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Thriving in golden years: Promoting psychological well-being for healthy ageing in India

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ABSTRACT

Background: In order to address the issues associated with an ageing and implement effective policies, countries must have a thorough understanding of health issues and emerging trends among the geriatric population. Healthy ageing is an essential strategy to address the issue among the elderly. Psychological well-being is a critical factor that contributes to healthy ageing, yet it is often overlooked. Therefore, present study examines the relationship between psychological well-being and healthy ageing among the elderly in India aged 60 years and above.

Methods: We created composite score of healthy ageing using Principal Component Analysis based on LASI (wave-1) data 2017–18 in accordance with the WHO framework of healthy ageing based on the functional ability of an individual. We then used multiple linear regression to demonstrate the association between psychological well-being and healthy ageing among the elderly in India aged 60 years and above.

Results: The mean Healthy Ageing Index of our study population was 82.8 %, representing the study population is healthier. Psychological well-being is significantly associated with healthy ageing among older adults in India (β=1.56; 95 % CI: 1.35–1.76). In addition, healthy ageing is also associated with the lifestyle behaviours like physical activity, smoking and drinking history.

Conclusion: The present study highlights the importance of promoting psychological wellbeing and healthier lifestyle for better health outcome among the older population in India. Because, with increasing age, as the health status among individual's decline, promoting a positive self-perception of ageing is equally important in facilitating healthy ageing as that of promoting healthier lifestyle.

Introduction

The rapid changes in demographics occurring in various nations throughout the world as a result of increasing life expectancy and declining fertility results in significant increase in the number of older populations. Population ageing is considered as one of the most important social trends of 21st century (Kim et al., 2021). The latest population projection by World Population Prospects 2022 states that the proportion of 65+ population is projected to increase from 10 percent in 2022 to 16 % in 2050 globally (United Nations Department of Economic & Social Affairs, Population Division, 2022). While increasing longevity and number of more years of life is a positive outcome, it is often accompanied with various diseased conditions due to declining physical health and increasing risks of various non-communicable diseases (World Health Organization, 2015). Therefore, living longer with the diseased condition possess a range of challenges at individual as well as a burden for overall healthcare resources of the country (Hu et al., 2019).

The ageing process and experiences might vary from person to person due to the differences in the genetic profile and different life course exposures including lifestyle habits and surrounding environment (Tosato, Zamboni, Ferrini & Cesari, 2007; Foscolou et al., 2018). Nevertheless, the common losses associated with ageing process-such as social loss (e.g., bereavement), physical loss (e.g., decline in physical health, reduced physical ability, sensory impairment etc.), and role related loss within family and community are nearly universal.

As societies worldwide face the realities of ageing population, there is a clear structural lag in our society's core institutions such as families, healthcare systems, housing design, neighbourhood etc. to meet the needs of these growing aged population. Therefore, the scope should be

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expanded to resilience, as well as psychological and social assets, in our prevention and treatment program to have the comprehensive and multidisciplinary response efforts our society needs (Rowe & Kahn, 2015).

Psychological well-being is a critical issues that is well associated with health of an individual especially among the geriatric population. Psychological well-being has been defined in various ways, and although it's exact content and contours are contested and evolve with new empirical research and theoretical models (Kashdan, Biswas-Diener & King, 2008), two main perspectives characterize its essential features. First is the eudaimonic approach, which defines psychological well-being as a person's ability to identify meaningful pursuits, and the act of striving toward them through virtuous activities in pursuit of achieving one's ultimate potential (Ryff, 2013). Second, is the hedonic approach, which defines psychological well-being as a high frequency of positive affect, low frequency of negative affect, and the evaluation of life as satisfying (Diener, Emmons, Larsen & Griffin, 1985). Our study on psychological well-being was conceptualized based on the hedonic approach of looking into the psychological wellbeing through life satisfaction perspective.

Based on the existing literature we tried to contextualise psychological well-being within India's diverse socio-cultural framework and incorporated the conceptual framework by Kubzansky et al., 2028 (Kubzansky et al., 2018), with a little modification in it.

The framework in Fig. 1 shows that psychological well-being might influence healthy ageing through at least two pathways: (1) through psychosocial factors and (2) through health behaviours. In each of these pathways, the effect of psychological well-being may reduce the likelihood of a deteriorative process (e.g., smoking, drinking alcohol) and/or increase the likelihood of a restorative process (e.g., physical activity). Additionally, this model shows the process of healthy ageing changes over the course of life, which is shaped by the physical environment, social environment, and various sociodemographic factors.

