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Regional Variation and Determinants of Well-being of the Elderly in India

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Abstract

The paper assessed the level of well-being in six states in India, namely Himachal Pradesh, Punjab, West Bengal, Odisha, Kerala, Tamil Nadu and Maharashtra. The index of well-being was developed based on the Stanford Centre on Longevity (SCL) Index of well-being, Global ageing and Monitoring Project, 2011 with certain modifications. Indices for physical, social and emotional well-being are constructed using data from the Building a Knowledge Base on Population Ageing in India (BKPAI), Sample Registration System, Census of India and National Crime Records Bureau. The indices were thereafter combined to form the well-being index. Marital status, educational level, employment status, annual income, health status and regional factors emerged as strong determinants of elderly well-being through a multinomial logistic regression. The states varied in rank in the components of well-being revealing paradoxes. The differentials in different domains need to be emphasized in the state specific policy for the aged.

Keywords

Elderly; physical well-being; social well-being; emotional well-being; India

Introduction

The well-being of the people is often measured in terms of the degree to which they lead a healthy and happy life (Veenhoven, 2000). A resolution on 'society of all ages' in World Assembly on Ageing in Vienna, Austria 1982, emphasized on the well-being of the elderly, identifying ageing as a demographic challenge the world is going to face. Focusing on three important areas: older persons and development; advancing health and well-being into old age; and ensuring enabling and supportive environments (UN, 2002), the Second World Assembly on Ageing in 2002 laid the goal of ensuring people worldwide to age with security and dignity and to actively participate in society as its citizen. Nearly in all countries of the world, the growing ageing population is fast outpacing the younger generation which challenges the existing health policies, social security, and pension schemes. Initially, believed to be a process associated with developed countries, the phenomenon of ageing is fast catching up even in developing countries, including India. At the turn of the millennium, 7.4% of the population in India were aged 60 and above, which is quite low when compared with developed countries. However, in absolute numbers, it consists of the second largest aged population in the world after China and the ratio of elderly is expected to increase from one in twelve in 2001 to one in five in 2050 (Rajan & Kumar, 2003). As projected by the Office of the Register General, the proportion of elderly is expected to rise

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to 12.4% by 2026 (RGI, 2006). This section of the population requires high medical and psychological attention, which, if remains unaddressed, threatens the well-being of the elderly.

In 1984, the World Health Organization (WHO) used a multidimensional functioning rather than one track caregiving approach to define what constitutes elderly well-being. According to the WHO, "activities of daily living, mental health, physical health, social and economic functioning" are required to be distinguished from adequate to inadequate to understand elderly well-being (Fillenbaum, 1984). In this context, the causal relationship of different components has guided the social scientists of Scandinavia to develop different instruments (Halleröd & Seldén, 2013). Analysis of well-being is a complex concept and the researchers have exercised their prudence in choosing the indicators best applicable in their cases. Broadly, the measurement of well-being takes into account health, happiness, quality of life and other dimensions in a broader and relevant perspective of "how people are doing" (Bourke & Geldens, 2007). Hermalin (2002) while trying to capture the elderly well-being considered three broad dimensions, namely economic, physical, mental and emotional health; and activity level including work and leisure. Though Zaidi (2008) followed to some extent with similar indicators, he was critical in measuring well-being referring more to life cycle hypothesis. The research group, 'Well-being in developing country' (WeD) recognizes three significant dimensions of well-being i.e. material, relational and subjective which mostly comprehends the attempts made previously. While material well-being comprises of assets, welfare, and standards of living, the relational well-being is divided into two spheres: the social sphere comprising of social relations and access to public goods; and the human sphere consisting of capabilities, attitudes to life, and inter-personal relationships. The subjective well-being also has two aspects: people's perceptions of their (material, social, and human) positions, and cultural values, ideologies, and beliefs (White, 2010). However, in the aspect of recognizing ageing as a challenge in the 1940s, very little attention has been paid on well-being of the elderly.

The well-being of the elderly is multi-dimensional and it depends on a variety of factors, including demographic, socio-economic and life course events. Various researchers over time have shown that the well-being of elderly depends upon a number of factors, education being one of them. A vast proportion of the elderly in India is either uneducated or have low literacy levels which is understandable as they have lived a major part of their lives before the accelerated development of the country (Rajan, 2008). Further, the literacy level of elderly women is found to be lower than men. The condition is even worst among widows where the literacy level is very low and they don't have any independent source of income, and therefore, they have to depend on their children or family members to look after them who often consider them as a burden (Visaria, 2008; Saha & Paul, 2017).

It has been noted the well-being of married persons are better compared with single or widowed persons as the demise of the partner at old age leaves them out of a normal life (Kaulagekar, 2007). The low status of elderly South Asian women is found to be highly associated with their marital status (Martin, 1990). Often, widows living with their children and families tend to be mistreated which exposes them to multitude of health issues and are therefore subjected to the high incidence of health (Ashok & Ali, 2003). In India, the percentage of widows are found to be higher than widowers which could be attributed to the age difference between couples, the differing proportion of aged men and women who remarry as well as the difference in life expectancy of males and females (Srivastava, 2010). Gulati and Ranjan (1999) found in 1991 almost half of the aged people lived without their spouse, especially women with a higher percentage of 71.11% as against 28.89% among males in 1991.

