Health Care Utilization by Elderly in India: Does Family Matter?

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This paper unravels the magnitude of horizontal equity in elderly health care utilization in India. The focus on elderly health and living arrangement corresponds well with increasing research and policy attention on family as an effective institution for elderly care. Using, regression-based indirect standardization approach with nationally representative survey data it is observed that family has a significant relative advantage in matters of elderly health and health care utilization. Particularly, spouse has a considerable influence in matters of health care utilization among Indian elderly. Further, it is shown that elderly health care utilisation in India has a pro-rich bias and a positive horizontal inequity index signifies the magnitude of income-related inequalities in health care utilization. The need-standardised utilization is higher among elderly who are financially independent whereas it is much lower among those dependent on grandchildren or other relatives.

1. Introduction

Population ageing is a remarkable demographic phenomenon that reflects our social, economic and health achievements. However, ageing can have adverse consequences for countries with huge elderly population, inadequate social security and restricted fiscal space for welfare programmes. Given such apprehensions, researchers and policymakers are increasingly deliberating on policy alternatives to ensure healthy ageing. In fact, some are (re)investing their faith in 'family' as the principal institution for elderly well-being. For example, India - with second largest elderly (aged 60+) population in the world - is certainly looking forward to integrate family in policy discourse via the *Maintenance and Welfare of Senior Citizens Act, 2007* of India that mandates effective provisions for the maintenance (includes provision for food, clothing, residence and medical attendance and treatment) and welfare of parents and senior citizens (Government of India 2007). Legal provisions notwithstanding, society in general insist family to provide social, economic and emotional support to the elderly (Chan 1997, Rajan et al 1999). Likewise family has a critical role in recognizing health care needs and encouraging health care utilization by elderly, however, there is a lack of conclusive evidence on this vital policy concern.

The empirical studies on elderly in India have primarily discussed the trends, patterns and differentials in ageing cross-classified by social, economic and demographic characteristics (for example, Sathyanarayana et al 2012, Bongaarts & Zimmer 2001, Rajan et al 1995, Rajan & Kumar 2003, Rajan & Mathew 2008). Although, a few have examined the health status of elderly in India (Alam 2006, Alam & Karan 2011, Siva Raju 2002, Mini 2009) but family was seldom the highlight. In this regard, Gupta and Sankar (2002), Sen & Noon (2007) and Agrawal (2012) are notable in detecting a positive influence of family on health (short-term morbidity) of the elderly (also see Sheela & Jayamala 2008). Similar evidence on living arrangement and

elderly health is available from other countries (particularly East and South-East Asia) experiencing rapid population ageing (Dean et al 1992, Chou & Chi 2000, Gee 2000, Iwasa et al 2006, Kharicha et al 2007, Li et al 2009). Nevertheless, the instrumental role of family in recognition of health care 'need' and promotion of health care utilization remains a neglected aspect in the discourse on elderly well-being in India.

Furthermore, the distribution of health care in accordance with need is a commonly accepted egalitarian principle and can be described as horizontal and vertical equity (Wagstaff & van Doorslaer 2000). While horizontal equity necessitates that "same set of health services, of comparable quality should be made available to all persons with similar health needs, irrespective of socio-economic status, ability to pay, social or personal background" (HLEG 2011) the complementary norm of vertical equity demands appropriate unequal treatment of unequals (O'Donnell et al 2008). In this regard, information on need-expected utilization holds immense relevance and can help to comprehend whether elderly in need are at least able to receive some health care. Moreover, an analysis of standardized distribution could further inform regarding the magnitude of horizontal inequity in health care utilization.

It is widely acknowledged that health care is significantly influenced by need and non-need factors. Therefore, it is desirable to use standardized estimates while comparing utilization levels across social and economic categories (Wagstaff & van Doorslaer 2000). Standardized health care utilization is interpreted as the distribution that would be observed, irrespective of differences in the distribution of the need and non-need factors. Need for health care *per se* is a rather elusive concept with considerable variations in its conception, measurement and interpretation (Culyer 1995, Culyer & Wagstaff 1993). Despite such intricacies, it is plausible to find reasonable information that proxy need for health care. For instance, demographic, health and morbidity status of an individual are most natural alternative (O'Donnell et al 2008). Even subjective information such as self-assessed health status can be reliably used to reflect need for health care in India (Subramanian et al 2009).

Given the backdrop, the twin objectives of the article are as follows: First, it examines the relative importance of various types of living arrangement in matters of health care utilization by elderly in India. Second, it unravels the magnitude of horizontal equity in elderly health care utilization and argues for better health care coverage for the vulnerable sections of the population. Overall, it is expected that the findings can play a crucial role in creating and assessing policies aimed at eliminating the health care disadvantages among the elderly population. With this motivation, the rest of this article is organized as follows: Section 2 elaborates on the data, variables and methods used for analyzing the actual and need-expected health care distribution. Section 3 presents the key results with specific focus on describing the influence of living arrangement and financial dependence on health care utilization. Section 4 discusses the major findings and its policy implications particularly in the context of universal health care coverage in India. This section also reports some of the limitations and suggestions for further research. Section 5 concludes.

2. Data and Methods

Nationally representative data from Morbidity and Health Care Survey (60^{th} round) of India is used for the analysis (NSSO 2006). This survey was conducted in 2004 by the National Sample Survey Organisation (NSSO), Ministry of Statistics and Programme Implementation, Government of India and covered a sample of over 73 thousand households (around 47 thousand in rural areas and 26 thousand in urban areas). Key information on aspects of hospitalisation (inpatient) and ambulatory (outpatient) care for a reference period of 365 days and 15 days respectively was collected through this survey. This article analyses the information on about 34,831 elderly (aged 60 and above) persons with focus on utilization of outpatient and inpatient care services in the last 15 days.

