponding effect is zero against the alternative that it is not zero

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