Building knowledge base on
Population Ageing in India

Series II, Working Paper-2

Household context, social capital and wellbeing of older adults in India

Tannistha Samanta

UNFPA

Editor's Note

Dear readers,

In most countries of the world, including India, population ageing is likely to become a serious policy and programmatic issue in the coming decades. UNFPA in collaboration with the Institute of Social and Economic Change, Bangalore, the Institute of Economic Growth, Delhi and Tata Institute of Social Science, Mumbai has launched a major research project to build a knowledge base on population ageing in India (BKPAI). The study focuses on social, economic, health and psychological aspects of elderly. This peer reviewed publication is second in the series of working papers based on the data gathered from seven Indian states. We are sure that the findings of this publication will help in generating a healthy debate and policy response amongst a wider cross-section of scholars, professionals, policy makers and civil society.

Editorial Team

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ABSTRACT

Tannistha Samanta[1]

Though several decades of scholarship have contributed to a rich legacy of studies on social capital and health, empirical examination of this link has often remained limited in scope in the developing world. Using data from a newly collected survey on older adults (N=9852), this study examines two related questions: what is the direction and strength of the association between social capital and subjective wellbeing among older adults in India? And, how does the household context (e.g. living arrangement, SES) influence the social capital-wellbeing link? The study has adopted a *structural-cognitive* framework for conceptualizing social capital, whereby structural social capital is measured in terms of frequency of social visits and cognitive social capital is measured by the dimension of trust. The study follows a two-step analytical strategy - standard logistic regression analysis and propensity score stratification method - to adjust for confounding factors, a methodological dilemma that most demographic studies relying on cross-sectional non-randomized, observational data typically encounter. The substantive and consistent finding from both the analyses (after controlling for confounding) is the positive association between social capital and subjective wellbeing, highlighting the important role of social engagement, participation and trust. Results also suggest that social engagement and trust trump the co-resident advantage, a finding that has been consistently demonstrated in the demographic literature on developing countries. Additionally, age, gender, wealth and rural residence of older persons are also shown to affect their wellbeing.

Findings from the study are consistent with the Madrid International Plan of Action on Aging (MIPAA, United Nations, 2002) recommendations (1) on the role of community-based organizations and multi-sectoral partnerships among families, civil societies, religious organizations, corporations and media in ensuring enabling and supportive environments for older people in rapidly changing developing societies, (2) on a "rights based" approach of participation and freedom, where current and future cohorts of older people are able to take advantage of active aging practices and opportunities.

Keywords: social capital, living arrangement, subjective wellbeing, India

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Background

It is well recognized in the demographic literature of developing countries that the household context has a critical role in influencing the socioeconomic and health outcomes of older persons (Yount, 2009; Chen & Short, 2008; Rajan, 2006; UNDESA 2005; Palloni, 2002). In addition, it has been demonstrated that social networks, trust and family ties are key institutions providing support, care and opportunities for older adults around the world (Cramm, et al. 2012; Yamaoka, 2007; Berkman, 2000; Penning, 1995). However, despite increasing academic acknowledgement of the complex associations between family structures, ties, networks and health, studies examining these linkages in the developing world are limited and inconclusive. In part, this can be explained by the widespread belief that older persons are well provided for by their children (a majority of older adults live with their children in the developing world), and also the lack of good quality data to examine such linkages. Furthermore, estimating the effects of confounding variables in health research has been a long-standing methodological dilemma for demographers relying on cross-sectional data (Moffitt, 2005). Very recently, several data initiatives on older persons (e.g. LASI and WHO-SAGE) have made it possible to carry out in-depth investigation of social and economic determinants of wellbeing.

Understanding the relationships between family structures, social ties and wellbeing are compelling in the developing world as demographic transformation - from a youthful to a more mature society - is occurring at a far more rapid rate in the developing world than in today's industrially advanced countries. For example, Asia's population, currently estimated to be 4.2 billion, is expected to increase to about 5.9 billion by 2050 (United Nations, 2008). Furthermore, for the first time in history, there will be roughly as many people in Asia over the age of 65 as under the age of 15 by mid-century (Smith & Majumdar, 2012). India is no exception. As societies as a whole "age" (Kirk, 1996), the demographic, social and health transitions will demand the conventional institutions (e.g. family, marriage, community, etc.) to adapt and develop different approaches to support, care giving and family life (Llyod-Sherlock, 2002).

Drawing data from a new cross-sectional survey of seven selected states - *Building Knowledge Base on Population Ageing in India*, 2011 (hereafter, BKPAI) - the current paper investigates the association between social capital (structural and cognitive) and wellbeing of older adults. In particular, the paper examines the role of family structure (living arrangement) in influencing the link between social capital and wellbeing. Research on India has consistently demonstrated that family still remains the central source of support for older persons (Samanta, 2012; Rajan 2006). The debates over dissolution of extended family forms (as a result of modernization-led forces) and the rise in nuclear families in India are inconclusive (Sathyanarayana et al. 2012; Rajan & Kumar, 2003; Shah, 1996; Caldwell, et al. 1984). However, what most studies agree upon is the extended (joint) family system, which not only is the dominant form of living arrangement but also serves as a crucial site for support (healthcare, care giving and security) for older adults (Dey, et al. 2012; Rajan, 2001). Hence, it can be safely argued that despite demographic and socioeconomic transformations, India's older populations will continue to rely on family and social networks (Gupta, 2009), given the resilient cultural scripts around filial obligation (Croll, 2008; Caldwell, et al. 1984) and fragile institutional support systems. Surprisingly, studies examining empirical relationships between social networks, trust and wellbeing indicators of older persons are very sparse in the demographic literature on India.

In a policy context where the Indian government has introduced legislation and programs (e.g. *Maintenance and Welfare of Parents and Senior Citizens Act*, 2007; *National Policy on Older Persons*, 1999) to uphold family values of filial obligation and inter-generational bonding, the current study is an important step to understand

the strengths of the network dynamics of older persons and their families. Specifically, from a policy standpoint, the study can answer questions such as: can the whole gamut of social support (e.g. networks, affiliations and ties) be used as a convoy (Antonucci, et al. 2014) to protect and/or buffer against the challenges of growing economic/non-economic burdens of population aging? If so, at what aspects and level of social support should policies be targeted? Finally, by also specifically focusing on living arrangements, the study will provide insights into the role of familial and/or non-familial social support that are essential for coping with issues associated with life events and for maintaining overall wellbeing. Again, from a policy perspective, the implications of availability of social support by living arrangement type (e.g. living alone versus living in a multigenerational household) will be a crucial one for designing financial as well as institutional provisions for the older persons in India. This dimension of population aging in developing societies has been persuasively put forth by the Madrid International Plan of Action on Aging (MIPAA, United Nations, 2002) where mutually interdependent multi-sectoral efforts have been suggested to "build a society for all ages". Thus, the current study hopes to (1) advance the scholarship on social demography by adopting a relatively new method (propensity score stratification method) to adjust for possible selection bias and better estimate the effect of confounding variables in health outcomes research (explained in the "methods" section), and (2) build on the recommendations of the MIPAA (United Nations, 2002) by connecting research with policy.

