

# Life Satisfaction among Older Adults in Rural and Urban Mongolia: A Cross-Sectional Survey Study

Saranchuluun Otgon<sup>a,b</sup> Denise Burnette<sup>c</sup> Yerkyebulan Mukhtar<sup>a</sup>  
Fabio Casati<sup>c</sup> Sugarmaa Myagmarjav<sup>a</sup>

<sup>a</sup>School of Public Health, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia;

<sup>b</sup>Department of Information Engineering and Computer Science, University of Trento, Trento, Italy; <sup>c</sup>School of Social Work, Virginia Commonwealth University, Richmond, VA, USA

## Keywords

Life satisfaction · Loneliness · Mongolia · Rural/urban · Social support

## Abstract

**Introduction:** Life satisfaction is a strong indicator of well-being for older adults. In this study, we aimed to assess the level and correlates of life satisfaction among older adults in urban and rural Mongolia. **Methods:** We recruited 304 community-dwelling older adults in urban and rural regions of Mongolia. We compared levels of life satisfaction for the two groups, and then used hierarchical regression to examine the association of sociodemographic, health, psychosocial factors, and urban/rural status with life satisfaction. **Results:** Older adults in urban areas reported higher levels of life satisfaction than their rural counterparts. In the final step of the hierarchical regression model, more grandchildren in the household, better self-rated health, and reporting more positive than negative affect were associated with better life satisfaction at  $p < 0.05$  as were engaging in paid work and lower levels of loneliness at  $p < 0.10$ . Net the effects of all other variables in the analysis, older adults in rural areas reported lower levels of life satisfaction. **Conclusion:** Our findings indicate that living in rural areas of

Mongolia leads to lower levels of life satisfaction. We identify potential points to intervene through policies, programs, and practices that target the strengths and needs of older adults in rural areas by addressing inequities in socioeconomics, health, mental health, and opportunities for social integration.

© 2023 The Author(s).

Published by S. Karger AG, Basel

## Introduction

Subjective well-being (SWB) refers to how people evaluate their lives at a given moment and over more extended periods. Life circumstances and dispositional/construal theories provide complementary frameworks for conceptualizing SWB [1]. Life circumstances theory attributes well-being to advantageous and disadvantageous demographic factors, the number and balance of positive and negative day-to-day experiences, and satisfaction with positive and negative events, experiences, and emotions in important life domains. Dispositional/construal theories, on the other hand, ascribe SWB evaluations to genetically influenced biological or temperamental factors that affect behaviors and cognitions, i.e., how an individual interprets and appraises their life

circumstances and events [2]. Finally, cultural patterns of individualism and collectivism that help shape the extent to which family and in-group serve as a main reference for thought, feelings, and behavior also influence SWB [3].

Diener's (1984) widely used tripartite model of SWB comprises life satisfaction, positive affect, and negative affect [4]. Most comparative life satisfaction studies have contrasted the West, especially North America, with East Asia [5]. But a growing appreciation of the complex role of overall well-being as an indicator of broader social progress has extended indicators of life satisfaction well beyond economic conditions [6]. The Organization for Economic Co-operation and Development launched the Fifth edition of *Better Life Initiative*, which includes measures of constructs in Diener's SWB model used for population-based survey collects data on multiple indicators of 11 dimensions of current material conditions, quality of life, and their likely sustainability [7]. Measures are then aggregated and used to monitor the well-being of populations and their salient subgroups.

With rapid population aging in low- and middle-income countries, older adults represent a crucial subgroup for targeted health, mental health, and social policies and services in these locales. Global measures of life satisfaction serve as a useful indicator and outcome measure for planning, implementation, and evaluation. The current study explores levels and correlates of life satisfaction, defined as the subjective evaluation of one's overall life [1, 8], in a sample of 304 community-dwelling older adults in Mongolia.

#### *Life Satisfaction among Older Adults*

Self-evaluations of life satisfaction vary by locale and over time. In OECD countries, ratings tend to decline with age, and older adults are less satisfied on average than younger people [9]. Using data from large-scale, nationally representative panel studies in Germany and Britain, Baird et al. [5] (2010) found that life satisfaction decreased little during much of adulthood, then dropped steeply after age 70. British data also showed a relatively significant increase in life satisfaction from the 40s to the early 70s. On the other hand, the Gallup World Poll, an ongoing survey in more than 160 countries, found an oft-reported U-shaped association between evaluative well-being and age in high-income, English-speaking countries; lowest levels of well-being for persons aged 45–54 years. Findings of higher levels of life satisfaction at advanced ages, when declining health and significant social losses are more common, have led to the so-called “paradox of well-being.” Hudomiet et al. [10] (2020) used