There is ample research suggesting different dimensions of psychological well-being, including positive thoughts and feelings that people use to evaluate their lives favorably (e.g., a sense of purpose in life, a sense of optimism, and life satisfaction), are uniquely associated with reduced risk of incidence disease and premature mortality (Kim et al., 2021; Kubzansky, Winning & Kawachi, 2014). A study by Musich et al. in 2020 involving 3577 older adults explored the impact of purpose in life, resilience, optimism, internal locus of control, and social connections on health outcomes, and those individuals with high levels of any of these psychosocial factors demonstrated improved physical functioning, better overall health, and reduced healthcare utilization (Musich et al., 2021). Further, some studies have examined the relationship between psychological well-being and cognitive function, revealing that a sense of purpose in life and optimism are linked to a lower risk of cognitive impairment and Alzheimer's disease (Boyle et al., 2010; Gawronski et al., 2016; Oh, Chopik & Kim, 2020). A growing body of research has established links between psychological well-being and a lower incidence of various age-related conditions (e.g., lung disease, cognitive decline, cardiovascular disease) as well as a slower decline in physical function (Rowe & Kahn, 2015; Kubzansky et al., 2018; Steptoe, 2019). A recent meta-analysis of 90 prospective studies by Martín-María et al. in 2017, encompassing a pooled sample of 1259,949 participants, found that greater psychological well-being was linked to a reduced risk of mortality (hazard ratio = 0.92; 95 % CI = 0.91–0.93) (Martín-María et al., 2017). Similarly, another meta-analysis of 10 prospective studies with a combined sample of 136,265 participants by Cohen et al., in 2016 reported that a stronger sense of purpose in life was associated with a lower risk of mortality (hazard ratio = 0.83; 95 % CI = 0.75–0.91) (Cohen, Bavishi & Rozanski, 2016). Additionally, a broad body of work suggests that positive functioning in different dimensions of social relationships (e.g., structural, functional, quality) is also strongly associated with enhanced health outcomes and reduced risk of mortality (Holt-Lunstad, 2021; Mandi & Bansod, 2023; Hawkley & Cacioppo, 2010).

Healthy ageing, as defined by World Health Organization (WHO), is "the process of developing and maintaining the functional ability that enables wellbeing in old age" (World Health Organization, 2015; Rudnicka et al., 2020). Functional ability refers to having the capabilities to enable people to be and do what they value by their ability to meet their basic needs, learn, grow and make decisions, be mobile, built and maintain relationships, and contribute to society. Intrinsic capacity

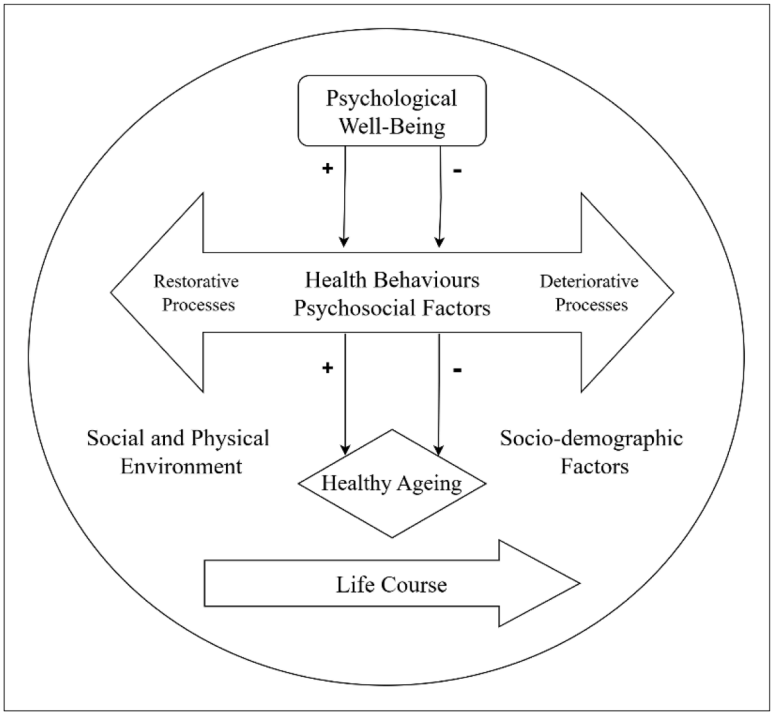

Fig. 1. Relationship between psychological well-being and healthy ageing (Kubzanskyet al., 2018).

among individuals varies by their genetic inheritance, physical and mental proficiency and specific environment where they live and interact. These environments can change over time depending on political, economic, social norms, values and resources. The close interaction between intrinsic capacity and environmental characteristics combined to determine functional ability (Michel & Sadana, 2017).