Aging, social capital and health: studies from India and beyond

A burgeoning empirical literature has linked social support, networks and ties to a variety of health outcomes and measures of wellbeing (Yip, et al. 2012; Sudha, et al. 2006; Kawachi, et al. 2004; Penning, 1995; Berkman & Syme, 1979). Findings vary in strength and ambiguities regarding the conceptualizations, measurement and modelling of social support. Studies have often used "social capital" as an umbrella term covering several more well-defined forms such as group memberships, community participation, trust, networks, family ties and confidence in institutions. Berkman and colleagues' (2000) important work clarified the many terms associated with empirical studies on social capital, into a schematic framework. Furthermore, social capital has been conceptualized to operate at both individual and collective levels (Cramm, et al. 2012; Vanneman, et al. 2006; Kawachi & Kennedy, 1997; Putnam, 1993). With respect to the first, social capital "is embodied in the relations among persons" (Coleman, 1990) and hence it is a resource that creates opportunities or facilitates social exchange that would otherwise not be possible or would be more costly (Vanneman, et al, 2006). When conceptualized as a resource at the community level, social capital is built up through voluntary civic engagement and trust in the community facilitating achievement of collective goals that cannot be accomplished by individuals alone. This approach is most notably associated with the "communitarian view" of social capital as argued in the influential works of Putnam (1993; 2000).

Another useful extension of this concept that has gained currency in recent years is the distinction between *structural* and *cognitive* dimensions of social capital (Yamaoka, 2008; Yip, et al. 2007; Harpham, et al. 2002). More specifically, the structural dimension includes *behavioural* manifestations of social capital (e.g. organizational membership), while the cognitive dimension subsumes *attitudinal* manifestations (e.g. interpersonal trust, norms of reciprocity, etc.). Studies employing these two dimensions have examined patterns in mortality, life expectancy, self-reported health status and wellbeing (Yamaoka, 2008; Kawachi, et al. 2004). Given this multidimensional framework, social capital has often been linked not only to health but also to political activity and mobilization (Krishna, 2002), levels of crime (Grootaert et al. 2004), economic development (Inglehart, 1997), confidence in institutions (Vanneman, et al. 2006), patriarchy (Andrist, 2008) and household welfare and poverty (Grootaert, 2001). The current study has adopted this structural/cognitive framework while examining the association between social capital and wellbeing of older adults at the individual level.

A majority of the gerontological research on social capital and health has been conducted mainly within the contexts of high and middle income countries. For example, drawing from cross-sectional (Cramm, et al. 2012; Mohnen.et. al, 2011; Helliwell & Putnam, 2004) and panel data (Poortinga, 2006) from the United States and Europe, studies have shown both positive as well as no association between social capital and health/wellbeing; as noted earlier, findings often vary owing to the conceptualization and measures of social capital. However, much less is known about this association within developing country contexts. Some notable exceptions include Yamaoka, 2008 (East Asia), Yip, et al. 2007 (China) and Harphan, et al, 2004 (Colombia). Gerontological literature on India is further limited to a handful of studies looking at the associations between social support/networks and health (Berkman. et al. 2012) or health care access (Sudha, et al, 2006) of older persons. While employing the concept of social capital as a predictor for socioeconomic outcomes (Vikram, et al. 2012; Andrist, 2008; Krishna, 2002) is not entirely rare in India, the link between social capital and health has remained largely unexplored. The current study aims to fill that gap.

Social Capital: Theoretical Considerations

Several decades of scholarship have led to a rich legacy of perspectives on social capital. As rightly pointed out by Berkman, et al. (2000), theoretical orientations from diverse disciplines are important drivers to advance the empirical research in this area. Theoretical literature on social capital can be traced back to the classical works of Durkheim (1893) and Marx (1848) in their emphasis on group membership as an antidote to *anomie* and capitalist forms of economic systems respectively. In particular, Durkheim's argument that individual pathology was a function of social dynamics in *Suicide* (1897) is of great relevance to understand how contemporary macro-social transformations (e.g. urbanization, out-migration, and changing family patterns) are linked to individual psychological processes (physical and emotional wellbeing). A related approach forwarded by noted social-psychologist, John Bowlby (1966; 1973; 1980), advanced the field with themes of attachment, security and engagement. In his works on childhood and adult development, Bowlby maintained that intimate bonds and attachment throughout a life-course are crucial for both cognitive development and good health. Specifically, in adulthood, Bowlby saw marriage as the adult equivalent of attachment between infant and mother during childhood. This conceptualization has important implication for research on gender and aging in India. Research has consistently demonstrated that older women, particularly widows, are vulnerable given the differences in men and women's marital histories, allocation of economic resources/land ownership, employment opportunities and restrictions on remarriage which are further exacerbated under patriarchal kinship norms (Chen, M & Drez, 1992; Agarwal, B, 1998; Rahman, 2000).

A later wave of research, led by Pierre Bourdieu (1985), conceptualized social capital by underscoring the dynamic and dialectical nature of the processes involved. Bourdieu defined social capital as a "….sum of actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of acquaintance or recognition - or in other words to membership of a group - which provides each of its members with the backing of the collectively-owned capital, a 'credential' which entitles them to credit, in the various senses of the word" (Bourdieu, 1985, p. 248, 1980). Inherent in this definition is the underlying dynamic forces involving support and network systems. This dynamic nature of the conceptualization allows health research to go beyond examining health "status" (a static interpretation) to an investigation of health "transitions" (e.g. role of social capital in the onset and recovery of poor health) (see Carpiano, 2007; Pevalin and Rose, 2002, for empirical tests of Bourdieu's theory).

Thus, the preceding discussion on complementary theoretical orientations of social capital sets the stage for an empirical examination of the effects of social capital on subjective wellbeing of older populations in India. Given the cross sectional nature of the BKPAI data, empirical investigation of "transition" (as suggested by

Bowlby and Bourdieu) and neighbourhood contexts influencing health are limited. Hence, the focus is on examining the effect of structural and cognitive dimensions of social capital on subjective wellbeing, at the individual level.

Data

Access to a new cross-sectional data focused on older adults in India allowed the study to examine the aforementioned associations empirically. Drawing from seven selected states in India, namely, Kerala, Tamil Nadu, Maharashtra, Himachal Pradesh, Punjab, Odisha (formerly Orissa) and West Bengal, BKPAI (2011) collected information on socio-demographic characteristics of households that have one or more older persons (60 and above), in addition to capturing information on functioning and management of old age institutions. The states were chosen for their regional/geographical representation and were also the ones that had higher than (national) average proportion of older adult populations. The older adult population percentages ranged from about 12 percent (West Bengal) to about 16 percent (Himachal Pradesh).