Economic crisis is identified as a major problem faced by the elderly in India, especially in rural areas (Adhikari, 2018). Generally, elderly workers irrespective of gender are found to be concentrated in the primary sector where the retirement age limits are not well defined (Martin, 1990). Participation of elderly men in economic activities is also found to be higher compared to women, a suggested reason for which is shrink in employment opportunities or active involvement in family affairs (Das, 2017; Goyal, 2000).

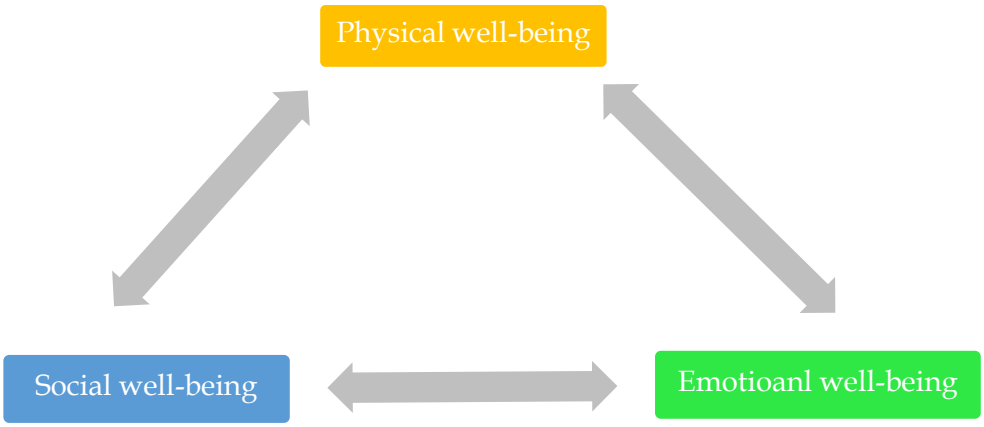
Until recently, most of the research on ageing focused on the health status of the elderly (Paul & Singh, 2017). Ageing, along with disease, disability, frailty, and dependence may also bring in anxiety and stress due to a low status in the family, and lack of financial security (Ashok & Ali, 2003). At the UN World Assembly on Ageing in 1982 at Vienna, India stated that the ageing was not a big challenge to the nation due to the traditional family structure existing in the country which takes care of the aged and government services that meet their health needs (Karkal, 1999). However, with modernization, the traditional family system is fast eroding leaving the elderly on their own. The aged parents, especially the father, even when widowed do not generally choose to live with his married daughters while the mother would not mind living with the daughter's family (Das, 2017). According to 2011 census, more than 10 million elderly are living exclusively with the elderly member of their family. The family support which also indicates support from young able-bodied persons is lacking. With shrinking kin network, they are losing their traditional support making them more vulnerable (Rajan et al., 2001; Hermalin et al., 2007).

At a time, when the country is undergoing rapid demographic changes with the expectation of 327 million elderly in 2050, there is a serious and urgent need to revise and create more policies for the betterment of the elderly (Rajan, 2008). India is diverse and each state is different from the rest and thereby the determinants of well-being also differ from state to state. The determinants of well-being hence, must be scrutinized. Therefore, this paper attempts to assess the level of elderly well-being and identify their major determinants in selected Indian states.

Conceptual Framework

The health of the elderly is an essential component to decide the progress of human health. However, long life cannot be equated with well-being as at later life, human beings become socially isolated and emotionally fragile. While well-being has three components - material, relational and subjective - the well-being of the elderly is predominated by subjective well-being where cultural values, ideologies, and beliefs play a very important role (White, 2010). Nevertheless, in old age compromised physical functioning leads to a reduction in social network hampering social well-being. Both of these compromised functions lead to a reduction in emotional well-being. When a social network is strong and community is supportive, emotional well-being is observed to be much better. Similarly, social sphere influences cognitive functioning (Charles & Carstensen, 2010). The conceptual framework in the study is adopted from the Well-being in the Developing countries research group (WeD), which reveals all these three components are closely interlinked. Therefore, the study has been designed accordingly to examine the Indian scenario.

Figure 1: Conceptual framework of elderly well-being



Data Sources

To date, except for the periodic national level Indian Census, there is hardly any large scale survey of the elderly population across India. At the same time, Indian Census does not have sufficient data to understand the well-being of the elderly. Identifying the gap, UNFPA India conducted a survey in seven states of India, namely Himachal Pradesh, Kerala, Maharashtra, Odisha, Punjab, Tamil Nadu and West Bengal. The series is called Building a Knowledge Base on Population Ageing in India (BKPAI, 2012). This study looked at all the seven states based on: (i) percentage share of the elderly population, and (ii) regional representation. It conducted a survey on the socio-economic status, work participation and benefits, income and asset holding, living arrangement patterns and family relations, health status, utilization of healthcare services, awareness and social security schemes among the aged population. The sample size of the survey was 8,329 households and 9,852 elders, with 1,280 elderly from each state. For constructing the life table, data was used from Sample Registration Survey, 2011 (RGI, 2011a). National Crime Records Bureau of Government of India provided information on suicide rates, 2011.

Methodology

The requirement of a summary measure to assess the well-being of the aged population is well identified. This will help in directing the policies and programmes in a right way, which will provide optimum benefit to the elderly. Therefore, the summary measure also needs to be efficient to capture the local variation.

