Social Capital's Importance in Determining Life Satisfaction in Later Life: A Cross-sectional Study Based on Indian Demography

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Abstract

The global population is in the ageing process. Older adults in India comprise 8.60% of the total population, and this proportion is anticipated to increase to 19.50% by 2050. This ageing process impacts health, well-being, and life satisfaction, contributing to healthy ageing. This study examines the importance of social capital in determining life satisfaction in later life. The LASI 2017–18 dataset was used, and the study employed exploratory factor analysis (EFA) and principal component analysis (PCA) to identify the most suitable variables for measuring social capital. The results showed that older adults had a mean of 0.24 friend networks, 0.94 social participation, and 0.19 reciprocity. The odds of life satisfaction increase by 1.20 times (AOR 1.20, CI 1.13–1.28, $P \leq 0.001$) when the mean number of friends network increases by one unit. The odds of life satisfaction increased by 1.48 times (AOR 1.48, CI 1.30–1.68, $P \leq 0.001$) when one unit increased mean social and civic participation among 60 + older adults. Social capital, such as friend networks and involvement in social activities, boosted older adults' life satisfaction. These findings can help shape future policies for older adults to increase their life satisfaction.

Keywords Social capital · Life satisfaction · Older adults · LASI

Introduction

The world's population is progressively ageing. Older adults aged 60 and above are expected to increase by almost 56% from 2015 to 2030, bringing the population from 901 million to 1.4 billion by 2030 and 2.1 billion by 2050, more than doubling the existing population (United Nations, 2015). Individuals aged 60 and above in India are projected to grow 64% from 2015 to 2030 (United Nations, 2015). The ageing process has an impact on not only disease and disability (Agarwal et al., 2020; Srivastava et al., 2020) and self-reported health (Patel et al., 2021) but also subjective well-being, psychological health (Patel et al., 2021), and life

satisfaction (Ng et al., 2017). Life satisfaction is a significant part of the psychological characteristics that have been associated with older positive health behaviors (Grant et al., 2009), high health status (Ghimire et al., 2018), and healthy ageing (Ramia & Voicu, 2022). As one gets older, life satisfaction can be viewed as the level of harmony with one's expected life and achievements, which is also a measure of overall well-being (An et al., 2008). Numerous indicators, such as marital status (Jung & Ellison, 2022), living arrangements (Mao & Han, 2018), health condition (Ghimire et al., 2018), and various sociodemographic characteristics (Banjare et al., 2015; Rajani et al., 2019), are significantly associated with older adults' life satisfaction. Furthermore, older adults' life satisfaction is linked considerably to social capital (Banjare et al., 2015; Khurshid et al., 2023; Wang et al., 2022).

In recent studies, the influence of social connection on individual behavior has become an important aspect. According to various researchers, individual attributes cannot solely influence subjective well-being; social interaction also has a role (Ateca-Amestoy et al., 2014; Klein, 2013). The most significant factors of subjective well-being are social comparison and social capital. The importance of social capital as a life satisfaction factor is becoming

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increasingly apparent (Elgar et al., 2011; Han et al., 2013; Hoogerbrugge & Burger, 2018). Still, social capital is a contentious topic with no commonly accepted definition or measurement technique (Klein, 2013; Moore & Kawachi, 2017; Sarracino, 2010). When it comes to defining social capital, determining whether it is an individual asset (Ajrouch, 2007) or a community asset (Poortinga, 2006) is problematic. Putnam's definition of communitarianism social capital is more influential in public health; however, several conceptions of social capital have emerged (Kawachi et al., 2008). Putnam defined social capital as "social structure," emphasizing collaborative traits as well as the value of individual acts from the standpoint of cohesiveness (Gelderblom, 2018; Putnam, 2001; Siisiäinen, 2003).

Trust, social networks, and participation are frequently recognized as social capital indicators in the context of public health (Dakua et al., 2023; Kawachi et al., 2008). The feeling of faith and anticipation that comes from thinking others will act softly and expectantly is what trust is all about (Algan, 2018). An individual's social contact with friends is defined as social networks, which are stable systems developed through social interactions, and involvement in various formal or informal activities is referred to as social participation (McConkey, 2010). It is also well known that social capital comprises cognitive and structural elements, with the past relating to trust and the latter to social networks and social partnerships (Kawachi et al., 2008; Nyqvist et al., 2014). Besides, social capital has been widely used in two ways: bonding and bridging social capital (Claridge, 2018; Kawachi et al., 2008). Bonding means the internal social connection of individuals inside a homogeneous group, whereas when an external social connection develops between members of heterogeneous groups, it is called bridging social capital (Claridge, 2018). For

this study, we measured social capital among older adults through friend networks, confidants (in terms of sharing confidential things), and participation in social and organizational activities (Fig. 1).