In particular, two sets of questionnaires were administered - household and individual. The *household questionnaire* collected background information including household amenities, caste, religion, household ownership, deaths and causes of mortality and measures to compute household living standard. The *individual questionnaire* had six modules capturing information on socio-demographic characteristics, past and current work status, income and assets, living arrangement and familial relationships, subjective health and health seeking behaviour, and finally, social security awareness and coverage. For the current analysis, the majority of indicators were drawn from the individual questionnaire modules. A total of 9,852 older adult interviews were conducted drawing from 8,239 households from the seven selected states. Furthermore, the survey included both rural (villages) and urban (urban wards) households. The overall household and individual completion rates were 95 percent and 93 percent respectively. Funded by the United Nations Population Fund (India), the survey was designed and administered by a team of researchers from Institute of Social & Economic Change (ISEC, Bangalore), the Institute of Economic Growth (IEG, Delhi) and the Tata Institute of Social Sciences (TISS, Mumbai). More information about the sample design and the survey can be found at the UNFPA-BKPAI Report (2012).

Measures

Variables of interest are described in this section. The dependent variable is the subjective-wellbeing, while the primary independent variables are living arrangement and social capital; control variables include socio-demographic variables and regional characteristics.

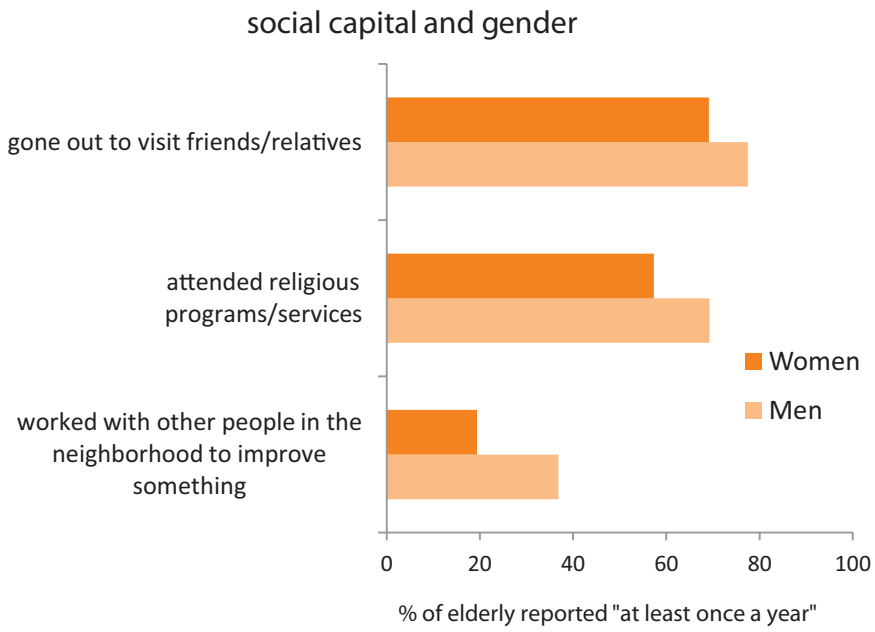
Social capital

As noted earlier, the study uses the structural-cognitive conceptualization of social capital (Yip. et al, 2007; Kawachi, et al. 2004). Structural social capital (i.e. behavioural manifestations of network connections, participation in political or cultural activities and group memberships) has been measured variously in the

existing literature with measures ranging from organizational memberships (e.g. voluntary organization, sports clubs, trade unions, political parties, etc.) to frequency of meetings with friends/relatives (Giordano & Lindstorm, 2010; Yip et al. 2007). In particular, interaction with friends may improve wellbeing through multiple channels, such as through diffusion of health information, mutual assistance and economic support, promotion of healthy behaviour (e.g. preventing smoking and drinking, jogging and weight control) (see. Lindstorm, et al. 2003), thereby fostering a "buffering effect" (Kawachi, et al. 1999) that help people to deal with distress related to age and sickness.

In this study, structural social capital is measured by two sets of questions on social activities. The BKPAI (2011) survey had asked participants *how often in the last 12 months have they attended religious programs/ services* (not including weddings and funerals) and *have gone out of the house to visit friends or relatives*. Response categories included never, once or twice per year, once or twice per month, once or twice per week and daily. Based on the distribution of responses to these questions, the variables were recoded with two categories - "never" and "at least once a year". Of the total older men (N= 4508) and women (N=4947) who responded to these questions, the data showed a clear gender divide in remaining active socially (see Fig 1). For example, 69 percent of men and 57 percent of women indicated that they had attended or participated in religious programs/services while 77 percent of men and 69 percent of women reported having gone out to visit friends and relatives at least once a year. The gender difference in responses to both the questions highlights the restrictions on women's physical mobility in patriarchal societies - a gender segregated behaviour against women that has been well documented in the gender literature on India (Desai & Andrist, 2011; Jejeebhoy. et. al. 2001; Derne, 1994). In addition, overall lower levels of economic opportunities, health and education (Rajan. et al. 2003; Agarwal, 1998) may limit women's social activities and participation in the public sphere.

Figure 1: Social capital and gender, India, 2011



Source: *BKPAI, 2011*. N_{men}= 4508, N_{women}= 4947

Trust, an important dimension of cognitive social capital, was captured by the question, *do you have someone you can trust and confide in*? The response options were "yes" or "no". A majority of the respondents (82 percent) indicated that they have someone to trust and confide.

Living Arrangement

The current study argues that living arrangement is a crucial mediating factor in the association between social capital and subjective wellbeing. In this analysis, living arrangement has been conceptualized keeping in mind the theoretical underpinnings of family sociology (Palloni, 2002). In particular, co-residence with adult children, in developing societies, has been shown to serve as a means of both economic and non-economic (e.g. care giving, companionship, etc.) support (Samanta, 2012; Rajan, 2006; UN DESA 2005). Furthermore, the interaction between living arrangements and social networks and its effect on wellbeing of older adults have been studied with mixed findings (Chan. et. al. 2011; Knipscheer, et al. 1998). For instance, Knipscheer, et al (1998) report from the Netherlands based NESTOR study that age was a crucial determinant for availability and functions of social networks; specifically, the young old were not only more likely to have larger networks but also more likely to live alone, to be divorced and to participate in shared housing arrangements. Marital and occupational histories were also important predictors of networks and living arrangement decisions (*ibid)*. A recent study by Chan and colleagues (2011) on community dwelling among older adult Singaporeans shows a clear association between living arrangements, social networks and emotional wellbeing (depressive symptoms). In particular, this study showed that both women and men experienced higher rates of depressive symptoms when they lived alone or at least with one child (when compared to those living with spouse and children) and had weaker non-familial networks. Thus, the findings from these studies motivate the current study to examine these linkages in the Indian context - something which has been grossly lacking in the gerontological literature in the country.