Psychological factors alone are likely insufficient when considering healthy ageing, thus we also turn to social relationships and other lifestyle attributed factors that may contribute to healthy ageing especially among the geriatric population.

With increasing age, an individual loses their functional abilities as a result of declining health and increasing the risk of non-communicable diseases. But apart from that exposure to different lifestyle behaviours might affect the health outcomes (Södergren, 2013). Age-related diseases could be delayed by adopting a healthy lifestyle. Regular engagement in physical activity and refraining from smoking can delay the ageing process (Södergren, 2013).

Studies found that there is an adverse relationship between smoking and functional ability, and a strong and consistent relationship has been found among the sustained smokers at age 50 to 70 and its effect of the declining functional ability at age 75, even after adjusting for physical activity and also it is well associated with drinking alcohol and unhealthy diet (United Nations, 2011; Pruchno, Hahn & Wilson-Genderson, 2012; Støvring, Avlund, Schultz-Larsen & Schroll, 2004; Le Marchand, Kolonel, Hankin & Yoshizawa, 1989).

Study by Bourke et al., found that discontinuing smoking and regular exercising can bring good health among the older individuals even after controlling for the cardiovascular disease risk factors (Burke et al., 2001). A study by Yates et al., found, in the absence of smoking, diabetes, obesity, hypertension, or sedentary lifestyle it is likely that the life span at age 70 years old may increase to 90 years (Yates et al., 2008). Early life exposure to healthy behaviours including smoking abstinence and regular exercise is associated with enhanced lifespan, good health and function during old age (Yates et al., 2008). Study by Daskalopoulou et.al. (2018) found a positive association of limited alcohol consumption on healthy ageing (Daskalopoulou et al., 2018).

The existing literature highlights the significant impact of psychosocial factors on health outcomes among the elderly, with previous research linking various dimensions of psychological well-being to a reduced risk of mortality. However, there is a noticeable gap in research within the Indian context, particularly studies utilizing large-scale, nationally representative datasets. As India experiences a rapid demographic shift toward an ageing population, gaps in institutional support continue to influence health outcomes for older adults. Addressing these challenges requires a concerted effort to improve the health and well-being of the country's growing elderly population. Promoting psychological well-being emerges as a key strategy to support healthy ageing. This study, therefore, explores the association between psychological well-being and healthy ageing among older adults in India aged 60 years and above.

Methods

Data sources

The present analysis was carried out using data from the first wave of Longitudinal Ageing Study in India (LASI), which was the first nationally representative survey on health, social and economic aspects of the older adults aged 45 years and above across all states and union territories of India conducted in the year 2017–18 (Harvard, 2020). LASI provides a comprehensive information on demographics, household economic status, health conditions, healthcare access and utilization, family dynamics and social security coverage.

LASI adopted a multistage stratified area probability cluster sampling design to determine predefined sample size. The detailed sampling procedure is elaborated in LASI report (Harvard, 2020).

LASI covered a sample size of 73,396 individuals aged 45 years and above. However, our study concerned subjects aged 60 years and above. Therefore, the sample size for the present study is 29,179 elders aged 60 years and above across all the states and union territories of India.