Several research studies are being carried out to examine the linkages between social capital and various sorts of well-being among older adults. The significance of social capital as a propeller of happiness is becoming more evident in Asia (Nomura et al., 2005; Tanaka & Tokimatsu, 2020), Europe (Forsman et al., 2012; Tanaka & Tokimatsu, 2020), Latin America (Ateca-Amestoy et al., 2014), and Australia (Sum et al., 2008). Prior research has primarily focused on high-income countries, with mixed outcomes in terms of life satisfaction. Existing research from developed countries suggests that both structural and cognitive social capital positively connect with older adults' life satisfaction. The level of analysis, conceptual framework, and social capital measures used influences the relationship between social capital and life satisfaction. The socioeconomic complexities and ethnic or racial differences of the study areas are also essential factors in studying social capital. Prior research exploring the link between individual-level social capital, such as membership in an organization, trust, civic activity, and life happiness, for example, has shown that personal social capital is positively related with improved life satisfaction (Dakua et al., 2023; Ke et al., 2019; Theurer & Wister, 2010). Some studies suggest that the country level's social capital indicator and life satisfaction are not associated with European countries (Ferragina, 2017) and Australia (Ambrey et al., 2017).

Social capital comprises networks and participation, which is social security in the older person's life. Despite the growing body of theoretical and empirical data on social capital and life satisfaction separately, minimal research in

Fig. 1 Conceptual framework
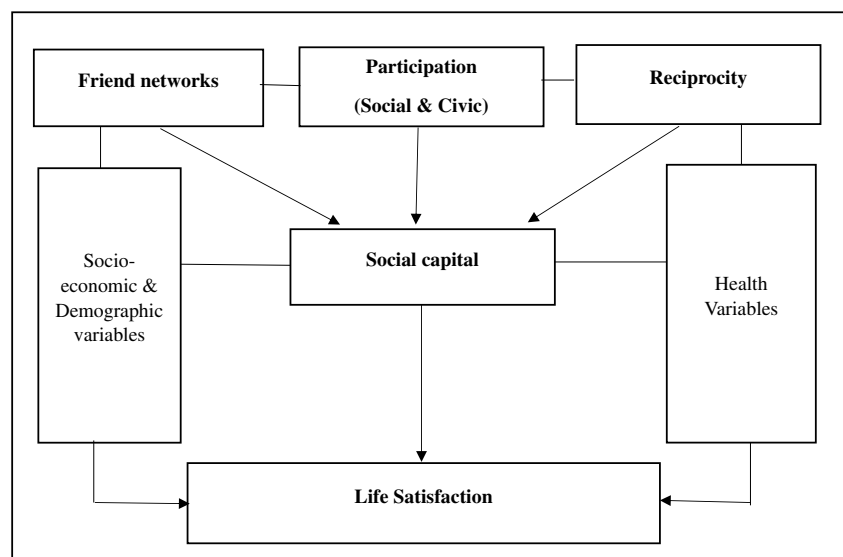
India has looked at the link between individual social capital and life satisfaction among older adults (Banjare et al., 2015; Berkman et al., 2012; Chauhan et al., 2021). By examining the connection between personal social capital and life happiness, we want to bridge this gap for older adults in India. The primary objective of this study is to investigate the relationship between individual social capital and life satisfaction among older adults in India. Specifically, the study examines how various elements of social capital, including friend networks, confidants, community/social participation, and reciprocity, influence the overall life satisfaction of the older adult population. The present study hypothesizes that older adults with more social capital have better life satisfaction.

Methods

Data Source

The data used in this study was obtained from Wave 1 of the Longitudinal Ageing Study in India (LASI) conducted in 2017–2018. It is a nationally representative survey conducted among older people to capture their social, health, and economic well-being and also reflects the implications of population ageing in India (IIPS et al., 2020). The first wave of the LASI study included 73,396 adults aged 45 and above and their spouses. The study included 31,902 eligible respondents aged 60 and above from all Indian states and union territories, with an effective sample size of 30,713 individuals. Multistage stratified area probability cluster sampling was utilized in the survey, with response rates ranging from 96% in Nagaland to 74% in Chandigarh (IIPS et al., 2020) (Fig. 2).

Outcome Variable

The study outcome variable was life satisfaction. Life satisfaction among older adults was assessed by utilizing five separate questions, which were "*(a) In most ways my life is close to ideal, (b) The conditions of my life are excellent, (c) I am satisfied with my life, (d) So far, I have got the important things I want in life and (e) If I could live my life again, I would change almost nothing* (IIPS et al., 2020)." On a seven-point Likert scale ranging from disagree to agree, the replies were categorized as strongly disagree, somewhat disagree, slightly disagree, neither agree nor disagree, slightly agree, somewhat agree, and strongly agree. A new scale with a score range 5 to 35 was created using the responses to the five statements on life satisfaction. A higher score denotes a better level of life satisfaction. Further, the scale was categorized into three categories, "low satisfaction" (score 5 to 20), "medium satisfaction" (score 21 to 25), and "high satisfaction" (score 26 to 35) (IIPS et al., 2020; Srivastava et al., 2022).