The index is adopted from the Stanford Centre on Longevity (SCL) Index of well-being among older population, Global ageing and Monitoring Project, 2011. However, some modifications have been made to the index as per the data availability and considering the country's development context. For example, the material index has not been calculated as elderly specific information pertaining to economic variables are not collected in the survey. The elderly in India mostly live within a family institution which includes resource sharing

in everyday life. Thus, individual access to economic resources is not clear. The SCL index uses median household per capita income of elderly for calculating material index; which is not available in India. Similarly, for calculating the functional limitations, not only a person's capability of walking a distance of 100 meters are taken into consideration but also persons who do not have any limitation regarding vision, hearing, speech, memory, and speaking are also included to have a clear picture on healthy ageing in India.

The well-being index measures the current well-being of elderly (60-69 years, 70 and above) in 2011 in seven states of India, using data from the BKPAI (Building a Knowledge Base on Population Ageing in India) survey, Sample Registration System, Census of India and National Crime Records Bureau. All the data pertains the year 2011. The index summarizes the status across three domains:

Physical Well-being:

a. Persons with no disability
b. Persons with no difficulty taking medications
c. Persons with no functional limitations (walking, talking, hearing, vision, speech and memory)
d. Life –expectancy at older age (60-69, 70-79 depending on age group)

Social Well-being:

a. Persons participating in any social activity or socially connected.
b. Persons either co-residing or having contact with any one child.

Emotional well-being:

a. Persons not suffering from depression (clinical measure).
b. Suicide rate for older adults (reverse coded to make it unidirectional)
c. Persons thriving (satisfied with current life and future prospects).

Of the nine indicators, seven measures the percentage of the population in the age group in the specified state while the other two, i.e. life expectancy was constructed from vital statistics and suicide rates obtained from National Crime Records Bureau. The index is the average of the all the domain score. The domain score is calculated by normalizing each indicator value as a percentage of the best observed value of the indicator among the states. The scores range from 0 to 100. The state with the highest observed value is given a score of 100 and all the scores are calculated accordingly.

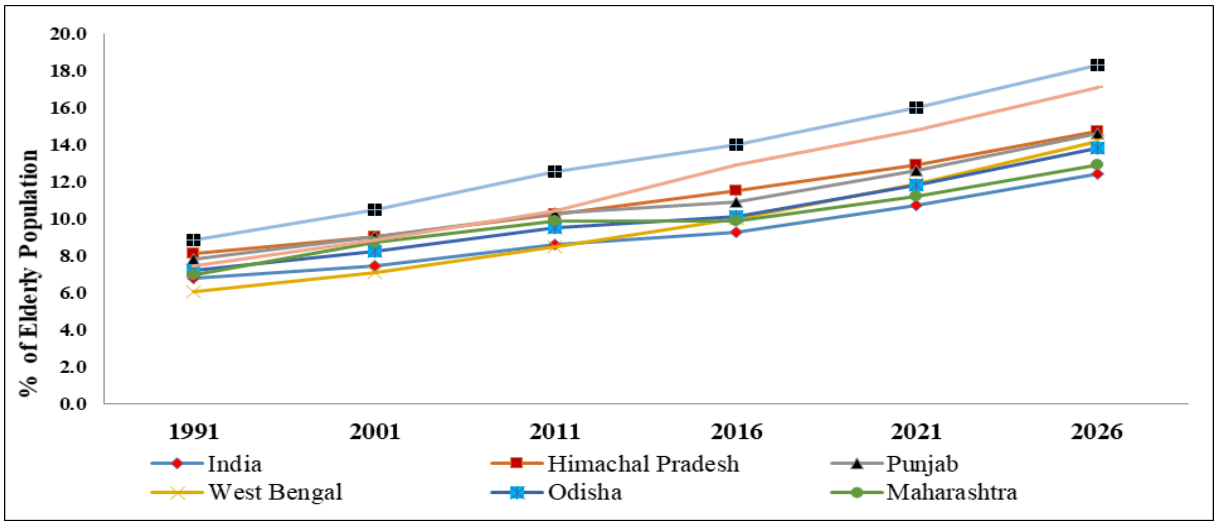
In order to the find out the determinants of the well-being of elderly in India, a composite score based on the nine indicators was calculated to form the dependent variable of overall level of well-being. All these responses are categorical variable. However, life expectancy and suicide rate are interval variable and thus not considered for calculating the composite score. The score ranges from 1 to 7 with the higher values indicating higher levels of well-being.

Accordingly, the score was categorized into three categories: low (score 1 to 3), moderate (4 to 5) and high (6 to 7) level of well-being. The predictor variables include socio-economic and health variables, namely the place of residence, sex of the elderly, current marital status, level of education, occupation, working status, annual income, any substance abuse/addiction, access to social security schemes, health status, and region. A multinomial logistic regression is attempted to understand the influence of each of these independent variables on the dependent variable of well-being.

Study Area

The BKPAI survey was conducted in Himachal Pradesh, Kerala, Maharashtra, Odisha, Punjab, Tamil Nadu and West Bengal. The states are a geographic representation of the country and have distinct socio-economic characters. Here Kerala and Tamil Nadu represent south, Maharashtra represents west, West Bengal and Odisha represent east, and Himachal Pradesh and Punjab represents north. These four states together account for 32 percent of the total population but nearly 37percent of the population of 60 and above age group. The ORGI has published the projected population (2006) on the basis of 2001 population census which shows that the growth rate of elderly population in study states is expected to be much faster than the country's average (Figure 2).