longitudinal data from the US Health and Retirement Study (HRS) to explain this paradox. In cross-sectional data, life satisfaction increased with [10] age beyond retirement into advanced old age; however, longitudinal data showed significant age-related declines in life satisfaction that accelerate with age and widowhood, and health shocks contributed to this decline. The authors reconciled findings from the cross-section and longitudinal measurements by showing that differential mortality and differential non-response bias the cross-sectional age profile upward: individuals with higher life satisfaction and those in better health tend to live longer and to remain in the survey, causing an increase in average values. The authors conclude that the optimistic view about increasing life satisfaction at older ages based on cross-sectional data is not warranted [11]. Factors that contribute to life satisfaction and their relative weight also change over the life course, with subjective perceptions becoming more critical. Older adults tend to place less value on status and money and more on family relationships and long-term fulfillment. Self-rated health also appears to have more impact on life satisfaction than objective measures of health. For instance, Puvill et al. [12] (2016) suggest that mental health is a far more robust contributor to life satisfaction than physical health, particularly for the oldest old. In a study of older adults in China, Ng et al. (2017) highlighted physical and cognitive health status as major determinants of life satisfaction, alongside female sex, higher education, perceptions of relative economic status, living with family, living in a city, regular physical exams, access to social security and commercial insurance, and availability of community social services. Also in the region, Gallup World Poll respondents in the former Soviet Union and Eastern Europe reported large and progressive reductions in well-being with age [5], while Didino et al. [13] (2018) found that higher quality social interaction, better standards of living and satisfaction with one's health were associated with greater life satisfaction and happiness among older adults in Siberia.

#### *Aging in Mongolia*

Mongolia is in the early stages of a major demographic transition. Sustained economic and social progress and health system improvements have extended life expectancy at birth from 62.9 in 2000 to 72.7 years in 2022 – yet still below the World Health Organization (WHO) Western Pacific Region average of 76.6 years. As a result of this trend and a rapid decline in the fertility rate in recent decades, the proportion of the country's population aged 65 and over is projected to increase from

4.3% in 2020 to 14% in 2050, while the share of people older than 80 will increase nearly fivefold, from 0.7% to 3.0% [14]. Mongolia faces significant challenges in developing and implementing age-friendly policies and actions that will improve the quality as well as length of life for older adults. Using fixed-effects modeling, Williams et al. [15] (2022) determined that continued investment in the health of older people in Mongolia would improve the quality of life while enhancing the sustainability of public budgets. There is evidence that positive health-related and social outcomes are associated with high levels of flourishing, a eudemonic dimension of psychological well-being, among older Mongolians [16], which suggests that policies and programs should also aim to improve their life satisfaction. Finally, it is important to consider the distribution and needs of socially and economically vulnerable subgroups. Worldwide, the gender gap in life expectancy is 4.2 years (average 68 years for men and 72.2 years for women); this compares to a startling 9-year gap in Mongolia, where there are 2.5 times the number of older women as same-aged men and 69.2% of older adults are women [17]. Older adults are more vulnerable to poverty as most cannot work for pay and their pensions and benefits are insufficient to sustain a healthy livelihood and many lack essential information about potential resources they may need [18]. Loneliness, an inability to access social and health care, and depression are therefore common [19]. Owing to the wide geographic dispersal of the population and poor infrastructure in rural and outlying areas, older adults, including nomadic pastoralists, who live in these areas are likely to be especially disadvantaged. Drawing on life circumstances and dispositional/construal theories, studies on health and psychosocial correlates of life satisfaction in later life, and Mongolian cultural norms and values, we pose three sets of hypotheses:

H<sub>1</sub>: compared to their rural age-peers, urban older adults will report:

1. higher levels of life satisfaction
2. higher levels of physical well-being
3. higher levels of psychosocial well-being

H<sub>2</sub>: net the effects of sociodemographic characteristics of older adults in the sample:

1. physical well-being measures will contribute significantly to life satisfaction
2. psychosocial well-being measures will contribute significantly to life satisfaction

H<sub>3</sub>: net the effects of sociodemographic characteristics, physical and psychosocial well-being, and geographic locale (urban vs. rural) will contribute significantly to life satisfaction.