Explanatory Variable

Since social capital is a relationship between individuals and social relationships, it includes ample dimensions such as sense of belonging, the feeling of trust and safety, social participation, reciprocity, and networks. Although social capital is a big concept and includes many aspects of life, some indicators on social, civic, and organizational participation, trust, friend network and connectedness, and reciprocity availed in LASI were utilized as proxy indicators to measure one's social capital.

Considering social participation, we utilized twelve questions that include information on organizations, clubs, or

Fig. 2 Sample selection procedure
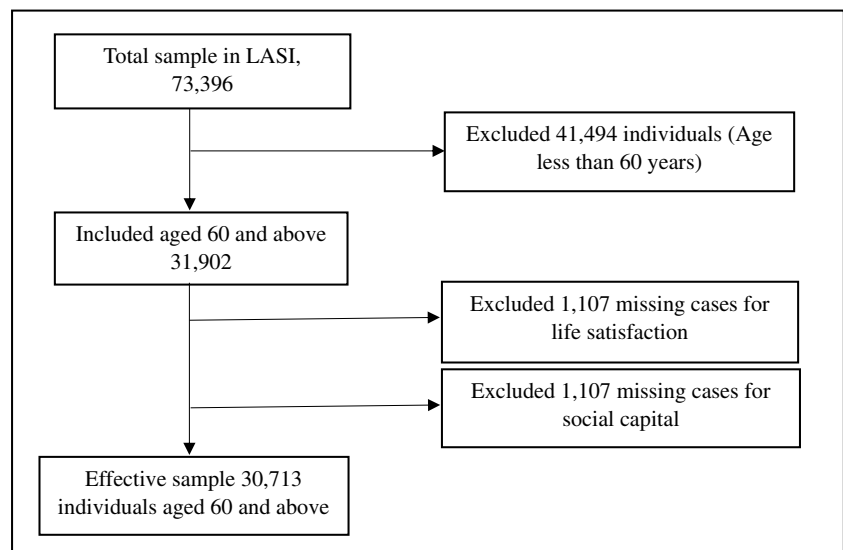
societies meeting, eating, going to the park/beach for relaxing/entertainment, playing cards or indoor games, playing outdoor games/sports/exercising/jogging/yoga, visit relatives/friends, attending cultural performances/shows/cinema, attending religious functions/events such as bhajan/Satsang/prayer, participate in political/community/organization group meetings, reading books/newspapers/magazines, watching television/listen radio, and using a computer for e-mail/net surfing (IIPS et al., 2020). Using responses from these questions, we constructed a new dichotomous variable coded as 1 = yes (if one said yes to at least one out of twelve questions) and 0 = otherwise.

LASI also collected information on civic participation by asking whether respondents participated in "*voting in the last panchayat/municipal/assembly/parliament elections?*" and we incorporated the answer to measure civic participation. Information on organization participation was collected through the question "*whether the respondent was a member of any social, religious, or club organization*." Using the information, we measured one's organizational participation in dichotomous form (1 = yes and 0 = no). Measuring one's "trust" as an indicator of social capital, we utilized information from the questions "*With whom do you share most of your personal matters?*" and constructed a binary variable coded as 1 = having trust, 0 = no.

Measuring friend network and connectedness, we adopted three pieces of information on "*number of close friends, frequency of talking, and meeting with friends*." The number of close friends is further labeled as "only one friend" (1), "more than one" (2 to 20), and "no friend" (0). Meeting with friends was categorized as "no meeting (0)" (never) and "any frequency of meeting (1)" ("daily/at least once a week/at least once a month/at least once a year") (IIPS et al., 2020). Talking with friends is also classified as a dichotomous form: "no talking (0)" (never) and "any frequency of talking (1)" ("daily/at least once a week/at least once a month/at least once a year") (IIPS et al., 2020). The last component, reciprocity, was measured through financial support received and given.