Figure 2: Actual and projected growth of population aged 60 and above, 1991 – 2026



Source: Registrar General of India, 2006

Irrespective of their socio-economic condition, all these states have reached the fourth stage of demographic transition where both birth and death rates decline resulting in an increase in the number of elderly population. In the selected states, the proportion of the elderly is higher than the nation's average of 7 percent. But except for Kerala, other states are homogeneous in demographic indicators (Table 1). The economic indicators, namely per capita income and proportion of population below poverty line, vary widely across the study states. The states representing eastern region of India are poverty stricken.

Table 1: Socio-economic characteristics of the study states

States	% of Elderly Population*	% of Elderly Literacy*	Dependency Ratio*	Elderly Work Participation rate*	Per Capita Income (2009-2010)**	% of total population BPL (2011-2012)**
Himachal Pradesh	10.2	42.4	16.1	9.9	56706	8.1
Kerala	12.6	79.2	19.6	8.8	60264	7.1
Maharashtra	9.9	53.4	15.7	9.4	74027	17.4
Odisha	9.5	43.7	15.4	8.7	34361	32.6
Punjab	10.3	41.0	16.1	9.5	62605	8.3
Tamil Nadu	10.4	49.8	15.8	10.0	63547	11.3
West Bengal	8.5	53.5	13.2	7.0	41837	20.0

*Source: *Census of India, 2011, **Planning Commission of India*

Result and Discussion

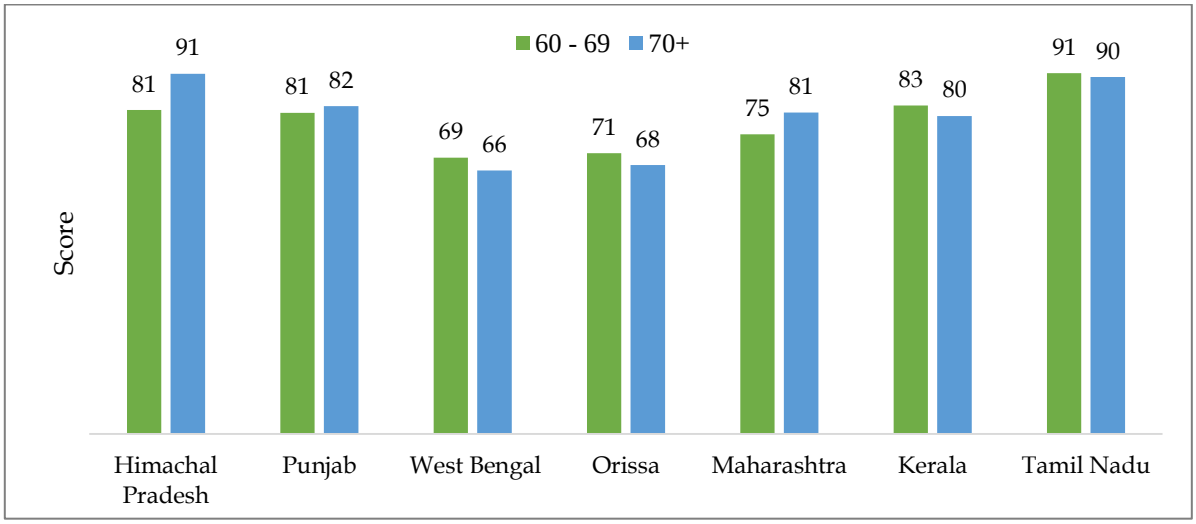
Regional Variations in Well-being

India has significant variations in the characteristics of its population, including socio-economic characteristics. Even though the vast country is under one polity, the states are at different stages of demographic development. The study states have achieved fertility transition but with different socio-economic conditions. The variation in the status well-being is therefore expected to be high. The following section discusses regional variation in well-being.

Physical Well-being

The ability to care of oneself, remain active and productive and live independently is some of the important effects of health. Poor health is often associated with diminished happiness and well-being. Therefore, being physically fit is very important to stay happy. The physical well-being as already been mentioned in methodology, has taken activities of daily living (ADL) into consideration. It is observed that the southern state of Tamil Nadu and the northern states of Himachal Pradesh and Punjab, occupies the first three ranks, while the eastern states of Odisha and West Bengal lies at the bottom for both the cohorts (Figure 3). However, there is a substantial difference in the score between Tamil Nadu and Himachal Pradesh in the first cohort compared with the second. The census of India records low (2.5 percent) disability among the elderly in Tamil Nadu. It also records moderate level of disability among the elderly in West Bengal (4 percent) whereas BKPAI shows highest scores for the state. The range of the scores for two different cohorts does not vary considerably. This implies the behavior of the cohorts remain similar. However, lower ADL scores at higher age groups are often related to degenerative disabilities. In addition, there is a high difference between the best practice state of Kerala and others states regarding persons who can take their medicines on their own. Life expectancy is found to be almost the same in all the states with Odisha recording the lowest. Functional limitations are also found to be in high percentage among other states compared with the best practice state of Tamil Nadu. Overall, the physical well-being is the worst in the eastern part and best in the southern part, with the others lying in between the range. It appears that physical well-being does not necessarily deteriorate with age, but probably with the early age health practices.