The analysis views family as a group of people related by blood or marriage, who live together and financially support each other. Hence, information on living arrangement and source of financial support is used to comment on the influence of family on health care utilization. As discussed above, 'need' is captured through a set of variables reflecting demographic and health status of the elderly. Information on age, sex and self-reported health status and presence of ailments are used to proxy health care need. The analysis also controls for potential non-need factors to estimate the correlation of need variables with health care utilization conditional on these variables. The key non-need variable is wealth status captured through per capita consumption quintiles and insurance coverage. In addition, pertinent socioeconomic correlates such as education, marital status, caste, religion, and place and region of residence are also included in the analysis.

Regression-based indirect standardization (IS) approach is applied to arrive at need-standardised distribution of health care utilization (van Doorslaer & Wagstaff 2000 and O'Donnell et al 2008, Wagstaff et al 1991). This procedure corrects the actual health care utilization distribution by comparing it with the distribution that would be observed if all elderly had their own need status but the same average effects as the entire sample. Since information on health care utilization is dichotomous (yes = 1 and No = 0) therefore a non-linear (probit) regression is used to describe the relationship between the binary health care utilization variable, y_i, with (i=1, 2, …, n) need (x_j) and non-need (z_k) variables where (j:1, 2, … m) and (k: 1, 2, … l). This probit specification P(.) is written as follows:

$$y_i = P(\alpha + \Sigma_j \beta_j x_{ji} + \Sigma_k \gamma_k z_{ki}) + \varepsilon_i$$

where α is the regression constant, β_j and γ_k are the respective parameters for variables (x_j) and (z_k) with ε_i as the regression residual.

Using the regression parameters, need-standardized utilization ($\hat{y}_i^{IS}$) is obtained as the difference between actual and need-expected utilization ($\hat{y}_i^{X}$) as follows:

$$\hat{y}_i^{IS} = y_i - \hat{y}_i^{X} + \hat{y}_i^{mean}$$

Here $\hat{y}_i^{mean}$ is the mean of the predicted health care utilization. Need-standardized utilization ($\hat{y}_i^{IS}$) is interpreted as the distribution of health care utilization that would be observed, irrespective of differences in the distribution of the need and non-need factors across correlates.

Horizontal inequity is tested by determining whether the standardised utilization is unequally distributed by income, social groups and living arrangement. In the literature, probably due to poverty concerns, income-related horizontal inequity has received popular attention (see, for instance, van Doorslaer et al 2000, Shin & Kim 2010, Macinko & Lima Costa 2012). This can be ascertained by computing the concentration index (CI) for need-standardised utilization ($\hat{y}_i^{IS}$). CI could be written in many ways including the convenient covariance method (Wagstaff et al 1991) as follows:

$$CI = 2*\text{Covariance}(\hat{y}_i^{IS}, r_i)/ \hat{y}_i^{mean},$$

where $\hat{y}_i^{IS}$ is the need-standardized health care utilization variable whose inequality is being measured, $\hat{y}_i^{mean}$ is its mean, r_i is the i^{th} individual's fractional rank in the socioeconomic distribution. CI measures relative inequality and defines equity as a situation where the cumulative proportions of standardised utilization matches with cumulative population shares. Any mismatch between the two sets is defined as inequality. The CI ranges between +1 and -1 with zero depicting no inequality and large positive (negative) values suggesting disproportionately higher concentration of utilization among the rich (poor).

Finally, the relative importance of type of living arrangement and its implications on health care utilization is examined with the help of a logistic regression that also adjusts for important socioeconomic correlates. This analysis is particularly useful to understand the odds of utilization across living arrangement categories and financial dependency status of elderly. Predicted probabilities of utilization are reported for the various categories of living arrangement vis-à-vis financial dependency and wealth status. All the analysis presented here is weighted as per the instructions available in NSSO (2006). The analysis is performed in Stata 10.0 statistical software.

3. Results

Two-thirds of the elderly persons in India are aged below 70 years and mostly reside in rural areas (76%). 65% of the elderly are illiterate whereas only 20% have received education up to primary level (up to 5 years). The distribution of elderly across various social and religious groups corresponds with the all-India pattern. For instance, 17%, 7% and 40% of the elderly are affiliated to scheduled caste (SC), scheduled tribes (ST) and other backward classes (OBC) which is similar to their respective share in national population. Elderly are more or less equally distributed across the quintiles of household consumption expenditure for all-India. Most of the elderly reside with their family (12% with spouse only, 45% with spouse and other members, and 32% with children only). However, 40% of the elderly are either widowed or divorced and another 9% are living alone (including as inmate of old age home). Financial dependency is a major concern as only one-third of the elderly are self-dependent and nine percent are supported by spouse. One-half of the elderly fully or partly rely on children for economic support whereas a few depend on grandchildren (2%) and other relatives/non-relatives (4%).

3.1. Actual, Need-Expected and Need-Standardized Utilization

Table 1 shows the distribution of actual, need-expected and need-standardized health care utilization by background characteristics. Actual or unstandardized health care utilization is defined as at least one visit during the last 15 days for receiving outpatient or inpatient care. Overall, the data suggests that 25% of the elderly persons in India (both males and females) utilized health care during the reference period. Health care utilization exhibits a clear income gradient with only 16% elderly from poorest quintile seeking health care as against 39% from the richest quintile. The (unstandardised) concentration index value of 0.172 (standard error: 0.008) further confirms of a pro-rich distribution of health care utilization. Also, utilization is positively associated with education level. For instance, only 21% illiterates have utilized health care as against 36% from higher education category.