Demographic and Socioeconomic Factors

Gender was categorized as male and female. Respondent's age was grouped as 60–69 years (old), 70–79 years (old-old), and 80 + (oldest-old). The years of schooling were separated into three groups: 1 to 5 years, 6 to 9 years, and 10 years and above. Two types of living arrangements were shown: "living alone" and "living not alone." The dichotomous form of marital status was used; the first is "currently with partner/husband," which includes those who are currently married and live in a relationship, and the second is "currently single," which includes widowed, divorced, separated, deserted, and never married people. The two working status categories

were "currently working" and "currently not working." The monthly per capita consumption expenditure (MPCE) quintile was constructed using household consumption data and grouped into five quintiles: lowest, poor, medium, rich, and richest. The methodology for estimating the sample household expenditure has been explained in LASI guidelines (IIPS et al., 2020).

Self-rated health was categorized as "good," which refers to excellent, very good, and good; "fair" refers to fair and "poor" refers to poor. The physical limitation was recoded into binary categories where "no" means there is no physical limitation and "yes" means there are all kinds of physical impairments, mobility problems as a result of physical impairments, and trouble with activities of daily living (ADL). Detail concepts and examples related to physical limitation, mobility, and ADLs used in LASI can be found elsewhere (IIPS et al., 2020).

Statistical Analysis

The exploratory factor analysis (EFA) using principal component analysis (PCA) was employed to find the most suited variables with good internal consistency for measuring social capital. Of the seven selected indicators, five indicators, such as social and civic participation, close friend, meeting with friends, talking with friends, and reciprocity, had a factor loading greater than 0.6, which was considered a good threshold for keeping the variable for further analysis based on the previous work (Hair et al., 2006). We constructed three separate indicators with the five indicators with good scale reliability (0.70), Kaiser–Meyer–Olkin Measure value 0.69, significant Bartlett test of sphericity, and three factors with more than one eigenvalue. The first indicator was based on the first factor, which incorporated close friends, meeting with friends, and talking with friends. The second indicator was based on the second factor, which incorporated social and civic participation, and the third indicator was based on the third factor, which incorporated reciprocity. Following that, we generated three indicators by averaging: friend network, social participation, and reciprocity.

We employed descriptive statistics and bivariate analysis to assess the study sample's characteristics and the significant difference in the independent variables of life satisfaction (Mchugh, 2013). Since the outcome variable was in order from "low," "medium," to "high" satisfaction, an ordinal logistic regression model was employed to achieve the study's goal and objective. The ordinal regression model relies on the response variable's cumulative probabilities. The logit of each cumulative probability is seen as a linear function of the variables, with the regression coefficients remaining constant across response categories (Grilli & Rampichini, 2014). The order logistic results were given

as odds with a 95% confidence interval. Model I included the key variables and showed an unadjusted odds ratio, while model II included all the factors and an adjusted odds ratio. In this current study, all the analyses were done using STATA 14.

Results

Background Characteristics of 60 and Above Older Adults in India

Table 1 displays the background characteristics of the 60 + older adults. On average, older adults reported having 0.24 friend networks. This low mean suggests that many older adults have very few friend networks, indicating potentially limited social connections with friends. The mean social/civic participation score of 0.94 indicates that older adults are engaged in civic activities or social participation to a greater extent. The mean reciprocity was 0.19, indicating a low reciprocity among older adults. About 10% ($n = 3131$) of respondents were 80 years or above, and 36% ($n = 10,953$) of those who participated were single. The majority (94.89%) of the respondents were co-residing with family members and others. Male participants (48.02%) and female participants (51.98%) were roughly equally represented. Most of the older adults had no formal education (53.62%), and only 15.15% of them had completed ten or more years of schooling. About 41.78% of older adults were employed during the survey; the bulk came from rural areas (66.19%). A relatively equal number of respondents came from each of the MPCE quintiles. The majority of older adults reported physical limitations (77.27%). However, only 13.93% of respondents stated their health was poor, while 53.87% said it was good.

Level of Life Satisfaction by Background Characteristics of 60 and Above Older Adults in India

Table 2 shows the level of life satisfaction of the 60 and above older adults by their background characteristics. About one-third of older adults reported poor life satisfaction, while 45.46% reported high levels. Life satisfaction was significantly higher among males than their female counterparts (47.01% vs. 44.02%; $P < 0.001$). Older adults with a partner or husband reported considerably higher levels of life satisfaction than those who were single (47.30% vs. 42.14%; $P < 0.001$). The analysis indicated that years of schooling were positively associated with higher levels of life satisfaction among older adults. In addition, older adult individuals who lived alone (44.42%) reported considerably higher proportions of lower levels of life satisfaction than those who did not live alone. Older

Table 1 Background characteristics of the 60 and above older adults in India, LASI (Wave 1, 2017–2018)