The current study categorizes living arrangement into five mutually exclusive groups: *living alone* (older adults who are living on their own); *living with spouse only*; *living with spouse and (adult) children*; *living only with children*; and *living with others* (older persons living with nephew/niece, siblings, servants and relatives). The living arrangement variable has been constructed using the household roster in the household questionnaire, where all household members are identified in terms of the relationship to the household head. Based on this conceptualization, the survey indicates that about 6 percent (N=562) of older adults live alone, about 15 percent (N= 1385) live only with spouse, about 41 percent (3893) live with both spouse and children, about 30 percent (N=2842) only with children and about 8 percent (N=780) with others. Consistent with previous studies on living arrangements (Sathyanarayana. et al. 2012; Agarwal, 2012; Rajan, 2006; UN DESA 2005), multigenerational families (i.e. living with spouse and children or living with children) emerge as the dominant living arrangement type in our study, underscoring the cultural importance of filial obligation and expectation of intergenerational social contract (Gupta & Pillai, 2002; Bisht & Sinha, 1981).

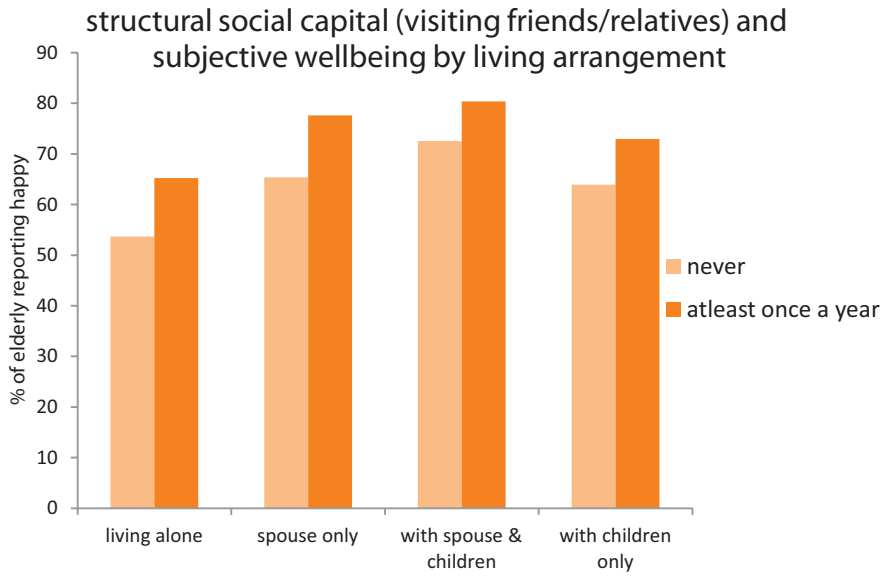
Subjective Wellbeing

Finally, the dependent variable of the study is the subjective health question - *Overall, how happy are you with the kind of things you have been doing in recent years?* Response options included, very happy, quite happy and not so happy. This variable was coded as a dummy with 1 if the respondent reports either "very happy" or "quite happy", 0 otherwise. As indicated earlier the choice of this question as the outcome variable has been motivated by empirical studies from both developed and developing country contexts demonstrating a positive association between overall wellbeing and social capital (Berkmann, et al. 2012; Yamaoka, 2008; Yip, et al, 2007; Bjornskov, 2003).

Bivariate associations between both the dimensions (structural and cognitive) of social capital and subjective wellbeing have been presented in Figures 2 and 3. Furthermore, the associations have been presented by living arrangement types and gender to get insights of the overall patterns. On average, older adults who report

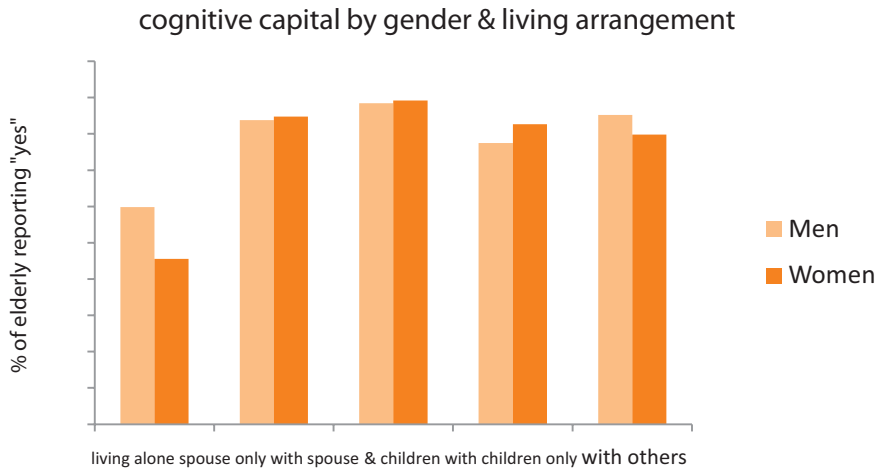
visiting friends and relatives at least once a year are the ones who are happier than those who have not visited anyone in the last 12 months [Figure 2]. This association holds true for all older adults regardless of their living arrangements. However, in terms of living arrangements, older persons who live alone report lower levels of social engagement and happiness as compared to their co-resident counterparts. It is interesting to note that those living with a spouse (that is, either only with a spouse or with both spouse and children) report higher levels of social engagement and happiness, highlighting the positive role of marriage as demonstrated elsewhere in family demography (Musick and Bumpass, 2012; Waite .et al. 2000; Waite, 1995). Similar patterns are found for cognitive social capital (i.e. trust), with older adults living with spouse reporting higher levels of "trust" in their current relationships than those living alone. [Figure 3] Since both the figures present observations based on bivariate associations, it remains to be seen whether age, marital status and gender emerge as important predictors of subjective wellbeing even after controlling for all background characteristics (i.e. multivariate analysis).

Figure 2: Structural social capital and subjective wellbeing by living arrangements, India, 2011



Source: *BKPAI, 2011*. N_{men} = 4508, N_{women} = 4947. Subjective wellbeing is measured by the question-*Overall, how happy are you with the kinds of things you have been doing in recent years?* The bars show the percentage of older adults who reported either "very happy" or "quite happy"

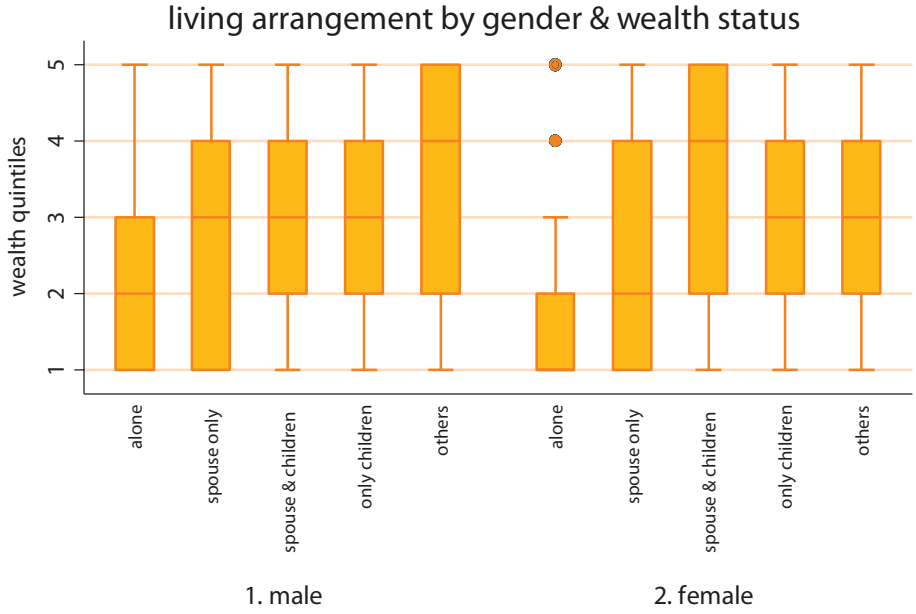
Figure 3: Cognitive social capital by gender and living arrangements, India, 2011