Table 1 about here

Elderly from historically disadvantaged social groups such as the SCs (21%), STs (12%) and OBC Hindus (22%) have low health care utilization but those from forward caste Hindus as well as Muslims report of 30% utilization which is higher than the national average. Unsurprisingly, rural areas (23%) have lower health care utilization than urban areas (33%). Similarly, economically backward states such as Bihar (14%) and Jharkhand (9%) as well as hilly and remote regions of the country such as Uttarakhand (13%) have poor utilization profile (Table 2). Odisha, Rajasthan, Madhya Pradesh and Chhattisgarh are among other underdeveloped states with low health care utilization. Relatively advanced states in South India have high utilization. In fact, 53% of elderly in Kerala have utilized health care in the two-week reference period whereas the same is 29% in its neighbouring state, Tamil Nadu (Table 2).

Table 1 also presents the need-expected utilization and the difference between need-expected and actual utilization. The need-expected distribution is the predicted probability of utilization obtained from a probit regression that uses information on health care need and also controls for pertinent non-need factors such as socioeconomic background and living arrangement. The need-expected profile indicates that females have greater need for health care. Also, it is perceptible that health care utilization by the poorest quintile is 6.2% lower than that what is need-expected. Income has a strong influence in matters of utilization. For example, elderly from the richest quintiles report of utilization which is 9.5% higher than need-expected. Interestingly, the distribution of need-expected utilization in India is also pro-rich with a minor but significant gradient across consumption quintile. This is further corroborated by the need-expected CI value of 0.051 (std. err. 0.005) and informs that (self-assessed) poor health and ailments are marginally higher among the richer sections.

Health care utilization among illiterate elderly corresponds with their need-expected profile whereas actual utilization is higher among the educated ones. Elderly from the SC and ST communities, respectively, have 2.3% and 5.5% lower health care utilization than expected whereas forward castes Hindus have 3.7% higher utilization. The difference between actual and need-expected utilization is positive and higher in urban areas. Elderly residing in economically backward states are at a disadvantage and their observed utilization is much lower than need-expected utilization. For example, in Chhattisgarh, Bihar, Jharkhand and Odisha the gap between actual and need-expected utilization is well above 5% (see Table 2). Interestingly, in

Kerala, actual utilization level exceeds need-expected utilization by over 17.5% and is a clear exception.

Table 2 about here

Standardisation helps to describe the distribution of health care utilization by controlling for potential confounding need and non-need factors. A need-standardized distribution of health care utilization is interpreted as the distribution that would be expected to be observed, irrespective of differences in distribution of the need and non-need factors (O'Donnell et al 2008). If all the individuals in the population utilize health care in accordance with their need profile than the standardised utilization would be equally distributed. However, a difference in need-standardised utilization across individuals and groups is evidence for horizontal inequity in health care utilization. The last column in Table 1 and Table 2 report the need-standardized utilization for selected correlates and states, respectively.

The results reinforce that elderly health care utilisation has a pro-rich bias and the share of health care use among the richer quintile is much higher than need-expected. It is also abundantly clear that despite greater needs elderly from poorest quintile have much lower utilization. The concentration index for need-standardised utilisation informs regarding the magnitude of income-related horizontal inequity in health care utilization and is computed to be 0.122 (standard error: 0.006). Alternatively, a similar value of horizontal inequity index is obtained as the difference between the CI for unstandardised (0.172) and need-expected (0.051) utilization reported above. A positive horizontal inequity index confirms the pro-rich bias signifying income-related inequalities in health care utilization. The need-standardised utilization further informs that horizontal inequities are proliferating along the dimensions of gender, caste and religion. To elaborate, females have lower need-standardized utilization (24%) than males (26%) because they are utilizing less health care than need-expected. Similarly, SC and ST communities are much deprived than compared to those from forward caste Hindus. Standardized utilization among the educated population is around 1.5 times than that of the illiterates. Inequities further intensify across place and region of residence with clear disadvantages for the rural population particularly from the central and eastern region of India.

3.2. Living Arrangement and Health Care Utilization

This section describes the differences in actual, need-expected and need-standardised distribution across two critical aspects defining family viz. living arrangement and financial support. In particular, emphasis is on describing utilization levels cross-classified by type of living arrangement of the elderly and sources of financial support. Living arrangement of elderly is divided into seven categories: i) living alone as an inmate of old age home, ii) living alone but not as an inmate of old age home, iii) living with spouse only, iv) living with spouse and other members, v) living without spouse but with children, vi) living without spouse but with other relations, vii) living with non-relations. Figure 1 shows that actual health care utilization is much lower (13%) among elderly who are living alone as inmate of old age home whereas it varies from 24% to 27% for other types of living arrangement. Highest health care utilization (27%) is reported by elderly who are living with spouse and perhaps reflects that they have greater health care needs. Highest care deficit (need-expected minus actual utilization) of 6.5%

is observed for elderly living alone in old age homes. Elderly living with other relatives or non-relations are also unable to match their need-expected utilization. Importantly, elderly who reside with children also fail to utilize health care in accordance with the need-expected profile. Only elderly residing with their spouse (with or without other members) have utilization (2.9% more) greater than what is need-expected. These patterns are reflected in the need-standardisation distribution which is highest for elderly living with spouse and is lowest for elderly living along as an inmate of old age homes.

Figure 1 about here

Providing financial support during old age is a fundamental defining feature of family. For an analysis along these lines, dependency status of elderly is divided into five categories as follows: i) economically independent; dependent on ii) spouse, iii) own children, iv) grandchildren and v) others. The results inform that elderly financially dependent on children or spouse have better health care utilization (27% and 26%, respectively) whereas those economically independent have low utilization (22%). Health care utilization by elderly financially dependent on their grandchildren is 4.3% lower than need-expected. Similarly lower than need-expected utilization is an issue with elderly financially dependent on others (non-relations). Need-expected utilization is satisfied by self-dependents (1.9% higher utilization) and those supported by their spouse (1% higher). The need-standardised distribution also shows that utilization is higher among financially independent elderly or those supported by their spouse whereas it is lower among dependents (on grandchildren or other relatives).