Background characteristics	Older adults' 60 and above ($n = 30,713$)	Percentage/mean
Friend network	30,713	0.24
Participation	30,713	0.94
Reciprocity	30,713	0.19
Age		
60–69	18,713	60.93
70–79	8869	28.88
80 +	3131	10.19
Sex		
Male	14,749	48.02
Female	15,964	51.98
Marital status		
Currently not married	19,760	64.34
Currently married	10,953	35.66
Year of schooling		
0	16,469	53.62
1–5	5718	18.62
6–9	3872	12.61
10+	4653	15.15
Living status		
Alone	1569	5.11
Not alone	29,144	94.89
Working status		
Currently not working	12,847	58.21
Currently working	9151	41.78
Place of residence		
Rural	20,329	66.19
Urban	10,384	33.81
Physical limitation		
Yes	23,727	77.27
No	6981	22.73
SRH		
Good	16,540	53.87
Fair	9890	32.21
Poor	4276	13.93
MPCE quantiles		
Poorest	6301	20.52
Poorer	6337	20.63
Middle	6268	20.41
Richer	6048	19.69
Richest	5759	18.75
Region		
North	5630	18.33
Central	4029	13.12
East	5179	16.86
North-East	3223	10.49
West	3975	12.94
South	8677	28.25

"n" is not equal for all the variables because of missing cases

Table 2 Bivariate difference between the level of life satisfaction and background variables

Background characteristics	Low satisfaction	Medium satisfaction	High satisfaction	P values
Age				
60–69	30.11	24.18	45.71	0.302
70–79	31.21	23.55	45.24	
80+	31.24	24.18	44.59	
Sex				
Male	29.30	23.69	47.01	0.001
Female	31.69	24.29	44.02	
Marital status				
Currently not married	28.60	24.10	47.30	0.001
Currently married	34.04	23.82	42.14	
Year of schooling				
0	35.79	24.60	39.61	0.001
1–5	28.66	24.92	46.41	
6–9	25.83	24.04	50.13	
10+	18.20	20.72	61.08	
Living status				
Alone	44.42	20.08	35.50	0.001
Not alone	29.79	24.21	46.00	
Working status				
Currently not working	30.23	23.07	45.92	0.011
Currently working	31.28	23.89	44.84	
Place of residence				
Rural	33.23	24.34	42.43	0.001
Urban	25.27	23.33	51.40	
SRH				
Good	26.02	23.45	50.54	0.001
Fair	32.56	24.83	42.61	
Poor	43.41	24.20	32.39	
Physical limitation				
Yes	31.45	24.56	43.99	0.001
No	27.46	22.10	50.44	
MPCE quantiles				
Poorest	36.76	25.12	38.12	0.001
Poorer	31.12	25.53	43.35	
Middle	29.42	24.43	46.16	
Richer	28.90	22.69	48.41	
Richest	26.05	22.00	51.95	
Region				
North	28.47	23.98	47.55	0.001
Central	35.19	27.53	37.28	
East	35.61	26.28	38.12	
North-East	27.02	27.92	45.05	
West	23.77	19.52	56.70	
South	31.11	21.61	47.29	
Total	30.54	24.00	45.46	

adults who were currently not working (45.92% vs. 44.84%; $P < 0.001$) and who lived in urban areas as opposed to rural areas (51.40% vs. 42.43%; $P < 0.001$) reported considerably high levels of life satisfaction. Compared to the older adults with physical limitations, the older adults without physical impairments reported higher proportions of high levels of life

satisfaction (50.44% vs. 43.99%; $P<0.001$). In a similar vein, a higher percentage of older adults who reported good self-rated health reported having a high level of life satisfaction (50.61% vs. 32.39%) than those who reported poor self-reported health. A substantial positive relationship existed between life satisfaction scores and the MPCE quantiles. Regionally, the West region (56.70%) had the highest level of satisfaction, followed by the South region (47.29%) and the North region (47.55%).

Level of Social Capital Among 60 and Above Older Adults by Background Characteristics in India

Table 3 shows the mean social capital by selected socioeconomic and demographic characteristics. Result reflects that older people aged 60–69 group had higher mean score of friend network (0.27) and social engagement (0.95) compared to older group. On the contrary, mean score of reciprocity was higher among 80 and above and 70–79 older adults (0.20 and 0.20, respectively) than among 60–69 older adults. Male older adults had considerably greater mean score of friend networks (0.30 vs. 0.18) and social participation (0.95 vs. 0.92) than female. Older adults who were currently married and not living alone had significantly higher mean score of friend networks and social participation compared to their counterparts. Conversely, older adults who lived alone had a significantly higher mean of reciprocity than those who lived with someone else (0.32 vs. 0.18). The mean score of friend network, social participation, and reciprocity among older adults was found to be improved as schooling years increased. Compared to older adults who were not currently working, currently working group had higher mean score of friend network (0.31 vs. 0.24) and social participation (0.97 vs. 0.93), but the mean score of reciprocity was higher among older adults who were not currently working than their counterparts (0.21 vs. 0.19). Older adults from urban areas had a higher mean score of friend network (0.26 vs. 0.22) and social participation (0.95 vs. 93) compared to the group from rural area. On the contrary, older adults residing in rural area had a higher mean reciprocity compared to those residing in urban area (0.20 vs. 0.17). Considering the MPCE quintiles, higher social capital was observed among the richest group compared to the poorest group. Similarly, a higher mean score of social capital was observed among the older adults from North-East geographical region compared to those from other geographical regions.