Source: *BKPAI, 2011*. The bars show percentage of elderly who have responded "yes" to the question: *Do you have someone you can trust and confide in?* N_{men} = 4508, N_{women} = 4947 [Figures 2 and 3]

Other background variables include caste, religion, education, place of residence (rural/urban), work status, pension status and wealth index. India has a stratified society with caste or *jati* and religion being defining features that permeate social life in many levels (Drez & Sen, 2013; Gupta, 2005; Srinivas, 1996; Beteille, 1992). Social distances in terms of residential segregation, language, identity formation, occupations are still common between upper and lower castes and Hindus and Muslims (For detailed studies on segregation and clustering, see Gupta, 2005; Bayly, 2001; Sharma, 2000). Hence, the study includes these stratification parameters as it is no surprise that these will also shape social networks and support (Vanneman. et al. 2006; Srinivas & Beteille, 1964). The current study distinguishes three major caste groups: General (includes high caste Brahmins and non-Brahmins) 40.5 %, Scheduled Castes (SC) and Scheduled Tribes (ST) 25%, and Other Backward Castes (34.6%). In the Indian caste system the OBCs, STs and SCs are considered to be lower order social groups and SCs and STs are typically at the bottom on most of the indicators of well-being (Desai, et al. 2010: 208). Religion has been classified into three major groups - Hindu (80%), Muslim (6.7%), Sikh (8.7%) and Other (includes Christians, Jains and other religious groups) (4.3%). Both caste and religion groups are included in the multivariate analyses as dummy variables with high caste Brahmins and Hindus serving as the comparison group for caste and religion dummies respectively.

Figure 4: Boxplots showing association between wealth status and living arrangements by gender



Source: *BKPAI, 2011*.

Education enters the multivariate analyses as a continuous variable and is measured by completed years ranging from 0= no education through 12 & more years= graduate degree. Marital status is measured as a two category variable, currently married (60%) and widowed/single (49%). Other marital status categories - divorced, separated or absent spouse - are ignored for this analysis as they are not theoretically relevant for the Indian context because of extremely low divorce rates among the older cohorts. Wealth quintiles have been created to measure household economic status. The quintiles are based on 30 household assets and housing characteristics (e.g. electrification, drinking water source type, toilet facility, house ownership, ownership of household appliances such as mobile telephone, colour television, refrigerator, etc.). One-fourth of the households surveyed fall under the lowest wealth quintile, whereas only 15 percent households belong to the highest wealth quintile. Consistent with the majority of demographic studies on India, substantial regional diversity was observed with respect to wealth - over 60 percent households in Odisha fall under the lowest income quintile, as opposed to just 5 percent of the households in Kerala, Punjab and Himachal Pradesh.

Furthermore, studies on living arrangements of older adults in India have reported lower levels of wealth for those living alone, particularly for women (Rajan, 2006). Figure 4 presents the association between wealth status and living arrangements by gender.

Finally, all models control for chronic morbidity (whether suffering from diabetes, arthritis or high blood pressure) and disability (those who reported "yes, fully" to difficulties either in vision, hearing, walking, chewing, speaking or memory). By these conceptualizations, about 47% older adults reported suffering from chronic morbidity for a period ranging from 6 months to 5 years from the survey, while about 17% had some functional limitations. Additionally, models controlled for work information (whether the respondent has ever participated in any economic activity) and pension income (includes pension benefits either from the *National Old Age Pension Scheme*, the *Annapoorna Scheme* or the *Widow Pension* in the last 12 months), both of which are indirect indicators of economic status and may influence support networks.

Table 1: Descriptive statistics of the dependent and independent variables used in the analyses (N =9462), 2011

Variables	Mean	S.D	Min	Max
Social engagement: how often in the last 12 months have you gone out to visit friends or relatives? *(never; once or twice per year; once or twice per month; once or twice per week, daily)*	2.02	0.877	1	5
Subjective wellbeing: overall, how happy are you with the kinds of things you have been doing? *(very happy; quite happy; not so happy)*	2.13	0.601	1	3
Trust: do you have someone you can trust and confide in? *(1= yes; 0=no)*	0.82	0.375	0	1
Living Arrangement (*alone; with spouse only; with spouse & children; with children, no spouse; with others*)	3.95	1.046	1	5
Age	67.72	7.402	60	116
Female dummy	0.52	0.491	0	1
Married *(=1; 0 = single/widowed/separated)*	0.63	0.480	0	1
Education	2.79	4.155	0	15
Caste *(Brahmin; OBCs; SCs; STs; other castes)*	3.09	1.381	1	5
Religion (*Hindu; Muslim; Christian; Sikh; other religion*)	1.33	0.834	1	5
Urban *(1= urban,0= rural)*	0.47	0.49	0	1
Wealth Quintiles	3.04	1.41	1	5
Whether receives any pension	0.17	0.383	0	1
Chronic Morbidity (*whether suffering from either diabetes, arthritis or high blood pressure)*	0.47	0.499	0	1
Disability (*reported "yes, fully" to difficulties either in vision, hearing, walking, chewing, speaking or memory)*	0.17	0.377	0	1
Ever worked (excluding housework)	0.63	0.481	0	1

Source: *BKPAI, 2011*

Analytical Strategy: Methods

The study follows a two-step analytical strategy to empirically test the association between subjective wellbeing and social capital among older people. In the first step, we estimate three logistic regression models to understand the role of social capital and other covariates in explaining subjective wellbeing of older persons. In the second step, we perform a stratified propensity score analysis to adjust for the effect of cofounding variables in health outcomes research (here, subjective wellbeing). The goal of a two-staged analytical strategy is to ensure empirical robustness and confidence in the findings that will follow.

The first logistic regression model examines the overall relationship between social capital (structural and cognitive) and subjective wellbeing. The second model includes living arrangement dummies; the goal is to examine if the association between social capital and wellbeing is mediated through household types. In the final model, all other socio-demographic, economic and health variables are added to empirically locate the social capital-wellbeing association in a broader context. Results are discussed in the next section.