The foregoing analysis indicates that family matters and that the presence of spouse is the most significant factor in need-recognition and health care utilization. Also, it is disconcerting to note that elderly living alone as inmates of old age home are the worst affected subgroup. However, all these inferences need to be verified in a multivariate framework by controlling for important socioeconomic correlates. For this purpose, logistic regression results from three different models are presented to unravel the relative importance of living arrangement and financial dependency. As shown in Table 3, the results for Model 1 tests the relevance of living arrangement and financial support in health care utilization by controlling for need factors only (age, sex, self-assessed health, illness). Model 2 expands the specification by introducing influential non-need factors (marital status, region of residence, social and religious background) as control variables. Finally, in Model 3 income-related variables (consumption quintile and insurance) are included to test the relative significance of family in promoting health care utilization by elderly.

Before examining the role of family it is worthwhile to highlight some stylized facts. In all the three models poor self-assessed health and presence of ailments have positive and significant association with utilization (not reported due to space considerations). All the three models confirm that the odds of health care utilization decrease with age. Apparently, the odds of health care utilization are marginally but significantly higher for females. Model 2 and 3 both confirm that the likelihood of utilization increases with education and is higher for elderly from advantaged social group. The relationship persists even after inclusion of income factors (Model 3) though the effect gets moderated. For instance, with illiterates as the reference category, Model 2 suggests that elderly with primary education are 1.38 times more likely to utilize health

care. Even after the inclusion of income related variables (in Model 3) the significance of the relationship persists though the odds decline to 1.25.

Model 2 informs that elderly from rural areas are 23% less likely to utilize care than their urban counterparts but when controlled for income factors (Model 3) the rural-urban gap narrows down considerably but the rural disadvantage persists. Unlike rural-urban divide, region of residence has a profound impact on health care utilization. For instance, Model 2 indicates that elderly from south India are twice as likely to receive care as compared to reference group from central India (odds ratio not reported in Table 3). In this regard, Model 3 also reports odds ratio of 1.9 which is very similar to the inference from Model 2. Social group affiliations are also important determinants of health care utilization. Elderly from ST community display highest relative disadvantage when compared to other social groups. The likelihood of health care utilization by elderly from SC and OBC categories is similar but significantly lower than the advantaged social groups referred to as the general population. Finally, Model 3 confirms the presence of a strong income gradient whereby the richest quintile is 2.5 times more likely to receive care than compared to those from poorest quintile. As expected, elderly with some insurance provision are also 40% more likely to receive care.

Table 3 about here

Reverting to the relationship between family and elderly health care utilization, it is observed that elderly who are financially independent (fully or partly) have better odds of receiving care than those who are financially dependent on others (reference category). However, the odds decrease from 1.25 (Model 1) to 1.07 (Model 3) as non-need variables and particularly income factors are introduced in the analysis. Clearly, richer elderly or financially dependent elderly from richer households are more likely to utilize health care. Co-residence with family emerges as a prominent determinant of health care utilization with particularly robust effect of spouse. Across all the three models 'living with spouse' is the only category that shows higher likelihood of receiving care whereas for others the odds are much smaller (living alone as inmate of an old age home is the reference category). It is intriguing to note that the positive role of living with children and other relatives gradually disappears when non-need variables, particular income indicators are introduced. For instance, as per Model 1 elderly living with 'children only' are 13% more likely utilize care than compared to the reference group. However, with inclusion of other variables the likelihood of utilization by elderly living with children diminishes. Similar effect is noted for elderly living with relatives/non-relatives or those living alone. This suggests that income and socioeconomic background is an important factor determining family support in utilization. It also suggests that family has large relative impact and that socioeconomic conditions have a strong influence over health care utilization in India.

Table 4 about here

The logistic results suggest that living with spouse has an independent effect on health care utilization and the effect is more significant if the elderly is economically independent or is financially supported by spouse or children. This can be confirmed by the regression-based predicted probabilities of health care utilization by living arrangement and state of financial dependence with all other variables held constant at their mean. The predicted probabilities of

utilization are the lowest (0.109) if elderly are financially dependent on others and are residing with relations or non-relations. The predicted probability is highest (0.164) for those who reside with spouse and are dependent on spouse for financial support. Moreover, the predicted probabilities exhibit a family gradient with direct relations associated with higher probabilities of utilization and distant relations with lower probabilities.

Figure 2 about here

In addition, a distinct and positive influence of spouse across the income gradient is noticeable. This is corroborated by plotting the predicted probabilities of utilization by living arrangement categories across consumption expenditure quintiles. As shown in Figure 2, across quintiles, the predicted probabilities of health care utilization is higher for elderly living with spouse than compared to any other living arrangement. In fact, to discern the significance of spousal co-residence one has to only compare the gap in predicted probabilities between those living with spouse and those with non-relations. For the poorest and richest quintile the predicted probabilities of utilization when living with spouse is 0.099 and 0.266, respectively whereas the probabilities for elderly living with non-relations is 0.075 and 0.209. Clearly, the gap widens with improvements in income status thus enhancing the influence of spouse. The effect of spousal co-residence is apparent even while comparing with other types of living arrangement.