Figure 3: Physical well-being scores by age and state, 2011



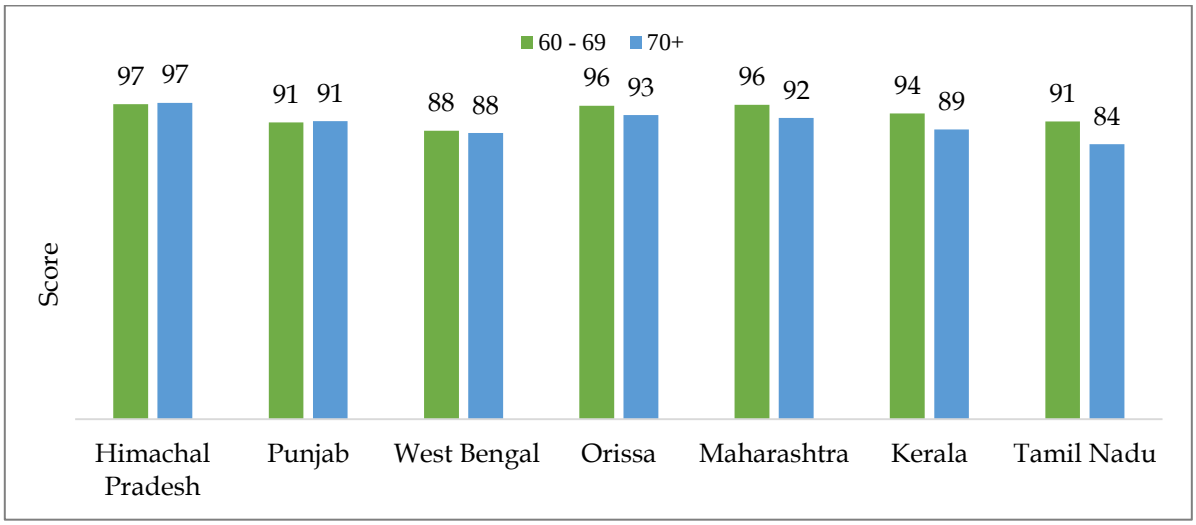
Source: Computed from BKPAI (2012)

Social Well-being

The framework has shown that being socially active increases well-being, reduces mortality as well as has positive impacts on mental health. This domain captures social engagement, relation or connection with family members, friends, community members and local institutions. In terms of social well-being a paradoxical situation is noted - Tamil Nadu which occupies first rank in physical well-being, is in fifth rank in the domain of social well-being (Figure 4). Himachal Pradesh ranks first in both the cohorts. Living alone has often been cited as a major factor for social isolation in many countries around the world (Havens et al., 2004; Lehmann et al., 2010). In Tamil Nadu, around 17 percent of the elderly are living alone which is extremely high compared with the national average which is below 10 percent (RGI, 2011b).

Individual scores show though a high percentage of elderly are connected with their children, they are not very socially active or engaged. The lowest percentages of elderly with social connections are found in Tamil Nadu. In all the states except Tamil Nadu, more than 80 percent of elderly are co-residing with family members and relatives while in the former, it is only 59 percent. Even widowhood is extremely high in the state revealing loneliness especially among the women. Tamil Nadu is also emerging in the map of international migration by sending largest number of youths out of the state (Sasikumar & Hussain, 2008). The socio-economic portrait of the state reveals changes in household composition and structure leading to the loneliness of the elderly population. It is plausible that staying alone is providing them the strength to remain physically fit leading to better physical wellbeing.

Figure 4: Social well-being scores by age and state, 2011



Source: Computed from BKPAI (2012)

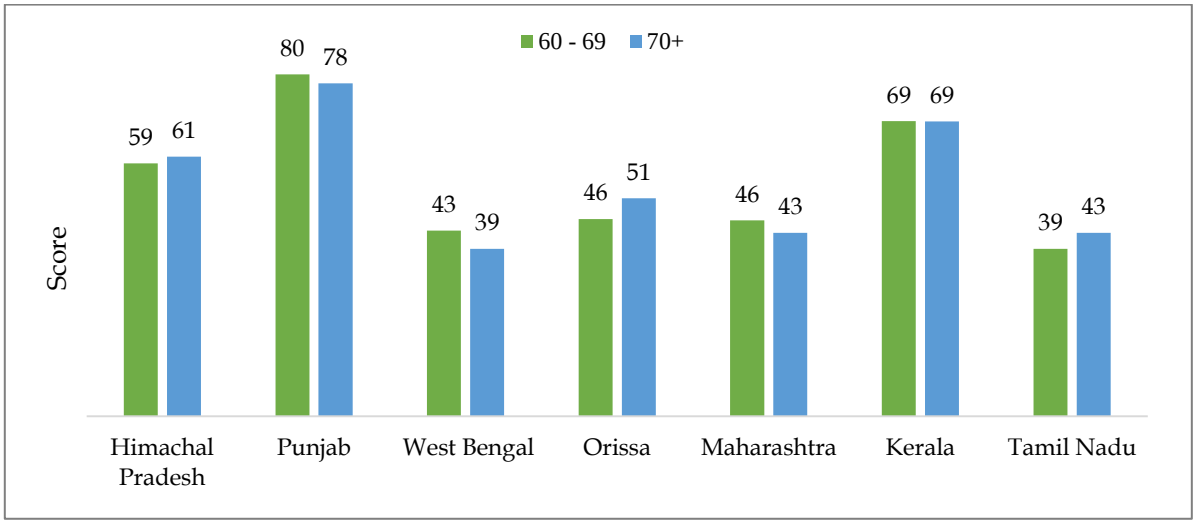
Once more, West Bengal occupies the last position in social well-being though only 7 percent of the elderly are living alone and 9 percent are living exclusively with another aged person. It has been observed that even when the aged parents stay with their children, they can be socially alienated in an urbanizing society (Shah, 1999; Rajan & Kumar, 2003). From the information provided by BKPAI, it can be inferred that the social well-being is better in the states where elderly are more frequently meeting the community through political, religious or community meetings. It has been reported in BKPAI (2012) that in Himachal Pradesh around 67 percent elderly have attended at least one social meeting in the last one year whereas in West Bengal only around one-third has attended any such meetings. Low participation in social life in West Bengal and Odisha is mostly attributed to lack of financial

support and physical fragility (BKPAI, 2012). It fairly establishes the link between physical and social well-being, especially for those who are unable to pay for comfortable movement. Social isolation is an aggravating situation for those who are not physically fit. However, this is not the case in Tamil Nadu which has scored well in physical well-being.