In addition to the above models, given the lack of longitudinal data, the study has employed the propensity score stratification method, to better estimate the effect of confounding variables. As noted earlier, studying associations in health outcomes research is complex, especially when one is relying on cross-sectional, observational data where random assignment is not feasible (Hirano & Imbens, 2001). Empirical inconsistencies may arise due to confounding and selection bias. For example, in this study, if we observe a positive association between social capital and subjective wellbeing, it is unclear if this is relationship is confounded by good health, i.e. older people who are healthier are generally more socially active, and are also the ones who report being happier at a higher rate compared to the general population. To reduce this bias, observational studies often borrow the language of the experiments, i.e. treatment group and the control (or untreated) group. In a basic model for health outcomes research based on observational studies, one estimates the effect of a treatment (here, social capital) on an outcome of interest (here, subjective wellbeing), while controlling for confounding factors. This can be achieved through propensity score techniques.

The logic of propensity score is based on the influential counterfactual framework of Neyman-Rubin where propensity score is defined as the *conditional probability of receiving treatment given observed covariates* (for more explanation on the theories and algorithms of this method, see Rosenbaum & Rubin, 1983).

$$p(X) = \Pr(D = 1 \mid X) = E(D \mid X)$$

Where D = {0,1} is the indicator of exposure to treatment and X is the multidimensional vector of observed covariates. Once propensity scores have been estimated, if the treated and controlled subjects have a similar propensity score, the observed covariates are automatically controlled for. Therefore, any differences between treatment and control groups may be attributed to the receipt of treatment and *not* as a result of observed covariates. In the stratified analysis, the estimated propensity score is used to stratify subjects into subclasses (or quintiles), with similar propensity scores. The treatment effect is estimated within each stratum and also the treatment effects for all strata are combined to estimate the overall treatment effect (Guo, et al. 2010) For the purpose of this analysis, the study has used psmatch2 (Leuven & Sianesi, 2003), a user developed program available in STATA, which includes pscore and att programs. The current study has benefitted from the instructions and modules offered in these programs.

Results and Discussion

Results from the multivariate logistic regression analysis are presented in Table 2.

Table 2: Logistic regression analysis (odds ratios) on the likelihood of subjective wellbeing among older adults in India (N=9455)

	Model 1: *(social capital)*	Model 2: *(Model 1+ living arrangement dummies)*	Model 3: *(Model 2 + sociodemographic and economic controls)*
structural social capital *(visit friends/relatives at least once)*	1.516***	1.453***	1.143*
	(-8.04)	(-7.16)	(-2.38)
Cognitive social capital *(someone to trust)*	1.921***	1.767***	1.434***
	(-11.16)	(-9.4)	(-5.58)
Living alone[a]		0.679***	0.874
		(-3.50)	(-1.13)
Living with spouse & children		1.213**	0.992
		(-2.59)	(-0.10)
Living with children, no spouse		0.831*	0.86

		Model 1: *(social capital)*	Model 2: *(Model 1+ living arrangement dummies)*	Model 3: *(Model 2 + sociodemographic and economic controls)*
			(-2.46)	(-1.75)
Living with others			0.746**	0.653***
			(-2.92)	(-3.94)
Female (=1; 0=Male)				0.928
				(-1.00)
Aged 60-69[b]				1.386***
				(-5.56)
Aged 80 & above				0.924
				(-0.90)
Muslim[c]				0.632***
				(-4.74)
Sikh				2.366***
				(-7.26)
Other Religion				1.604**
				(-3.26)
Upper castes[d]				1.078
				(-1.1)
Other Backward Classes (OBC)				1.313***
				(-4.08)
No education[e]				0.682***
				(-5.54)
Primary education				0.803*
				(-2.55)
Some college education				1.066*
				(-0.52)
Has one or more chronic morbidity conditions				0.797***
				(-4.41)
Has one or more functional limitations				0.597***
				(-7.97)
Has ever worked				0.898
				(-1.51)
Has been receiving pension				1.172*
				(-2.39)
Wealth quintiles				1.489***
				(-16.32)
Urban location (=1; 0=rural)				0.842**
				(-3.09)
Log likelihood	-5295.6	-5260.5	-4845.0	
Chi-squared	208.9	279.1	1110.1	
N	9455	9455	9455	

Source: BKPAI, 2011; * p<0.05, ** p<0.01, *** p<0.001
Note: T statistics are in parentheses.

[a]*Living with spouse is the reference category;*

Overall, as expected, social capital (structural and cognitive) is positively associated with subjective wellbeing of older adults in India. Specifically, older adults who have visited their friends/relatives at least once a year are more likely to be happy than those who have not, highlighting the positive influence of ties and networks. In terms of cognitive capital, trust is associated with increased odds of being happy. While these results are consistent with previous studies on social capital and health (Berkman, et al 2012; Yip. et al, 2007), results also show that the magnitude of the positive effect of social capital diminishes when controlled for living arrangements and SES[1] related covariates [$OR_{\text{structural social capital}}$: 1.52 (model 1) versus 1.14 (model 3) and $OR_{\text{cognitive social capital}}$: 1.92 (model 1) versus 1.43 (model 3)].

[1] SES (or socioeconomic status) is a term popularly used in the scientific literature of demography and public health. The term includes information that reflects an individual's or family's economic and social position. Typically, it includes information on income, education and occupation. In the context of India, the term may also signify caste and religion information.

Contrary to expectations, results indicate that there is no clear benefit of co-residing in joint families as opposed to living alone, in terms of subjective wellbeing (models 2 and 3). Specifically, in model 3 (the most comprehensive model), even after controlling for all other variables, the odds of being happy has no clear statistically significant association with any of the living arrangement types, when compared with those who live with their spouse. This finding is crucial, as it underscores two things: *First*, as observed in the bivariate analysis (not reported here) living with spouse seems to be more beneficial for older adult emotional wellbeing than living either with only children or with both children and spouse. This finding has implications for health programs and policies designed for older people in the country as trends in living arrangement indicate a growing number of elderly couple only households (Sathyanarayana, et. al 2012). *Second*, this result is substantively different from empirical studies on living arrangement and physical health outcomes of older persons in the country (Samanta, 2012; Sen & Noon, 2007), where the multigenerational family emerge as the most beneficial site for care giving and social security. While acknowledging the importance of multigenerational families (that are also generally wealthier) in the absence of institutional support for older adult wellbeing, it is useful to pay attention to the alternative forms of support (e.g. social participation and ties). As the country continues to experience demographic, health and family transitions, it will be critical to recognize alternative models of care and support, *outside* the traditional family setting.