4. Discussion

While there is some evidence that elderly residing with family members are more likely to be in good health but it was uncertain whether family can also encourage health care utilization in accordance with health care needs. Besides, it was unclear whether family displays a relative advantage irrespective of socioeconomic condition. This article sheds light on these concerns in a sociocultural setting such as India. The analysis is based on Morbidity and Health Care Survey of India (NSSO 2006) that provides information on age, sex, self-reported health status and presence of ailments to proxy need for health care. Regression-based indirect standardization (IS) approach discussed by Wagstaff & van Doorslaer (2000) and O'Donnell et al (2008) is used to arrive at need-standardised health care utilization. The results suggest that family, particularly spouse, has a decisive influence on elderly health care utilization. This reinforces the worth of family in a country grappling with poverty, illiteracy and health system deficiencies. The fact that over two-third of the elderly are financially dependent only helps to further accentuate the importance of family in India.

After standardising for need, it is observed that elderly living with their spouse (with or without other members) report high utilization whereas those residing in old age home receive much less care. Elderly living with other relatives or non-relations are also unable to match their need-expected utilization. The need-standardised utilization is higher among elderly who are financially independent whereas it is much lower among those dependent on grandchildren or other relatives. Perhaps, the most interesting result is that living with spouse has a significant and independent effect on health care utilization. This result can have considerable implications while debating elderly well-being in multigenerational vis-à-vis nuclear families. Incidentally, these results inform that widowhood and marriage dissolutions have profound impact on elderly well-being in India.

After adjusting for relevant factors, it is observed that living with children or grandchildren has no consequential bearing on health care utilization. This implies that children display an absolute advantage and prove important under better socioeconomic conditions. Elderly who live alone as inmate of old age homes are the worst affected subgroup with very low health care utilization. Certainly old age homes not only require economic support but should be provided or linked with appropriate health facilities. As suggested by a few researchers, a shift from old age homes to community setting is desirable to promote health care utilization and elderly well-being (Jai Prakash 2009, Siva Raju 2002). Perhaps, family should be offered incentives (tax benefits or direct payments) for assisting elderly relatives and health care utilization could be an important conditionality of such policies. Elderly who live with distant relatives or non-relations also form a significant group that deserves policy focus.

Although in relative terms family (spouse and children) fulfils the envisaged social role by encouraging health care utilization among elderly but in absolute terms families cannot function effectively as the magnitude of support is conditioned by household endowments and other contextual elements. For instance, households with low income or those from regions with poor health care infrastructure are unable to utilize health care in accordance with their need-expected profile. In this regard, legal provisions (such as the *Maintenance and Welfare of Senior Citizens Act, 2007*) though necessary but may not be sufficient to ensure elderly well-being. In general, elderly from the poorest quintile are the most disadvantage section and probability of health care utilization could increase significantly if elderly receive financial support or (fully) subsidized health care as envisaged by the High Level Expert Group on universal health care coverage in India (HLEG 2011).

This study further identifies socioeconomic inequalities in distribution of need-standardised utilization as a prominent concern. In particular, results reveal of huge horizontal inequities in that favours the rich and the advantaged sections of the population. Such inequities can only be reduced by increased investment in health care infrastructure particularly in rural areas and underdeveloped regions to enhance access and quality of care. Since horizontal inequity is rampant along the dimensions of gender, education and caste therefore utilization by females, illiterates and lower caste (SC, ST and OBC) should be improved through strategies and approaches bearing a non-discriminatory social outlook. As such, poverty and negligible health care infrastructure are primarily responsible for low health care utilization among disadvantaged caste and communities particularly from northern, central and eastern India. This suggests that contextual effects have policy relevance and elderly well-being cannot be discussed in isolation with structural factors including economic history, infrastructure and socio-political background. In this regard, expansion of the formal sector and policies for better pension provisions are key areas for engagement in an expanding market economy with huge informal sector.

It is worrisome to note that only one percent of the elderly population have some insurance provisions through private or pubic sector organisations. Although the coverage of insured population may have increased due to several national (such as Rashtriya Swasthya Bima Yojana) and subnational policy initiatives (such as Arogyashree Scheme) but high out of pocket health care expenditure in the private sector remains a formidable concern. Besides, it increases the risk of catastrophic health care expenditure even among better-off households. Moreover,

utilization above expected profile (over-medicalisation) may have implications for costs and resource allocations but amidst highly privatised tertiary care sector this issue has not received adequate policy attention. Nonetheless, it has consequences for the vulnerable sections of the elderly population that are devoid of financial and infrastructure support. Clearly, all such social determinants can intensify health inequalities whereby a majority of the elderly population is unable to enjoy the good health that is biologically possible. In view of such intricacies, universal health care coverage through direct public provision is perhaps a pragmatic way forward to enhance elderly well-being.

Finally, with epidemiological transition and growing burden of non-communicable diseases it is necessary to increase awareness among the vulnerable social groups and enhance their capacity to assess health care needs. Specifically, the role of information campaigns increases manifold because of massive illiteracy among elderly and other disadvantaged socioeconomic groups. Such initiatives, however, should be accompanied by expansion of the public health sector through nation-wide health care programmes. Even though the National Rural Health Mission (NRHM) has improved the supply side situation in the last decade but specific institutional provisions for geriatric care are warranted. In this regard, notable efforts by the Indian system of medicine, Non-Governmental Organizations (NGOs), and Accredited Social Health Activists (ASHAs) as visible under NRHM offers vital insights for envisioning strategies to promote 'healthy ageing'. Presumably, improvements in recruitment and retention policies for human resources (specialists, doctors and community health workers) would also constitute one component of the solutions.