Association Between Social Capital and Life Satisfaction Among 60 and Above Older Adults in India

Table 4 depicts the unadjusted and adjusted association between social capital and life satisfaction of 60 and above older adults. Odds and confidence intervals at 95% were estimated by ordered logistic regression to understand the association and significance level in this possible relationship. Two different models were used: model I for unadjusted and model II for data adjusted for socioeconomic, demographic, and health perception characteristics. Analysis indicated that in model I, the likelihood of life satisfaction among older adults increased by 1.45 times (UOR 1.45; CI 1.37–1.53; $P \le 0.001$) when one unit increased the mean number of friend networks. After adjusting for all possible socioeconomic, demographic, and health factors in model II, the odds of life satisfaction increase by 1.20 times (AOR 1.20; CI 1.13–1.28; $P \le 0.001$) when the mean number of friend network increases by one unit. Similarly, one unit increase in mean social and civic participation increased the odds of life satisfaction among older adults by 1.77 times (UOR 1.77; CI 1.56–2.00; $P \le 0.001$). Furthermore, in model II, after adjusting for all factors, the odds of life satisfaction increased by 1.48 times (AOR 1.48; CI 1.30–1.68; $P \le 0.001$) with one unit increase in mean social and civic participation among 60 + older adults. On the contrary, with one unit increase in mean reciprocity among older adults (60 +), the likelihood of higher life satisfaction is 0.93 times (UOR 0.93; CI 0.88–0.98; $P \le 0.001$) lower when all the other factors were excluded.

Looking at demographic factors compared to older adults aged 60–69, the odds of reporting a higher life satisfaction score were 1.08 times (AOR 1.08; CI 1.02–1.13; $P<0.01$) higher among 70–79 years and 1.25 times (AOR 1.25; CI 1.15–1.35; $P<0.001$) higher among older adults aged 80 and above. Analysis indicated that with the increasing age of older adults, the likelihood of higher life satisfaction scores also increased. The probability of reporting a higher life satisfaction score was 1.15 times (AOR 1.15; CI 1.09–1.21; $P<0.001$) higher among females than their counterparts. A higher life satisfaction score was also 1.09 times (AOR 1.09; CI 1.03–1.15; $P<0.001$) more likely for older adults (60 +) who were currently married or in a committed relationship than for those who were not. Life satisfaction and years of schooling were positively associated. The probability of a higher life satisfaction score report was 2.04 times (AOR 2.04; CI 1.91–2.21; $P<0.001$) higher for those with 10 + years of schooling than those with zero years of education among 60 and above older adults. Those older adults not engaged with work had 1.08 times (AOR 1.08; CI 1.02–1.14; $P<0.001$) higher probability to report higher life satisfaction. Those living in urban areas and not living alone (living with someone else) have 1.14 times (AOR 1.14; CI 1.08–1.20; $P<0.001$) and 1.59 times (AOR 1.59; CI 1.43–1.76; $P<0.001$) higher likelihood of higher life satisfaction than their counterparts. The likelihood of life satisfaction among older adults increased with increasing MPCE quantiles. The likelihood of life satisfaction was 1.98

Table 3 Mean of social capital by selected socioeconomic and demographic characteristics