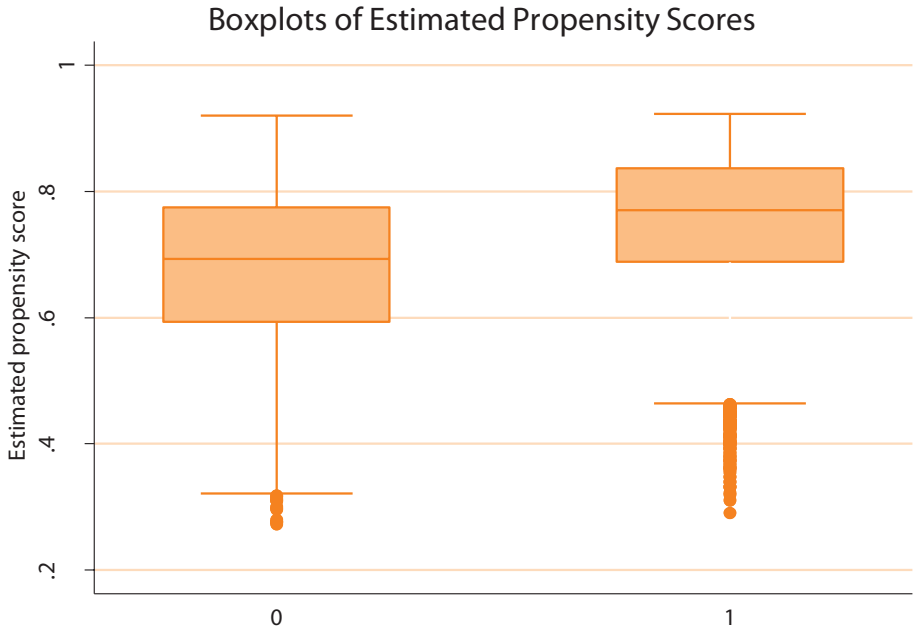
A few other results deserve attention. For this discussion, the focus is only on Model 3. For instance, age is strongly associated with the odds of being happy. In particular, those in the age group 60-69 are 1.38 times [OR: 1.38] as likely to be happy as those in the age group 70-79, holding all other variables constant. Younger older adults have increased odds of being happy than their older counterparts. Part of this finding can be explained by highly statistically significant odds ratios for chronic illness and functional limitation conditions, both of which are likely to increase with age. The analysis also indicates reduced odds of being happy for an older adult woman. A surprising finding, however, is the statistically non-significant interaction term (not shown in the table) between female social capital (both structural and cognitive) and wellbeing. Women have been consistently perceived as "kin keepers" (Hagestad, 1986) with higher "bridging potential" (Corwall, 2011) across most cultures, which suggest a greater "connectedness" with the family and community at large. However, the contrary finding in this analysis is suggestive of the higher mobility difficulty (due to chronic illness and functional limitations) that women experience as they grow older (Sengupta & Agree, 2010), in addition to gender segregated restrictions on physical mobility in patriarchal settings (Desai & Andrist, 2010). Both these findings on how age and gender interact with wellbeing and social networks are consistent with a recent study on India (see Berkman, et al. 2012). In addition, these findings shed light on the gendered process of aging in India.

Findings on social group differences in subjective wellbeing among older adults are mixed. For example, Muslims are 0.36 times [OR:0.63, $p<0.001$] less likely than Hindus to have reported being happy, after controlling for other variables. This result is consistent with existing studies on the intersectional nature (class, caste and wealth) of socioeconomic and health inequalities in India (Drez & Sen, 2013; Desai & Dubey, 2012). However, results also indicate no significant caste-based differences in terms of subjective wellbeing among older persons. But higher levels of education [$OR_{\text{college education}}$: 1.06; $p<0.05$] and wealth [$OR_{\text{wealth quintiles}}$: 1.48; $p<0.001$] being associated with increased odds of happiness may suggest the complex linkages between socioeconomic inequalities and wellbeing. These mixed results warrant further investigation. Finally, contrary to most demographic studies on India reporting a consistent urban advantage in health outcomes (often mediated by wealth) (see Samanta, 2012; Desai et al. 2010), the current study reports increased odds of happiness with those residing in rural areas, after controlling for other covariates. This is an interesting finding as it hints at a higher degree of social cohesion and participation in rural communities which in turn has a positive influence on the subjective wellbeing of older persons.

Results from propensity score stratification analysis

As noted earlier, since the data is being drawn from a non-randomized, cross-sectional observation survey, the current study employs a propensity score stratification method to reduce the effect of selection bias and confounding variables. To perform the stratified analysis, the sample was sorted by estimated propensity scores in an ascending order and then divided into four strata using the estimated propensity scores**.** Two sets of stratification analyses were conducted, each for structural and cognitive social capital. The distribution of the estimated propensity scores into two groups (treatment and control) for the structural social capital has been presented in Figure 5.

Figure 5: Boxplots showing estimated propensity scores for the treatment groups



Source: *BKPAI, 2011*. $N_{control}$= 2543 ; $N_{treatment}$= 6919. The "treatment" here is the structural social capital variable (whether visited friends/relatives)

Often researchers (Perkins, et al, 2000; Landrum & Ayanian, 2001) have used quintiles of estimated propensity score to create strata but given the distribution of the propensity score in the current sample, dividing into four strata ensured adequate cases in both the treatment and control groups. Table 3 provides the total number of cases for each propensity score stratum. A similar exercise was performed for cognitive social capital (stratum specific cases not reported here).

Table 3: Treatment and control samples per propensity score stratum (structural social capital)

Propensity scores	$N_{control}$ ($N_{treatment}$)
[.00 0.5)	256 (206)
[0.5 0.75)	1479 (2792)
[0.75 0.85)	607 (2541)
[0.85 1]	201 (1380)

Source: BKPAI, 2011. $N_{control}$= 2543 ; $N_{treatment}$= 6919

Estimates of the overall impact of social capital on subjective wellbeing were obtained by calculating the weighted average of the stratum specific differences (Rosenbaum & Rubin, 1984) and are reported in Table 4. The treatments are also compared pre and post the propensity score stratification method to illustrate the differential effects of confounding. Overall, results from the propensity score stratification method highlight the positive role of social capital on subjective wellbeing. This finding is consistent with the previous logistic

regression analysis. In Table 4, column A shows the baseline situation, that is, the percentage of those who are "untreated" or in the control group for the specific social capital variable. For example, in the case of structural social capital, the statistically significant difference in subjective wellbeing between the treatment (older adults who visit friends/ relatives at least once a year) and control (those who have never visited friends/years) groups, is about 10 percentage points. However, after adjusting for the effect of confounding variables, the magnitude of the association is diminished (4.3 percentage points versus ~10 percentage points). Similarly, for cognitive capital (row 2), after adjusting for confounding, the statistically significant difference in subjective wellbeing between those older adults who have experienced interpersonal trust versus those have not, is about 8 percentage points (6 percentage points lower than without adjusting for possible biases). The substantive finding, however, remains consistent across alternative systems of analyses; that is, the positive role of social capital in influencing subjective wellbeing of older people over and beyond living arrangement and SES related factors.