Before concluding this discussion three concerns are worth highlighting. First, it must be noted that the analysis assumes that vertical equity norm is satisfied and that the quality and quantity of care received by elderly is in accordance with their need. However, there can be considerable violation of the equity norms as several elderly persons perhaps receive inadequate health care for various reasons. Second, the preliminary results regarding importance of living with spouse should be explored further particularly by analyzing information on ailments and health care expenditure. It is also worthwhile to note that the relative importance of family could differ with sociocultural milieu and deserves further research attention. Third, the available data for ageing research in India is often a byproduct of health surveys with different motivations (such as reproductive health or health care expenditure) and provides limited information to proxy need for health care. Hence, it would be useful to entail a 'symptoms approach' consisting of non-technical questions about health status and medical care to understand health care need (Hoffer and Schuler 1948). Needless to say, quality data and information can go a long way in supporting research and policy for the elderly in India.

5. Conclusion

Issues of health and health care utilization predominates the discourse on elderly well-being in India and elsewhere. The issue assumes policy relevance particularly in countries with weak institutional support and limited fiscal scope for elderly well-being. In view of such intricacies, this article reiterates that research and policymaking for elderly well-being could identify factors that promote health and health care utilization by elderly. With this motivation, this study finds that family, particularly spouse, has considerable influence in matters of health care utilization

among Indian elderly. However, the positive intent of family is constrained by widespread poverty and backwardness in the country. Feeble social and economic environment and contextual uncertainties are major constraints that restrict the positive impact of family on elderly well-being. Undeniably, in the absence of a multi-pronged approach elderly health in India can further deteriorate as evident from the poor utilization profile of the poor and vulnerable social groups, mainly the SC/ST and the OBC community residing in backward regions. Hence, it is mandatory to review and appraise the various policies and programmes for expanding economic and health security of elderly with an overall objective to achieve equity and social justice.

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Table 1: Actual, Need-Expected and Need-Standardised Health Care Utilization, NSS 2004

Variables	Actual	Need-Expected	Difference	Need-Standardized
Gender				
Female	25.1	25.5	-0.4	24.1
Male	25.1	23.5	1.5	26.0
Place of residence				
Rural	22.6	23.7	-1.1	23.4
Urban	32.6	27.0	5.7	30.2
Consumption quintile				
Poorest Quintile	15.9	22.2	-6.2	18.3
Second Quintile	20.8	23.5	-2.7	21.8
Third Quintile	22.7	23.2	-0.6	23.9
Fourth Quintile	28.4	24.7	3.8	28.3
Richest Quintile	38.9	29.4	9.5	34.0
Education				
Illiterate	21.4	23.6	-2.2	22.3
Up to Primary	30.9	26.8	4.2	28.7
Up to Secondary	32.7	25.4	7.3	31.8
Higher	35.6	26.1	9.5	34.0
Social Group				
Scheduled Tribe	12.3	17.7	-5.4	19.1
Scheduled Caste	21.2	23.5	-2.3	22.2
Hindu OBC	22.1	23.0	-0.9	23.6
Hindu FC	30.2	26.4	3.8	28.3
Muslim	29.6	28.4	1.2	25.7
Others	42.5	30.9	11.6	36.1
Region of residence				
East India	20.9	24.6	-3.7	20.8
West India	29.8	26.2	3.6	28.1
North India	21.1	20.4	0.7	25.2
South India	31.7	25.9	5.9	30.4
Central India	20.2	23.9	-3.7	20.8
Northeast India	25.8	25.0	0.7	25.2
Union Territories	25.4	30.9	-5.5	19.0
All India	25.1	24.5	0.6	25.1

Source: Author (using NSS 2004)

Note: Standard errors are not reported due to space considerations.

Table 2: State-wise Actual, Need-Expected and Need-Standardised Health Care Utilization

States	Actual	Need-Expected	Difference	Need-Standardised
Jammu & Kashimir	23.2	25.0	-1.7	22.8
Himachal Pradesh	26.5	22.1	4.4	28.9
Punjab	33.6	26.4	7.2	31.7
Uttaranchal	13.4	15.1	-1.7	22.8
Haryana	21.9	18.9	3.0	27.5
Rajasthan	15.4	17.7	-2.3	22.2
Uttar Pradesh	21.8	25.4	-3.6	20.9
Bihar	13.6	20.8	-7.2	17.3
Assam	30.6	26.9	3.7	28.2
West Bengal	34.0	33.1	0.9	25.5
Jharkhand	9.4	16.7	-7.2	17.3
Odisha	11.4	17.3	-5.9	18.6
Chhattisgarh	12.5	20.9	-8.4	16.1
Madhya Pradesh	18.4	20.9	-2.4	22.1
Gujarat	25.8	23.6	2.1	26.6
Maharashtra	31.1	26.9	4.1	28.6
Andhra Pradesh	32.0	28.6	3.4	28.0
Karnataka	18.9	21.6	-2.6	21.9
Kerala	53.3	35.9	17.4	41.9
Tamil Nadu	24.2	18.9	5.4	29.9
All India	**25.1**	**24.5**	**0.6**	**25.1**

Source: Author (using NSS 2004)
Note: Standard errors are not reported due to space considerations.