Outcome variable

Our conceptualisation of healthy ageing index (HAI) was based on the WHO definition of healthy ageing within the functional ability framework (World Health Organization, 2015; Rudnicka et al., 2020). We constructed Healthy Ageing Index (HAI) by considering 28 variables from multiple domains, including physical health, functional health, cognitive functions, mental health and social engagement. All the variables used in the index under different domains are based on the information available in the Longitudinal Ageing Study in India (Wave-1) data. The information on *physical health* was measured using absence of major chronic diseases among the elderly. LASI provides information on chronic morbid conditions. Therefore, we used nine important chronic diseases to identify the healthy agers. That includes hypertension, diabetes, cancer, chronic lung disease, chronic heart disease, stroke, arthritis, neurological problem and cholesterol. The second component is *functional health* or the physical capabilities of an individual to perform basic activities of daily living. Therefore, the information on whether the older individuals need any assistance with their activities of daily living (ADL) or instrumental activities of daily living (IADL) like dressing, walking, bathing, eating, getting out of bed, using toilet, cooking, shopping, making telephonic calls, taking medications, doing work around the house or garden, managing money, and getting around or finding address in unfamiliar place etc. were taken to assess the functionality of an individual. The third component in healthy ageing is *cognitive ability* to understand the cognitive functioning of an individuals and was captured based on the memory recall and orientation to time (date, month, and year). Fourth component being the *mental health*, and was measured by the depressive symptoms among the geriatric population and has been widely used in various studies through the Centre for Epidemiologic Studies Depression Scale (CES-D). The original CES-D scale is a 20-item scale, while a shortened 10-item scale with four scale option categories was used in the LASI. The 10 items included seven negative symptoms (trouble concentrating, feeling depressed, low energy, fear of something, feeling alone, bothered by things, and everything is an effort), and three positive symptoms (feeling happy, hopeful, and satisfied). Response options included rarely or never ($<$ 1 day), sometimes (1 or 2 days), often (3 or 4 days), and most or all of the time (5–7 days) in a week prior to the interview. The scoring was reversed for negative symptoms. For negative symptoms, rarely or never ($<$ 1 day) were scored three, and sometimes (1 or 2 days) were scored two, often (3 or 4 days) were scored one, and most or all of the time (5–7 days) categories were scored zero. For positive symptoms rarely or never ($<$ 1 day) were scored zero, and sometimes (1 or 2 days) were scored one, often (3 or 4 days) were scored two, and most or all of the time (5–7 days) categories were scored three (Harvard, 2020). The overall score ranges from zero to 30 and the score was further transformed to a quintile scale 0–100, with 0 represents depressive symptoms 100 indicates healthy ager. The last component of Healthy Ageing Index is *social engagement*. In order to capture the social participation and the social environment in which elderly live, this component is very important. WHO also stresses on the environment as an important indicator in its healthy ageing definition. The frequency of social engagement of an individual is measured with seven dimensions like (1) going to park or beaches for relaxing or entertainment, (2) play cards/indoor games, (3) play outdoor games/sports/yoga/exercise, (4) visit relatives/friends, (5) Attend cultural performances /shows/Cinema, (6) Attend religious functions /events such as bhajan/satsang/prayer, (7) Attend political/community/organization group meetings. Each of these questions have seven responses daily, several times a week, once a week, several times a month, at least once a month, rarely/once in a year, and

never. The overall score based on this social engagement ranges from 0 to 28 and the score further transformed to a quintile scale 0–10. The code for each of the variables for constructing healthy ageing is available in the supplementary file (see Table S1 supplementary material). We used the principal component analysis (PCA) to create the composite score of Healthy Ageing Index (HAI) incorporating these 28 variables clubbed within these five domains i.e. physical health, functional health, mental health, cognitive functions, and social engagement. The HAI score ranges from 0 to 100 with higher score indicated healthier ageing status.

The validity and reliability of the HAI was performed using Cronbach Alpha, and the full details are provided in the supplementary file. The Cronbach alpha was 0.83 indicates a good internal consistency.

Predictor variables

Psychological wellbeing

Based on the hedonic approach to define the psychological well-being, we conceptualize through life satisfaction using the latest round of LASI questionnaire. A participant's level of life satisfaction was assessed using the 1–7 response scale derived from Satisfaction with Life Scale (SWLS) instrument based on five statements regarding life satisfaction: 'In most way my life is close to ideal'; 'The condition of my life are excellent'; 'I am satisfied with my life'; 'So far, I have got all the important thing I want in my life'; 'If I could live my life again, I would change almost nothing'. The level of agreement with each five statements using 1–7 scale: '7- Strongly agree'; '6- Somewhat agree'; '5- Slightly agree'; '4- Neither agree nor disagree'; '3- Slightly disagree'; '2- Somewhat disagree'; '1-Stronngly disagree' were recorded. Using the responses, two category scale was constructed: 'low life satisfaction (score of 5–20), and 'high life satisfaction (score of 26–35). The outcome variables were coded 0 as "low", 1 as "high". The coefficient alpha for life satisfaction in this study was 0.90, indicating a good internal consistency.