**Table 1.** Proportional quato sampling strategy

Age group	Total population	Study sample	Urban	Rural
55–59	115,125	125	68	58
60–54	65,496	71	39	32
65–69	43,089	47	25	22
70+	71,976	78	42	36
Total	295,686	322	174	148

## Materials and Methods

### *Design and Sampling*

The study used a cross-sectional survey design. As old age thresholds differ by gender in Mongolian law, we used proportional stratified sampling to recruit 210 women aged  $\geq 55$  and 94 men aged  $\geq 60$  years ( $N = 304$ ) (Table 1). We recruited older adults who had normal daily self-sufficiency and had lived at their address for more than 1 year. Older adults who were hospitalized at that time were excluded from the study. All participants resided in the community and were recruited from 3 of the 9 districts of the capital city of Ulaanbaatar and two province centers and their sub-provinces in the Gobi and Khangai regions. Thirteen trained interviewers with social work and public health training conducted face-to-face, semi-structured interviews of about 30 min durations in elder associations, geriatrician offices, and respondents' homes. Study participants received 10,000 MNT (~4 EUR) compensation.

### *Measures*

#### Dependent Variable

A single item from the World Values Survey (OECD, 2013) was used to measure life satisfaction: "Overall, how satisfied are you with life as a whole these days?" ("not at all satisfied" = 0 to "completely satisfied" = 10). The theoretical range was 0–10; higher scores mean greater life satisfaction [20].

#### Independent Variables

Sociodemographic indicators are from the Survey of Health, Aging, and Retirement in Europe (SHARE) [21]. It includes age, sex (male = 1, female = 2), residence (urban = 1; rural = 2), marital status (married or living with partner = 1, single, divorced, or widowed = 2), and employed during the past month (yes = 1; no = 0). Education was classified as illiterate or primary school = 1, secondary = 2, high school = 3, vocational school = 4, and university degree = 5.

#### Health and Activities of Daily Living Impairment

We assessed self-rated health with a standard question from the World Health Survey (2002): "In general, how would you rate your health today?" (very good = 1; good = 2; moderate = 3; bad = 4; very bad = 5) [22]. Current assistance with personal and instrumental activities of daily living (ADL) was measured as yes = 1 and no = 0 on the following activities: dressing, putting on shoes and socks, walking across a room, bathing or showering, eating, e.g., cutting up food, getting in or out of bed, using the toilet, including getting up or down, using a map to figure out how to get around in a strange place, preparing a hot meal, shopping for groceries, making

**Table 2.** Sociodemographic characteristics of participants (categorical variable)

	Total (n = 304)		Urban (n = 162)		Rural (n = 142)		Degree of freedom	$\chi^2$ statistic	p value
	n	%	n	%	n	%			
<b>Sociodemographics</b>									
Sex (male = 1)	94	30.9	50	30.9	44	31	1	0.001	0.982
Marital status (married/partner = 1)	146	48	87	53.7	59	41.5	1	4.479	0.034
<b>Education</b>									
Primary or illiterate	48	15.8	7	4.3	41	29.1	4	64.927	<0.0001
Secondary	53	17.5	17	10.5	36	25.5			
High school	79	26.1	46	28.4	33	23.4			
Vocational	53	17.5	36	22.2	17	12.1			
Bachelor or more	70	23.1	56	34.6	14	9.9			
Paid work (yes = 1)	48	15.8	25	15.4	23	16.2	1	0.033	0.855

telephone calls, taking medications, doing work around the house or garden, and managing money, e.g., paying bills and keeping track of expenses.

#### Psychosocial Factors

*Affect balance* was determined by asking respondents how happy, worried, and depressed they felt yesterday, on a scale of 0–10 in each case. We then assessed the mean positive and negative affect scores on the OECD (2013) measure of well-being. Following OECD guidelines, we then created an “affect balance” score by subtracting the mean negative affect score from the mean positive affect score, yielding a theoretical range of –10 to 10 [20].

*Loneliness:* We measured loneliness using the Three-Item Loneliness Scale [23]. “How often do you feel that you lack companionship?” “How often do you feel left out?” “How often do you feel isolated from others?” Items are scored as hardly ever = 1; sometimes = 2, or often = 3, then summed (theoretical range = 3–9). Higher scores indicate greater loneliness.

*Social isolation* was measured by the Mongolian version [24] of the 6-item Lubben Social Network Scale (LSNS-6). This two-factor scale assesses perceived support from family (item 1–item 3) and friends (item 4–item 6). Items are scored from 0 (*none*) to 5 (*nine or more*). Total scores are an equally weighted sum of all 6 items (theoretical range = 0–30), and higher scores indicate lower social isolation.