Emotional Well-being

The emotional well-being domain includes indicators like percent with no report of depression, suicide rate for older people and percent who are satisfied with current life and future prospects. Depression is measured objectively with a clinical indicator of whether the doctor has diagnosed the person with depression. Suicide rate is reverse coded with states having the highest level of suicide rate having the lowest value. Percentage of thriving is measured based on satisfaction with one's life. The emotional well-being is quite low in all the states in India considering 100 as the upper limit (Figure 5). Almost same ranking of the states is noticed for both the cohorts. Punjab has the highest score for emotional well-being followed by Kerala and Himachal Pradesh. The individual scores also vary widely. While those not suffering from depression is quite high (more than 95 percent) in all the states, thriving percentage of elderly is quite low. It ranges from less than one percent to 14 percent between the best and worst reported states. While Kerala ranks first in the individual scores for percentage not depressed and percent thriving, the state also ranks highest in the suicide rate which is ironic.

Figure 5: Emotional well-being scores by age and state, 2011



Source: Computed from BKPAI (2012)

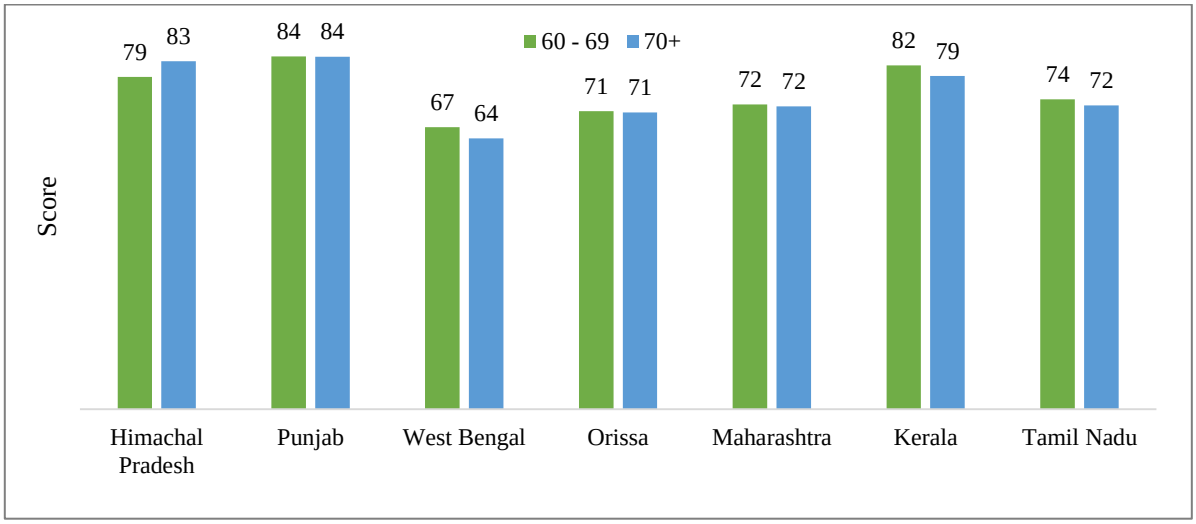
Studies have identified that family problems and ill health are the major reasons behind suicide (Halliburton 1998; Soman et al., 2009). However, the current data set does not allow us to dig deeper but to infer that higher suicide rate in Kerala is not related to chronic clinical depression.

Overall Well-being

Each individual score is indicative that overall well-being score among the elderly population is higher in Punjab and Kerala than in the other five states. High level of development in both the states along with strong social and emotional well-being contribute to better overall well-being of the elderly. The eastern region which is considered to be poor in terms of living conditions and basic amenities observed low well-being in the two representative states of West Bengal and Odisha (Figure 6).

The well-being pattern suggests that the situation does not change from young-old to old-old population and regional pattern mostly continues for all the elderly.

Figure 6: Overall well-being scores, ages 60 – 69 years and 70+ years, 2011



Source: Computed from BKPAI (2012)

Results of Multinomial Analysis: Determinants of Well-being of Elderly

The indices constructed in the study are used to describe the level of well-being and does not help much in identifying the underline key factors which govern the level of well-being. In order to determine the major factors affecting the level of well-being of individuals, a multinomial regression is carried out using unit level data from BKPAI. In the logistic model, the outcome variable, well-being has been categorized into three: high, moderate and low level of well-being keeping the first as a reference. The predictors are of categorical nature that includes variables, such as gender, place of residence, occupation, work status and health status of the elderly. Further, the states have also been aggregated into regions to understand whether the location can influence the well-being of the aged. The states of Punjab and Himachal Pradesh are combined to form the northern region, Kerala and Tamil Nadu form the southern region, West Bengal and Odisha forms the eastern region while Maharashtra forms the western region.