Socio-demographic measures

Age, sex, place of residence, marital status, educational attainment, working status, marital status, living arrangements, economic and social status etc. was taken as background variables. Age was categorized into three groups '60–69′, '70–79′, and '80 and above' to distinguish between life stages which are 'youngest-old', 'middle-old', and 'oldest-old' (Phulkerd, Thapsuwan, Chamratrithirong & Gray, 2021). Sex was categorized as a dichotomous variable; i.e., male or female. Place of residence was classified as rural or urban. Educational levels were assessed using four categories based on the years of schooling which ranges from 'no schooling', 'less than 5 years', '5–9 years', and '10 and more years of schooling'. Current marital status was classified into 'currently married' and 'others'. Similarly, current working status as 'yes' and 'no'. Economic status was indicated by household wealth quintile ('poorest', 'poorer', 'middle', 'richer' and 'richest'). Living arrangements among the older adults were classified into 'living alone or with spouse' and 'living with others'. Caste has been classified as 'Scheduled Castes (SC)', 'Scheduled Tribes (ST)', 'Other Backward Classes (OBC)', and 'none of them'.

Apart from sociodemographic characteristics we also taken the lifestyle behavioural measures like current smoking and alcohol history, physical activity status etc. Self-reported current smoking status was assessed with yes/no using the question on whether the respondents currently smoking (either smoked tobacco like cigarette, bidi, hookah, chroot or smokeless tobacco like chewing tobacco, gutka, pan masala etc.). Similarly, the alcohol history of the respondents was also studied and self-reported current drinking alcohol status was assessed with yes/no, using the question: over the past three-month respondents had at least one alcoholic drink, for example-beer, wine or any drink.

We tried to capture the physical activity status of an individual based on the WHO guidelines on moderate and vigorous physical activity (World Health Organization, 2020). *Moderate physical activity* has been considered if an individual were involved at least 150 min of moderate-intensity physical activities like cleaning house, washing clothes, fetching water, drawing water from a well, gardening, walking at a moderate pace, bicycling at a regular pace, and floor or stretching exercises throughout the week. *Vigorous physical activity* is considered by involvement of at least 75 min of vigorous-intensity physical activities like running or jogging, swimming, going to a health center/gym, cycling, digging with a spade or shovel, heavy lifting, chopping, farm work, fast bicycling, and cycling with loads throughout the week. Based on the response to moderate and vigorous physical activity, we classified respondents as physically active (those who are either engaged in moderate physical activity or vigorous physical activity or an equivalent combination of moderate- and vigorous-intensity activity) and physically inactive (those who are not engaged in any type of moderate or vigorous physical activity throughout the week) (Harvard, 2020).

Statistical analysis

Descriptive statistics were used to describe the characteristics of the older population in various socio-demographic conditions. The estimated mean Healthy Ageing Score were adjusted for age and sex fixed effect for elderly with higher life satisfaction. Multiple linear regression analysis was performed with Healthy Ageing Index (HAI) as dependent variable and life satisfaction, socio-demographic covariates and lifestyle behaviours as independent variable. The estimates were presented in the form of adjusted coefficients with a 95 % confidence interval (CI). STATA 17.0 has been used to perform all the statistical analyses. Survey weights were applied to account for population-level estimates. Regression diagnostics, such as multicollinearity and normality tests, were run to ensure the fundamental regression assumptions were followed.

Results

Sociodemographic characteristics

The present analysis was carried out using 29,179 respondents who had responded to all the variable of interest for this study. In our study, approximately, 61 % of the study population belong to the age group 60–69, females (52 %), had no schooling (53 %). Almost two third of the study population residing in rural areas (67 %). Over 30 % of the respondent were currently working. All the categories in MPCE quintile represented approximately equally. Around one third of the study population were currently smoking (31 %), either smoked or smokeless tobacco or 10 % were currently drinking alcohol. In terms of physical activity more than half were physically active (52 %). Detailed description is given in table 1.

The mean Healthy Ageing Index of our study population was 82.8 %, representing the study population is healthier. A significantly larger share of our study sample (61 %) in the age group 60 and above had healthy ageing score more than the mean HAI.