Table 3: Logistic Regression (Odds Ratio, OR) for Elderly Health Care Utilization

Health care utilization (Yes=1)	Model 1		Model 2		Model 3	
Correlates	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Age	0.996	[0.996 - 0.996]	0.989	[0.989 - 0.990]	0.987	[0.987 - 0.987]
Male	0.967	[0.966 - 0.969]	0.936	[0.935 - 0.938]	0.990	[0.989 - 0.992]
Economically Independent	1.252	[1.247 - 1.257]	1.162	[1.144 - 1.153]	1.071	[1.066 - 1.075]
Partly dependent	1.133	[1.131 - 1.136]	1.080	[1.079 - 1.084]	1.063	[1.060 - 1.065]
Dependent on spouse	1.137	[1.133 - 1.143]	1.173	[1.151 - 1.161]	1.095	[1.090 - 1.100]
Dependent on children	1.111	[1.107 - 1.115]	1.144	[1.123 - 1.132]	1.114	[1.109 - 1.118]
Dependent on grandchildren	0.870	[0.865 - 0.875]	0.992	[0.966 - 0.978]	0.987	[0.981 - 0.993]
Living with spouse	1.481	[1.470 - 1.492]	1.202	[1.193 - 1.211]	1.181	[1.171 - 1.190]
Living with spouse and others	1.302	[1.293 - 1.312]	1.072	[1.064 - 1.080]	1.120	[1.111 - 1.128]
Living with children only	1.130	[1.122 - 1.139]	0.955	[0.948 - 0.963]	0.981	[0.973 - 0.988]
Living alone	1.275	[1.265 - 1.285]	1.026	[1.018 - 1.035]	0.967	[0.959 - 0.974]
Living with relatives only	1.110	[1.101 - 1.119]	0.835	[0.828 - 0.842]	0.864	[0.858 - 0.871]
Living with non-relations	1.049	[1.036 - 1.062]	0.882	[0.871 - 0.894]	0.880	[0.868 - 0.891]
Primary education	-	-	1.383	[1.381 - 1.386]	1.250	[1.248 - 1.253]
Secondary education	-	-	1.642	[1.637 - 1.646]	1.363	[1.359 - 1.367]
Higher education	-	-	1.813	[1.806 - 1.820]	1.394	[1.389 - 1.400]
Rural	-	-	0.767	[0.765 - 0.768]	0.949	[0.947 - 0.951]
Hindu	-	-	0.779	[0.777 - 0.782]	0.851	[0.849 - 0.854]
Muslim	-	-	0.828	[0.825 - 0.831]	0.968	[0.964 - 0.972]
Scheduled tribes	-	-	0.489	[0.487 - 0.491]	0.587	[0.585 - 0.589]
Scheduled castes	-	-	0.727	[0.725 - 0.728]	0.835	[0.833 - 0.836]
Other backward classes	-	-	0.776	[0.775 - 0.778]	0.848	[0.847 - 0.850]
Insurance	-	-	-	-	1.371	[1.362 - 1.381]
Second quintile	-	-	-	-	1.319	[1.316 - 1.322]
Third quintile	-	-	-	-	1.487	[1.483 - 1.491]
Fourth quintile	-	-	-	-	1.994	[1.989 - 1.999]
Richest quintile	-	-	-	-	2.484	[2.477 - 2.491]
N	34781		34781		34781	
Pseudo R2	0.360		0.386		0.392	

Note: Model 1 also controls for health status variable viz. illness and self assessed health status. Model 2 includes all the variables from Model 1 and further controls for marital status and region of residence. Model 3 is the full model which also includes income-related variables. In Model 3, excluding 'living with spouse and other members' all the explanatory variables are statistically significant (99 % confidence level).

Reference group for the variables are as follows: Female, economically dependent on others, living alone as inmate of an old age home, ill with poor self assessed health (SAH), illiterate, rural, uninsured, poorest quintile, widowed, non-hindu, non-muslim, non-SC/ST and non-OBC, and from Central region of India.

Table 4: Predicted probabilities of health care utilization by living arrangement and financial dependence

Living Arrangement	Status of Financial dependence				
	Independent	**Spouse**	**Children**	**Grandchildren**	**Others**
Live alone: inmate of old age home [95% C.I.]	0.138 [0.137 - 0.139]	0.143 [0.142 - 0.144]	0.139 [0.138- 0.140]	0.132 [0.130 - 0.133]	0.124 [0.123 - 0.124]
Live alone: not as inmate	0.134 [0.134 - 0.135]	0.139 [0.138 - 0.140]	0.135 [0.135 - 0.136]	0.128 [0.127 - 0.129]	0.120 [0.120 - 0.121]
Living with spouse	0.159 [0.159 - 0.160]	0.164 [0.164 -0.165]	0.161 [0.160 - 0.161]	0.152 [0.151 - 0.153]	0.143 [0.142 - 0.143]
With spouse and other members	0.152 [0.152 - 0.153]	0.157 [0.157- 0.158]	0.154 [0.153 - 0.154]	0.145 [0.144 - 0.146]	0.136 [0.136 - 0.137]
Without spouse but with children	0.136 [0.135 - 0.136]	0.141 [0.139 - 0.141]	0.137 [0.137 - 0.137]	0.129 [0.129 - 0.130]	0.121 [0.121 - 0.122]
Without spouse but with other relations	0.122 [0.121 - 0.123]	0.126 [0.125 - 0.127]	0.123 [0.122- 0.123]	0.115 [0.115 -0.117]	0.109 [0.108 - 0.109]
Without spouse but with non-relations	0.124 [0.123 - 0.125]	0.128 [0.127 - 0.129]	0.125 [0.123 - 0.126]	0.118 [0.116 - 0.119]	0.110 [0.109 - 0.111]

Figure 1: Actual, Need-Expected and Need-Standardized Utilization by Living Arrangement