The multinomial logit regression produces the model fitting information by providing the chi-square value along with the degree of freedom and level of significance (Retherford & Choe, 2011; Tarling, 2008). The chi-square which shows the difference between observed and fitted value is 437.789 in the degree of freedom of 40 which shows the model is significant with 99% confidence. The present study has considered the odds ratio in the analysis and presented the Exp (B) which is important in interpreting the model (Tarling, 2008). The results of the logistic regression show that the same independent variables have different associations and influence, at different significance level on moderate and low well-being when compared with high well-being. Except for place of residence and sex of the elderly, all the other variables show a significant effect on the overall well-being of the elderly.

Considering the first significant determinant of well-being it is observed that married people are more likely to have a family or at least their partners to share and care each other and thereby enhancing their quality of life (Wood, et al., 2009). Studies show that widowhood is associated with low level of well-being, with a higher proportion of them facing mistreatment as they are economically dependent on their family (Karkal, 1999; Ashok & Ali, 2003). The protection hypothesis on marriage observes that continuous companionship

of the spouse act as a buffer against the daily life odds. Similarly, selection hypothesis assumes that emotionally mature persons comply with the responsibilities of marriage (Coombs, 1991). In accordance with these, it appears in the current study that the married people were less likely to have low well-being compared to widowed and never married persons (OR=12.38; $p<.01$) and showed strong significance i.e. as high as 12 times of low well-being. This is further proved by less likelihood of moderate well-being among married couples (OR=0.67; $p<.01$).

Education has always been hailed as an essential factor for overall development in life. Higher education has always been linked with better opportunities, better skills and thereby high living standard. The same is reflected in the regression result where the elderly with low level education has a strong likelihood of moderate and low well-being. The likelihood of moderate and low well-being increases with a decrease in educational status. Illiterate and elderlies with primary schooling are likely to be of low well-being with reference to high and it is statistically significant (OR=4.73; $p<.01$ & OR=2.97; $p<.01$). Higher education leads to better awareness as well as better economic opportunities thereby ensuring higher well-being. A vast proportion of the elderly in India is uneducated and thereby unskilled and is mostly engaged in the unorganized sector or worked as laborers thereby leading to higher dependency on their children at old age. This leads to their lower status at old age (Rajan et al., 2001).

Table 2: Multinomial logistic regression showing determinants of well-being of elderly

Explanatory Variables	High vs Moderate		High vs Low		N
	Exp(B)	Std. Error	Exp(B)	Std. Error	
Place of residence (Ref: Urban)					1434
Rural	0.959	0.109	0.863	0.166	1587
Sex of the elderly (Ref: Female)					641
Male	0.988	0.159	1.017	0.228	2380
Present Marital Status (Ref: Widowed)					750
Never married	4.986	1.031	12.322***	1.075	37
Married	0.677***	0.147	0.564	0.206	2202
Separated/divorced	1.248	0.582	2.668	0.695	32
Educational Status (Ref: Higher)					281
Illiterate	1.500**	0.203	4.734***	0.363	1022
Primary	1.685***	0.200	2.967***	0.365	690
Secondary	1.462**	0.164	1.687	0.329	1028
Occupational Sector (Ref: Tertiary)					1129
Primary	1.483**	0.152	1.728**	0.243	1060
Secondary	1.112	0.147	1.296	0.236	832
Present Work Status (Ref: Unemployed)					1522
Employed	1.240***	0.113	3.532***	0.181	1499
Annual Income (in Rs.) (Ref: > 30,000)					1619
< 10,000	1.509**	0.171	2.022***	0.243	717
10,001 - 30,000	1.287**	0.138	1.633**	0.216	685
Addiction (Ref: No)					1683
Yes	1.465***	0.108	1.290	0.162	1338
Availing Social Security Schemes (Ref: Yes)					992
No	0.798*	0.126	0.680**	0.184	2029
Health Status (Ref: High)					1062
Poor	2.996***	0.223	6.606	0.287	257

Explanatory Variables	High vs Moderate		High vs Low		N
	Exp(B)	Std. Error	Exp(B)	Std. Error	
Moderate	2.007***	0.103	2.217	0.170	1702
Region (Ref: South)					732
North	1.624***	0.137	1.526***	0.224	1007
East	2.867***	0.157	5.080***	0.225	799
West	1.388***	0.163	1.324	0.269	483
Cox and Snell R^2: 0.135; NagelkerkeR^2: 0.169					

*Source: Computed from BKPAI, 2011, Note: ***p <0.01; **p<0.05; *p<0.1,*

The economic variables of annual income, working status as well as occupational sector also show strong association with well-being. Here, tertiary sector which is mostly the service sector is the reference category and primary sector that is people directly working with natural resources and secondary sector which involves manufacturing, transport communication and construction activities are other respective categories. The elderly who are engaged in the primary sector or agricultural sector has more likelihood of moderate and low well-being (OR=1.48; p<.05) compared to the other two categories namely the secondary and tertiary sector. The farming sector always generates less income than the non-farm sector (Hope, 1943; Gardner, 2005; Narayanamoorthy, 2006). Moreover, agriculture requires more physical strength than the other sectors and therefore, it takes a significant toll on the health of the person. Additionally, in India where marginal and small farmers occupy a higher percentage of the working population, the continuation with work is not a choice, but a compulsion which reduces people's well-being. This is further established by the moderately significant effect of work status on the well-being of elderly. Aged persons who are engaged in economic activities show more likelihood of moderate and low well-being compared with unemployed persons (OR=3.54, p<.01). The BKPAI data shows work intensity among elders are quite high with more than 80 percent of the elderly engaged as main workers (who are working for more than 6 months a year) who work for more than four hours a day. This reflects the economic and other compulsions rather than choice or chance (Root & Tropman, 1984; BKPAI, 2012). The elderly having an annual income of less than Rs.10,000 shows a strong likelihood to be in moderate and low well-being which further strengthens the argument of compulsion (Das & Bhusan, 2015). National Ageing Survey observed that urban elite suffers from alienation whereas rural agricultural population suffers from economic insecurity which cannot pull them out from labor force even when they are fragile and aged (James, 1994).