Table 2 shows age-sex adjusted score of healthy ageing among the older adults with higher life satisfaction by socio-demographic characteristics in India. The score was adjusted for age and sex fixed effects. It was found that healthy ageing score was relatively better among male (84.1; 95 % CI: 83.93–84.26), rural resident (84.13; 95 % CI: 83.98–84.27), currently working (86.46; 95 % CI: 86.26–86.67), ST category (85.53; 95 % CI: 85.25–85.81), those belongs to age group 60–69 (84.44; 95 % CI: 84.30–84.59). Among the various lifestyle factors, mean heathy ageing score was higher among elderly who are physically active (84.82; 95 % CI: 84.66–84.98).

Table 3 shows results of regression model showing association of life satisfaction on healthy ageing among the older adults in India aged 60 years and above. The regression analysis indicates a positive effect of higher life satisfaction on healthy ageing (β=1.56; 95 % CI: 1.35–1.76).

Table 1
Background characteristics of the study sample.

Background Characteristics	Frequency	Percentage
Age Category		
60–69	17,886	61.30
70–79	8393	28.76
80+	2900	9.94
Sex		
Male	14,097	48.31
Female	15,082	51.69
Place of Residence		
Rural	19,440	66.62
Urban	9739	33.38
Current Marital Status		
Unmarried	10,459	35.84
Married	18,720	64.16
Living Arrangements		
living alone	1470	5.04
with spouse only	5705	19.55
living with others	22,004	75.41
Educational Attainment (years of schooling)		
No schooling	15,565	53.34
Less than 5 years	3537	12.12
5–9 years	5643	19.34
10 and more	4434	15.20
Currently working		
No	20,379	69.84
Yes	8800	30.16
MPCE Quintile		
Poorest	6038	20.69
Poorer	6007	20.59
Middle	5973	20.47
Richer	5753	19.72
Richest	5408	18.53
Caste		
SC	4890	16.76
ST	4925	16.88
OBC	11,558	39.61
None of them	7806	26.75
Currently Smoking		
No	20,264	69.45
Yes	8915	30.55
Current Drinking Alcohol		
No	26,389	90.44
Yes	2790	9.56
Physical Activity		
Physically inactive	14,016	48.03
Physically active	15,163	51.97
TOTAL	**29,179**	**100**

Physically active elders had better healthy ageing status (β=2.34; 95 % CI: 2.14–2.54). There was a negative effect of age, sex (female), residence, educational attainment, working status, living arrangements and wealth status on healthy ageing. Compare to the male older adults, females were less likely to attain healthy ageing (β=−0.53; 95 % CI: −0.77–0.29). Older adults in the oldest-old age group (80+) were less likely to attain healthy ageing in compared to those in the age group 60–70 (β=−2.68; 95 % CI: −3.02–2.33). Among the social groups, elderly from the ST category had higher healthy ageing status (β=1.98; 95 % CI: 1.65–2.31). Working status among the older adults were protective factors in healthy ageing. Currently working older adults were more likely to attain healthy ageing in compared to those not currently working (β=2.83; 95 % CI, 2.60–3.06). Contrary to the conventional perception that "money can buy you happiness" our study found that elderly in the wealthiest quintile i.e., richer and richest were less likely to attain healthy ageing in compared to those in the poorest wealth quintile. Similarly, marital status was also associated with higher healthy ageing status. Older adults currently in marital union were more likely to attain healthy ageing than those not in marital union (β=0.70; 95 % CI, 0.46–0.95).

Table 2
Age-sex adjusted score of healthy ageing among the elderly with **high** level of life satisfaction by socio-demographic characteristics in India, 2017–18.

Sociodemographic Characteristics	High Life Satisfaction Mean HAI Score (95 % CI)
Age Category	
60–69	84.44(84.30–84.59)
70–79	82.49(82.27–82.70)
80+	80.26(79.90–80.63)
Sex	
Male	84.10(83.93–84.26)
Female	82.87(82.71–83.04)
Place of Residence	
Rural	84.13(83.98–84.27)
Urban	82.31(82.12–82.50)
Educational Attainment (years of schooling)	
No schooling	84.01(83.84–84.17)
Less than 5 years	83.22(82.89–83.55)
5–9 years	83.08(82.82–83.33)
10 and more	82.65(82.37–82.92)
Currently working	
No	82.20(82.07–82.34)
Yes	86.46(86.26–86.67)
Currently married	
No	82.33(82.13–82.53)
Yes	84.07(83.93–84.21)
Living Arrangements	
living alone	83.06(82.48–83.63)
with spouse only	83.96(83.70–84.23)
living with others	83.37(83.24–83.51)
MPCE Quintile	
Poorest	84.43(84.17–84.70)
Poorer	84.14(83.88–84.40)
Middle	83.79(83.54–84.05)
Richer	83.14(82.88–83.40)
Richest	81.89(81.62–82.15)
Caste	
SC	83.96(83.67–84.26)
ST	85.53(85.25–85.81)
OBC	83.22(83.04–83.41)
None of them	82.37(82.16–82.59)
Currently Smoking	
No	82.95(82.81–83.09)
Yes	84.75(84.54–84.97)
Current Drinking Alcohol	
No	83.26(83.14–83.38)
Yes	85.66(85.27–86.04)
Physical Activity	
Physically inactive	82.00(81.83–82.17)
Physically active	84.82(84.66–84.98)