Characteristics	Friend network	Participation	Reciprocity
Age	$F = 117.50; P = 0.000$	$F = 301.73; P = 0.000$	$F = 4.20; P = 0.0151$
60–69	0.27	0.95	0.19
70–79	0.22	0.94	0.20
80+	0.16	0.87	0.20
Sex	$t = 28.85; P = 0.000$	$t = 9.01; P = 0.000$	$t = 0.33.96; P = 0.7341$
Male	0.30	0.95	0.19
Female	0.18	0.92	0.19
Marital status	$t = 1\,8.12; P = 0.000$	$t = 17.00; P = 0.000$	$t = -0.28; P = 0.7792$
Currently not married	0.27	0.95	0.19
Currently married	0.19	0.92	0.19
Year of schooling	$F = 399.54; P = 0.000$	$F = 100.00; P = 0.000$	$F = 4.18; P = 0.0022$
0	0.17	0.92	0.18
1–5	0.27	0.96	0.20
6–9	0.32	0.96	0.21
10+	0.39	0.97	0.21
Living status	$t = -2.11; P = 0.034$	$t = -4.32; P = 0.034$	$t = -13.15; P = 0.034$
Alone	0.22	0.92	0.32
Not alone	0.24	0.94	0.18
Working status	$F = 357.87; P = 0.000$	$F = 190.01; P = 0.000$	$F = 13.74; P = 0.000$
Currently not working	0.24	0.93	0.20
Currently working	0.31	0.97	0.19
Missing	–	–	–
Place of residence	$t = -9.804; P = 0.000$	$t = -7.78; P = 0.000$	$t = -5.92; P = 0.000$
Rural	0.23	0.93	0.20
Urban	0.27	0.95	0.17
SRH	$F = 177.47; P = 0.000$	$F = 110.13; P = 0.000$	$F = 48.62; P = 0.000$
Good	0.28	0.95	0.18
Fair	0.22	0.94	0.20
Bad	0.17	0.91	0.24
Physical limitation	$t = -12.61; P = 0.000$	$t = -2.29; P = 0.021$	$t = 9.44; P = 0.000$
Yes	0.23	0.94	0.20
No	0.29	0.95	0.15
MPCE quantiles	$F = 77.20; P = 0.000$	$F = 10.18; P = 0.000$	$F = 47.57; P = 0.000$
Poorest	0.18	0.92	0.16
Poorer	0.23	0.94	0.17
Middle	0.25	0.94	0.19
Richer	0.26	0.95	0.21
Richest	0.29	0.95	0.25
Region	$F = 584.78; P = 0.000$	$F = 24.59; P = 0.000$	$F = 39.33; P = 0.000$
North	0.14	0.92	0.16
Central	0.21	0.94	0.16
East	0.19	0.94	0.24
North-East	0.55	0.95	0.25
West	0.23	0.95	0.19
South	0.24	0.95	0.19

times (AOR 1.98; CI 1.85–2.11; $P < 0.001$) and 1.53 times (AOR 1.53; CI 1.43–1.64; $P < 0.001$) higher for those who reported poor self-rated health than those who reported good and fair self-rated health. Older adults in West India are 1.37 times (AOR 1.37; CI 1.43–1.64; $P < 0.001$) more likely to have high life satisfaction than North India, and older adults belonging to the rest of India were less likely to have high life satisfaction.

Table 4 Ordered logistic regression estimates for life satisfaction among older adults in India, 2017–2018

Background characteristics	UOR	CI at 95%	AOR	CI at 95%
Friend network	1.45***	1.37–1.53	1.20***	1.13–1.28
Participation	1.77***	1.56–2.00	1.48***	1.30–1.68
Reciprocity	0.93***	0.88–0.98	0.99	0.94–1.05
Age				
60–69[@]				
70–79			1.08*	1.02–1.13
80+			1.25***	1.15–1.35
Sex				
Male[@]				
Female			1.15***	1.09–1.21
Marital status				
Not currently not married			1.09***	1.03–1.15
Currently married[@]				
Year of schooling				
0[@]				
1–5			1.29***	1.21–1.37
6–9			1.44***	1.34–1.54
10+			2.04***	1.91–2.21
Living status				
Alone[@]				
Not alone			1.59***	1.43–1.76
Working status				
Currently working[@]				
Currently not working			1.07*	1.01–1.13
Place of residence				
Rural[@]				
Urban			1.14***	1.08–1.20
MPCE quantiles				
Poorest[@]				
Poorer			1.18***	1.10–1.26
Middle			1.24***	1.16–1.32
Richer			1.28***	1.19–1.37
Richest			1.39***	1.29–1.49
Region				
North[@]				
Central			0.77***	0.71–0.84
East			0.76***	0.70–0.81
North-East			0.86***	0.79–0.94
West			1.37***	1.26–1.49
South			0.90***	0.84–0.96
SRH				
Good			1.98***	1.85–2.11
Fair			1.53***	1.43–1.64
Poor[@]				
Physical limitation				
Yes			0.95	0.90–1.00
No[@]				

CI 95% confidence interval, *UOR* unadjusted odds ratio, *AOR* adjusted odds ratio

***$P \leq 0.001$

*$P \geq 0.001$ to < 0.05

Table 4 (continued)

[@]Reference category

Discussion

The growing aged population will be a matter of deep concern in the near future since it is expected to be one of the most vulnerable populations in the coming years (Yin et al., 2019). A number of key social determinants of life satisfaction among older adults have been identified in several studies, including demographic and socioeconomic status, self-rated health, living arrangements, and social participation (Lu et al., 2021). These factors are mostly interrelated and impact older adults' life satisfaction.