Table 4: Propensity score estimates of average treatment effect using stratification method

Treatment groups	Treatment effect without propensity score stratification		Treatment effect with propensity score stratification
	Column A	*Column B*	*Column C*
Structural social capital	67.1%	(+)9.7 percentage points***	(+)4.3 percentage points*
Cognitive social capital	61.8%	(+)14.9 percentage points***	(+)8.2percentage points***

Source: BKPAI, 2011; * p<0.05, ** p<0.01, *** p<0.001. *For structural social capital:* $N_{control}$ *= 2543 ;* $N_{treatment}$ *= 6919. For cognitive social capital:* $N_{control}$ *= 1617 ;* $N_{treatment}$ *= 7845*

Conclusion and implications

Several decades of scholarship have contributed to a rich legacy of studies on social capital. Despite a multitude of conceptualizations, it is reasonably well acknowledged that social capital is an important determinant of health and wellbeing. However, empirical examination of the role of social capital to older adult health and wellbeing has often remained limited in scope in the developing world. In part, this can be explained by the general acceptance of filial obligations in most of South Asia as well as lack of appropriate data to examine such associations. The current study addressed this gap in the context of India. Despite having the second largest population of older adults in the world, there has been very little research in India on the linkages between family structure, social capital and wellbeing. India provides an attractive setting to study these linkages given the massive socioeconomic and cultural transformations (e.g. a rapidly growing middle class, high rates of income growth, out-migration and urbanization) affecting ideologies of care giving, living arrangements and social expectations. In particular, the study focused on investigating the nature of the association between social capital and subjective wellbeing of older people in India. Additionally, the role of living arrangement over and beyond other household characteristics (e.g. SES) was examined. The goal was to understand how older people are embedded in their social matrix in the face of rapid socio-cultural transformations. Findings from this study can offer insights (1) on alternative models of care and support as larger families disintegrate or nuclearize, (2) on "active aging" practices, a concept which is becoming increasingly popular in the West as more and more cohorts of people reach older ages (World Health Organization: 2002).

Overall, the findings from the study highlight the crucial role of social capital on subjective wellbeing of older adults. However, the results also suggest that living arrangements do not necessarily influence this association.

Put differently, social engagement (conceptualized as *structural* social capital) and trust (conceptualized as *cognitive* social capital) trump the co-resident advantage, a finding that has been consistently demonstrated in the demographic literature on developing countries (Samanta, 2012; Yount, 2009; Chen & Short, 2008; Zimmer, 2005). These results remain consistent even after adjusting for confounding, though their effects decrease significantly. Furthermore, findings from logistic regression analysis show age and gender as important determinants affecting the social capital-wellbeing link. These results are consistent with previous studies on India that raise concerns about the gender and age segregated aging experience of older people in the country (Lamb, 2000; Cohen, 1998). These richly detailed ethnographic studies emphasize how human aging is experienced, conceptualized, studied and dealt with in popular discourse, scientific community and law in India (ibid).

Wealth, education and social group differences (e.g. Muslims were found to have reduced odds of being happy compared to Hindus) highlight the intersectional nature of inequalities in attaining wellbeing. The results also suggest the dampening effects of chronic illness and functional limitations on subjective wellbeing. This result has important implications, given the growing disease burden (Rajan, 2006) among older persons in the country. Finally, contrary to most demographic literature on India, the current study shows a rural advantage (as opposed to an urban advantage) in terms of increased odds of happiness, even after controlling for wealth and other household level characteristics. Further research is warranted to understand how rural residence influences the link between social capital and wellbeing among older persons.

From a methodological standpoint, the current study, by employing propensity score approach in addition to standard regression techniques, has provided sharper statistical evidence in support of the social capital and health link. However, it should be noted that even though propensity score methods can balance observed covariates between control and treatment groups, they cannot balance *unmeasured* characteristics and confounders (Shadish, et al. 2002; Wolfgang & Kurth, 2004; Guo & Fraser, 2010). Hence, despite its empirical robustness, interpretation of the results of this study can be best described in respect to association and not causation. The study, however, makes a strong case for a follow-up survey which can provide a longitudinal dataset more appropriate to test causality. Furthermore, in addition to conceptualizing structural social capital in terms of frequency of visits to friends/relatives, the current study would have benefitted from more information in the dataset on organizational membership and participation, found to be important determinants of social connectedness and wellbeing (Yip, et al. 2007; Harpham, et al. 2002). Finally, an important dimension of social capital that is conceptualized at a community/neighbourhood level (Cramm, et al. 2012; Mohnen, et al. 2011; Yip. et al, 2007; Putnam, 2003) and has been empirically demonstrated to be a powerful way to achieve collective goals and promote healthy behaviour, remained outside the scope of the current analysis. This is primarily because of the nature of the dataset which did not allow for multilevel analyses of social cohesion and neighbourhood environment influencing older adult health. These limitations notwithstanding, the study provides a good starting point for a more focused and systematic examination of the pathways between aging, social capital and health in India. Finally, the study has several implications for policy.

Findings from this study suggest that policies aimed at facilitating social engagement and participation at individual level hold promise in contributing to the wellbeing of the older cohorts in the country. These results are consistent with the recommendations of the MIPAA (United Nations, 2002). Specifically, since social participation and trust emerge as important determinants of happiness, interventions that strengthen intergenerational solidarity and community engagement should be encouraged. Enabling participation through advocacy and inter-sectoral collaborations (United Nations, 2002) between national and local governments, civil society including non-governmental organizations and older people themselves can effectively shift the

strategic planning on aging from a "needs based" to a "rights based" approach (WHO, 2002). Additionally, since results show that functional limitations prevent social participation, targeted programs that enhance mobility will be useful to promote a more inclusive aging experience. The same applies to older women whose mobility has often been restricted largely as a result of sustained gender segregation and lack of opportunities outside home. Public initiatives that promote and support local level civil societies will be particularly effective to ensure active aging and wellbeing of older women and men in the country.

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About the Project

The United Nations Population Fund - UNFPA supported project BUILDING KNOWLEDGE BASE ON POPULATION AGEING IN INDIA aims at contributing and further expanding the existing knowledge base on the emerging population dynamics in India which are resulting in significant shifts in the age structure towards higher proportions of older persons aged 60 years and above. In first stage, the project supported the preparation of a series of thematic studies using existing secondary data sources. In the second stage the project initiated a primary survey in seven states in India. Dissemination of the findings to various stakeholders is a key objective of the project to help enhance the overall understanding of the situation of elderly in the country for further research and policy analysis on the growing numbers of India's senior citizens. The project is a partnership between the Institute for Social and Economic Change (ISEC), Bangalore, the Institute of Economic Growth (IEG), New Delhi and Tata Institute of Social Sciences, Mumbai

More information on the project can be obtained from http://www.isec.ac.in/prc.html or www.indiaunfpa.org

The second phase of the project involves an updated situation analysis through the collection of primary data from seven states in India which have relatively higher proportions of elderly. These are Himachal Pradesh, Kerala, Maharashtra, Orissa, Punjab, Tamil Nadu and West Bengal. The survey data includes socio-economic characteristics, family dynamics, living arrangements, health and awareness of social security programmes of the elderly. This paper is based on the data gathered from the seven states.

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