Discussion

We created index of healthy ageing based on nationally-representative data on ageing population in India and examined its association with psychological wellbeing and lifestyle behaviours. Initially our analysis extends to the construction of Healthy Ageing Index (HAI), based on the WHO definition of 'Healthy Ageing' based on functional ability framework (World Health Organization, 2015) comprising 28 variables from five major domains of health (i.e., physical health, functional health, mental health, cognitive ability, and social engagement). The findings of our study are consistent with the previous studies indicating healthy ageing in old age is determined by various processes and lifestyle behaviours (Foscolou et al., 2018; Daskalopoulou et al., 2019; Cramm & Lee, 2014; Pac et al., 2019; Sabia et al., 2012). The mean Healthy Ageing Index of our study population was 82.8 %, representing the study population is healthier. Findings confirms that the psychological factors are associated with healthy ageing status among the geriatric population. Our findings regarding the psychological factors shows that the prevalence of high life satisfaction is associated with healthy ageing status. This phenomenon can be explained by the paradox of ageing that suggest, with increasing age people tends to react

Table 3
Multiple linear regression of the potential factors associated with Healthy ageing among the older adults in India, 2017–18.

Factors	β	95 % CI	P > t
Life Satisfaction			
Low®			
High	1.56	(1.35–1.76)	0.000
Physical Activity			
Physically inactive®			
Physically active	2.34	(2.14–2.54)	0.000
Currently Smokers			
No®			
Yes	0.67	(0.45–0.90)	0.000
Current Drinkers			
No®			
Yes	0.54	(0.20–0.88)	0.002
Age Category			
60–69®			
70–79	−1.15	(−1.38–0.93)	0.000
80+	−2.68	(−3.02–2.33)	0.000
Sex			
Male®			
Female	−0.53	(−0.77–0.29)	0.000
Place of Residence			
Rural®			
Urban	−1.09	(−1.31–0.87)	0.000
Educational Attainment (years of schooling)			
No schooling®			
Less than 5 years	−1.04	(−1.35–0.73)	0.000
5–9 years	−1.12	(−1.39–0.85)	0.000
10 and more	−0.80	(−1.13–0.47)	0.000
Currently working			
No®			
Yes	2.83	(2.60–3.06)	0.000
Currently married			
No®			
Yes	0.70	(0.46–0.95)	0.000
Living Arrangements			
living alone®			
with spouse only	−0.38	(−0.90–0.14)	0.154
living with others	−0.31	(−0.77–0.15)	0.181
MPCE Quintile			
Poorest®			
Poorer	−0.11	(−0.41–0.18)	0.456
Middle	−0.33	(−0.63–0.03)	0.031
Richer	−0.79	(−1.09–0.48)	0.000
Richest	−1.79	(−2.10–1.47)	0.000
Caste			
SC®			
ST	1.98	(1.65–2.31)	0.000
OBC	−0.31	(−0.59–0.03)	0.029
None of them	−0.29	(−0.60–0.02)	0.063

®Reference category.

less to negative situations, ignore irrelevant negative stimuli, and remember relatively more positive information than negative information and manage to maintain positive well-being, and this leads to a sense of higher life satisfaction and as a result perceive healthy ageing (Pan et al., 2019). In addition, maintaining a good self-perception is very important because, with age, as individuals age, they lose their health and other important social relationships. Therefore, with these circumstances and surroundings, keeping a positive outlook towards life and having a positive psychology promotes better and healthier lives.

Apart from life satisfaction, healthy ageing among older population is also associated with the lifestyle behaviours like physical activity, smoking and drinking history. Physically active status and engagement in workforce are associated with healthy ageing.