The effect of social capital on the life satisfaction of older adults has been explored in this paper. Even after adjusting for other demographic, socioeconomic factors, and self-rated health status, different elements of social capital have become significant factors for the life satisfaction of older adults in our study. Friend networks (number of close friends, talking, meeting), social and civic participation, and reciprocity (financial support giving and receiving) are important in enhancing the life satisfaction of older adults. Frequent meetings and interactions with their spouse, family, and other direct social relationships or social contacts or someone of their age group or with friends are a matter of choice, bringing higher life satisfaction among older adults (Lu et al., 2021). Furthermore, when children get older and become more independent, they no longer live with their parents; meeting with non-cohabiting children and close friends and frequent communication becomes necessary (Yin et al., 2019). Studies have pointed out that income has a substantial influence on life satisfaction. According to many studies, perceived wealth compared to other people or families in the community has a long-term influence on happiness (Chen et al., 2021; Ng et al., 2017). However, studies have shown that social participation is also conditioned by household income levels (Yuan, 2016). Developing new friendships and becoming a part of new networks becomes more challenging as people become older since they tend to lose contact with the social networks to which they once belonged (Singh & Misra, 2009). Older adults who live alone also have lower chances of interaction with relatives and friends, and due to low social connections and participation, they mostly suffer from depression (Singh & Misra, 2009).

Moreover, having trusted social ties and acquaintances offers older adults a sense of safety and contentment. Trust in family and friends remained a significant factor in life satisfaction. The feeling of being loved by family members and friends and a related sense of security is associated with higher life satisfaction, although research also supports those

relations can have negative impacts because bad relationships among household members may lead to tensions, disputes, and negative interaction patterns (Ng et al., 2017). Self-rated health is also important for life satisfaction among older adults, supported by prior studies (Ng et al., 2017). According to studies, self-rated health is positively associated with the levels of social capital in terms of social network, trust, and social participation, which increases the satisfaction levels among older adults (Nieminen et al., 2010). We discovered that the impact of social capital on life satisfaction is influenced by household economic conditions, consistent with results from previous Indian research (Srivastava et al., 2021). This may be attributed to the fact that household income significantly helps manage household expenditures and other expenses like catastrophic healthcare expenses, which add a sense of security to life.

Older adult women over the age of 60 were found to be more satisfied with their lives than older males, which may be attributed to their advantage over men when it comes to coping with the challenges of old age (Ng et al., 2017). Older persons who are currently married are more content with their lives than the singles. This is consistent with previous findings by (Rodríguez-Pose & von Berlepsch, 2014). It was found that the more educated older adults were significantly more likely to have better life satisfaction than their less educated contemporaries, corroborated by Lu et al. (2018) and Srivastava et al. (2021). Older adults in the urban areas were much more satisfied in life than their rural counterparts. Ng et al. (2017) also showed that those in cities were far more likely than those in the countryside to assess their lives as excellent or excellent. The better accessibility, infrastructure and healthcare facilities, good quality of life, and better livelihood options in the urban areas have probably contributed to higher life satisfaction.

Conclusion

The study concluded that strong social capital in terms of friend networks, trust, and social and civic participation improves life satisfaction among older adults. Different covariates like gender, living and marital status, levels of education, economic status, working status, and self-rated health also impact older adults' life satisfaction. However, more research is needed to fully understand the nature of social capital and its impact on older adult's well-being in India. In the near future, the changing social structure and support of older adults due to urbanization will be a significant issue in developing countries like India. Thus, various measures must be implemented on a priority basis to encourage and increase social interaction and social networks among older adults. As a family's economic level influences social capital and life satisfaction, policymakers

should concentrate on developing support systems for low-income families and providing financial and social security to older adults to improve their quality of life. Various steps can be taken to support social activities, such as establishing senior-accessible clubs, parks, and reading rooms to engage older persons in social participation and interactions; this can also enhance the contact frequency with friends. Encourage them to participate in voluntary activities, which can provide them a sense of purpose of the older persons and can also enhance their reciprocal relationships. Creating elderly-friendly spaces where older adults can regularly sit together for "adda" or informal discussions with their close ties may increase their happiness and life satisfaction. Measures like involvement of older adults in community development initiatives and participatory governance mechanism such as local councils or boards or clubs or societies can also increase their sense of purpose and belonging, therefore boosting life satisfaction.

Abbreviations ADL: Activities of daily living; EFA: Exploratory factor analysis; LASI: Longitudinal Ageing Study in India; MPCE: Monthly per capita consumption expenditure; PCA: Principal component analysis; SRH: Self-rated health

Declarations

Ethics Approval and Consent to Participate No ethical approval was required as this study is based on survey data available in the public domain. All methods were carried out in compliance with relevant guidelines and regulations.

Consent for Publication Not applicable.

Competing Interests The authors declare no competing interests.

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