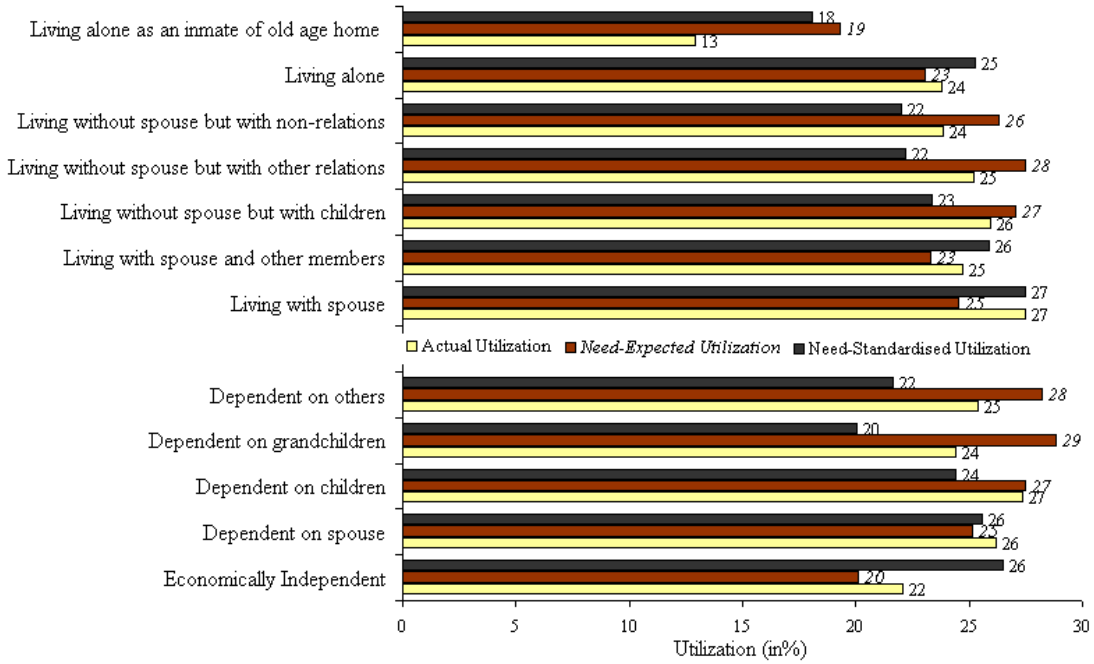

Figure 2: Predicted probabilities of health care utilization by living arrangement and consumption quintiles

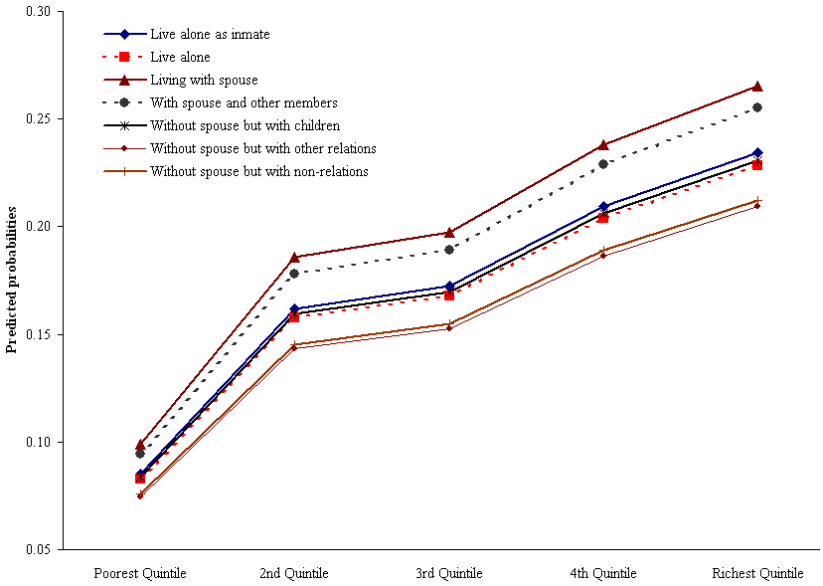

Table A1: Summary statistics (unweighted) of variables used in the analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Health care utilization	34781	0.259	0.438	0	1
Age	34781	67.56	6.879	60	100
Male	34781	0.510	0.500	0	1
Economically Independent	34781	0.339	0.473	0	1
Partly dependent	34781	0.135	0.341	0	1
Dependent on spouse	34781	0.089	0.284	0	1
Dependent on children	34781	0.499	0.500	0	1
Dependent on grandchildren	34781	0.018	0.131	0	1
Living with spouse	34781	0.111	0.315	0	1
Living with spouse and others	34781	0.464	0.499	0	1
Living with children only	34781	0.319	0.466	0	1
Living alone	34781	0.039	0.194	0	1
Living with relatives only	34781	0.038	0.191	0	1
Living with non-relations	34781	0.004	0.064	0	1
No illness	34781	0.597	0.490	0	1
SAH excellent	34781	0.053	0.223	0	1
SAH good/fair	34781	0.665	0.472	0	1
Married	34781	0.602	0.489	0	1
Never married	34781	0.012	0.111	0	1
Divorced	34781	0.004	0.065	0	1
Primary education	34781	0.213	0.409	0	1
Secondary education	34781	0.120	0.325	0	1
Higher education	34781	0.056	0.229	0	1
Urban	34781	0.639	0.480	0	1
Hindu	34781	0.803	0.398	0	1
Muslim	34781	0.101	0.302	0	1
Scheduled tribes	34781	0.093	0.291	0	1
Scheduled castes	34781	0.151	0.359	0	1
Other backward classes	34781	0.372	0.483	0	1
North	34781	0.155	0.362	0	1
East	34781	0.185	0.388	0	1
West	34781	0.120	0.325	0	1
South	34781	0.225	0.418	0	1
Northeast	34781	0.095	0.294	0	1
Union Territory	34781	0.017	0.129	0	1
Insurance	34781	0.011	0.105	0	1
Second quintile	34781	0.164	0.370	0	1
Third quintile	34781	0.227	0.419	0	1
Fourth quintile	34781	0.209	0.407	0	1
Richest quintile	34781	0.240	0.427	0	1

Source: Author (using NSS 2004)