Our study also confirmed the strong association of physical activity on the experience of healthy ageing (Cramm & Lee, 2014; Mandi, Bansod & Goyal, 2023). The complex association between physical activity and better health status had been widely studied. Older adults with higher physical activity in terms of either moderate or vigorous activities helps them to stay active and accelerate better metabolism, higher cell endurance, and reduced age associated neurodegenerative disorders and various health issues (Radak et al., 2010). Older adults who either engaged in moderate or vigorous physical activity have higher functional ability in terms of performing their own basic activities of daily living like walking, bathing, going to market, etc. Older adults those having more social participation through interaction with outside people, participating in social activities have more chances to be a healthy person. This finding is consistent with other studies showing similar association (Foscolou et al., 2018; Cramm & Lee, 2014; Pac et al., 2019; Mandi, Bansod & Goyal, 2023).

In addition to the lifestyle habits, healthy ageing differs by the sociodemographic characteristics of the study population. With increasing age of an individual, the risk of suffering from multiple chronic conditions and disability increases (Hu et al., 2019; Roberts & al., 2015; Rivadeneira et al., 2021), which may negatively impact on their intrinsic capacity and consequently on the functional ability. Therefore, it is not surprising that age has been negatively associated with healthy ageing.

Psychological well-being and healthy ageing are well interlinked, and the relationship is a two-way and both of them influence each other. Psychological well-being is essential for healthy ageing, as it positively impacts both mental and physical health in older adults. Psychological well-being promotes better relationships, as happier individuals tend to be more socially active and maintain supportive networks, which provide emotional and practical support, promoting longer and healthier lives. Good psychological well-being can reduce the risk of mental health issues, such as depression and anxiety, which can lead to physical health complications and enables older persons to adapt to ageing-related challenges. In addition, psychological well-being strengthens social connections, reducing loneliness and fostering supportive relationships. Ultimately, high psychological well-being is linked to increased longevity and improved quality of life, making it a crucial component of healthy ageing.

Our results contribute to the advance healthy ageing knowledge base by constructing a healthy ageing index and showing its association with psychological well-being which opens a horizon of future research in this domain. But our findings should be interpreted within the context of various study limitations. The psychological wellbeing index is a single item measurement based on a person's cognitive and affective evaluations of his/her life unit. Psychological wellbeing is much wider than only perceived life satisfaction. But conceptualizing it with the limited datasets available in Indian context increases the robustness of our findings. In addition, our analysis focused on older adults aged 60 years and above without considering their early life exposure to the various lifestyle behaviours. However previous research also found that early life factors and exposures to lifestyle behaviours may have impact on the health outcome in old age (Daskalopoulou et al., 2018; McEniry, 2013). In addition, although the research is purely data-driven and depends solely on the first round of the Longitudinal Ageing Study in India (LASI), future research should focus on replicating these findings, including other subpopulations that will contribute to life course perspective of health outcomes in old age.

Conclusion

In conclusion, the present study highlights the importance of promoting psychological well-being and a healthier lifestyle for better health outcomes among the older population in India. With increasing age, as the health status among individual's decline, promoting a positive self-perception of ageing is equally important in facilitating healthy ageing as that of promoting healthier lifestyle. Because positive mental outlook not only enhances physical state, but also enhance the cognitive function and strengthen social ties. These benefits collectively lead to increased longevity and a more fulfilling ageing experience. Therefore, prioritizing psychological well-being at individual and community level through increasing access to community counselling, incorporating

mental healthcare units in primary health care systems can serve as a powerful strategy for enhancing overall health and life satisfaction among older adults. Additionally, health-related policies should incorporate diverse well-being indicators alongside traditional economic metrics.

Key recommendations include:

- Implementing community-based mental health programs to improve psychological well-being and reduce social isolation among older adults.
- Developing age-friendly urban environments that encourage physical activity and social interaction.
- Integrating psychological well-being assessments into routine geriatric care for comprehensive health monitoring.

These initiatives can collectively enhance overall health, life satisfaction, and the quality of ageing experiences in India's older population.

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CRediT authorship contribution statement

Dhananjay W Bansod: Writing – review & editing, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Raghunath Mandi:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Funding acquisition, Formal analysis, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

The study is based on secondary data accessed on requests from https://www.iipsdata.ac.in/datacatalog_detail/5

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.aggp.2025.100127.

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