Health is one of the most important social capitals and a higher level of well-being is related to better health status needs no special mention. Good health status of the elderly is defined by people who do not suffer from any chronic ailment and have not been hospitalized in last one year prior to the survey. The result shows more likelihood at high significance level for moderate and poor well-being as health status decreases. Addiction to any sort of tobacco or alcohol has always a negative impact on the physical well-being of the people as well as elderly. Though more likelihood of moderate well-being as compared to high is noticed for people having an addiction, the result is not significant when compared with high to low well-being. In fact, people, who are engaged in manual work and are addicted, do not survive very long and their incidence of death is quite high (Mäkeläet al., 1997).

The government policies and programmes aimed at the betterment of the elderly are important for determining their well-being. Various schemes, such as Annapurna Yojana (food ration for the elderly), National Old Age pension or widow pension are run by the government to provide assistance to the elderly. However, most of the welfare schemes are

oriented to enhance well-being of the poor without producing a significant outcome. The schemes covered by the data set are targeted for the poor population and provided very minimum for sustenance. Those are insufficient to enhance well-being significantly. State policies and their implementation on improving the well-being of the elderly are crucial. The selected states not only represent four sides of the country, but also the status of its development. Elderly well-being is a result of the course of their life they spent before reaching old age. Compared with the southern region, all the other regions show a high likelihood at 95% level of significance for low and moderate well-being. The eastern region shows the highest likelihood of low well-being. The southern states in the study have started experiencing the phenomenon of ageing population much earlier than other states of India (Table 1). The four states (Tamil Nadu, Kerala, Andhra Pradesh and Karnataka) account for 57 percent of the elderly care centers of the country (Government of Tamil Nadu, 2003). The states in the south have already oriented themselves for elderly care to improve their well-being.

Conclusion

India's states are at different stages of demographic transition. The states included in BKPAI survey are in the fourth stage of demographic transition where a phenomenon of ageing is prominent. However, in terms of elderly well-being, they are located on different planes. Even the components of well-being do not provide a uniform mosaic for the study states. Punjab ranks first in emotional well-being but ranks fifth in social well-being and similarly, Tamil Nadu ranks first in physical well-being but ranks seventh in emotional well-being. Tamil Nadu also ranks poorly in social well-being. However, among the southern states, Kerala performs better than Tamil Nadu in terms of considered indicators. The behaviors of the elderly are a result of their life course. The paradoxes in the domain of well-being have not been developed suddenly on the day when reached 60. However, one important pattern that emerged is that well-being of the elderly is low in the eastern states and pattern for the individual well-being components, as well as overall well-being, do not very much for the young-old and old-old category. This shows that attitude and treatment towards the elderly remain the same irrespective of their age. Nonetheless, it is important that while introducing any policy to enhance the well-being of the aged population, the regional and component specificities must receive due priorities.

Abbreviation

ADL: activities of daily living

BKPAI: Building a Knowledge Base on Population Ageing in India

GAMP: Global Aging Monitoring Project

GoI: Government of India

IEG: Institute of Economic Growth

ISEC: Institute for Social and Economic Change

LASI: Longitudinal Aging Survey in India

MIPAA: Madrid International Plan of Action on Ageing

MoHFW: Ministry of Health and Family Welfare

NCRB: National Crime Records Bureau

PRC: Population Research Centre

RGI: Registrar General of India

SCL: Stanford Centre on Longevity

SRS: Sample Registration Survey

TISS: Tata Institute of Social Sciences

UN: United Nations

UNFPA: United Nations Population Fund

WeD: Well-being in developing country

WHO: World Health Organization

Declarations

Ethics approval and consent to participate

The BKPAI was conducted by ISEC with help of United Nation Population Fund and with multi-level collaboration with IEG, TISS and PRC of India. It is widely considered as a reliable source of information. Ethical approval for the survey was obtained at two levels: first, the ethical approval for the survey was obtained from the Ministry of Health and Family Welfare, Government of India. Second, a consent form approved by the ethics review committee was read out to the respondent in their native language. Once the respondent agreed to participate in the survey, the interviewer got the consent form signed form respondent acknowledging that he/she had read the form, had understood the purpose of the study and agreed to participate. No information collected in the survey revealed the identity of the research participants.

Consent for publication

Not applicable

Availability of data and material

The dataset used in this study is available in the public domain at the Institute for Social and Economic Change (ISEC), Bangalore, India.

Competing interests

The authors declare that they have no competing interests

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Authors Contributions

Bhaswati Das: Conceived and designed the experiments

Bhaswati Das &Rituparna Sengupta: Performed the experiments

Rituparna Sengupta &Kalosona Paul: Analyzed the data

BhaswatiDas, RituparnaSengupta& Kalosona Paul: Contributed eagents/materials/analysis tools

Bhaswati Das, Rituparna Sengupta& Kalosona Paul: Wrote the paper

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