*Social participation* was measured with items from the European SHARE study [21]. Questions ask if and how often a respondent has engaged in 7 types of volunteering, social, and cognitively stimulating activities: volunteering or charity work; caring for a sick or disabled adult; providing help to family, friends, or neighbors; attending an educational or training course; going to a sport, social, or other types of a club; taking part in a religious organization; or taking part in a political or community-related organization. Response options are almost daily = 1; almost every week = 2; less often = 3. Summed scores have a theoretical range of 7–21, and higher scores mean higher levels of social participation. We also asked about household composition, including the number of adult children and number of grandchildren who live in the household.

#### Statistical Analysis

We used SPSS (ver.28) for data cleaning and analysis. We generated univariate descriptive statistics for all study variables and conducted bivariate analyses ( $\chi^2$  and *t* tests) to assess urban versus rural group differences in correlates of life satisfaction. We then used hierarchical regression to examine the contributions of health and psychosocial measures to life satisfaction by geographic locale. Finally, we tested the association of urban versus rural residence with life satisfaction over and above the effects of demographics and physical and psychosocial well-being measures.

#### Results

Table 2 presents descriptive data on study variables, overall, and by urban/rural status. Participants’ average age was 64 years (range = 55–88), 69.1% were female, and 48% were married or living with a partner. Rural residents were less likely to be married  $\chi^2(1) = 4.479, p = 0.034$ . Almost one-quarter of the sample had a bachelor’s degree, and another 17% had vocational training while 16% reported engagement in paid work during the past month. Urban dwellers were better educated than those in rural areas  $\chi^2(4) = 64.927, p < 0.0001$ . They were more than twice as likely to have completed vocational school and almost 3 times more likely to hold a bachelor’s degree. Rural older adults reported more adult children,  $t(284.36) = 2.156, p = 0.032$  but fewer grandchildren living in their households,  $t(294.36) = 1.953, p = 0.052$ .

The data partially supported our first set of bivariate hypotheses (Table 3). Urban older adults reported higher levels of life satisfaction  $t(281.48) = 3.046, p = 0.003$  and social participation  $t(302) = 5.952, p < 0.001$ . However, the two groups did not differ on self-rated health, ADL assistance, affect balance, loneliness, or

**Table 3.** Sociodemographic, health, and psychosocial characteristics of participants (numeric variables)

	Total		Urban		Rural		Degree of freedom	T statistics	p value
	M	SD	M	SD	M	SD			
Dependent variable									
Life satisfaction	7.56	2.1	7.90	1.93	7.17	2.22	281.48	3.046	0.003
Sociodemographics									
Age (range 55–88)	64	7.1	63.87	7.21	64.16	6.99	302	0.348	0.728
Number of grandchildren in household	0.49	0.96	0.59	1.08	0.38	0.81	294.36	1.953	0.052
Physical factors									
Self-rated health	2.67	0.76	2.7	0.85	2.65	0.68	302	0.558	0.577
ADL impairments	0.62	1.23	0.49	0.92	0.76	1.5	227.62	1.836	0.068
Psychosocial factors									
Social participation	3.09	1.87	2.53	1.82	3.74	1.72	302	5.952	<0.001
No. of adult children	4.31	2.16	4.06	2.03	4.6	2.23	284.36	2.156	0.032
Loneliness	3.52	1.02	3.42	0.91	3.64	1.15	268.76	1.724	0.086
Affect balance	5.64	4.21	5.33	4.41	6	3.96	302	1.379	0.169
Social isolation	18.21	6.04	17.69	6.23	18.8	5.79	302	1.666	0.097

isolation at the  $p < 0.05$  level. Given our moderate sample size, it is worth noting that rural older adults reported more help with ADL impairments, higher levels of loneliness, and greater social isolation at the  $p < 0.10$  level of significance.

Table 4 presents the hierarchical regression models used to test our remaining hypotheses. Our second set of hypotheses posited that after controlling for the effects of sociodemographic characteristics, measures of physical (Adj.  $R^2 = 0.115$ ,  $p < 0.001$ ) and psychosocial (Adj.  $R^2 = 0.191$ ,  $p < 0.0001$ ) well-being would be associated with life satisfaction. Data supported both hypotheses. In Model 2 (Adj.  $R^2 = 0.115$ ,  $p < 0.001$ ), self-rated health (M =  $-0.56$ ; SD =  $0.16$ ;  $p < 0.001$ ) contributed to life satisfaction, and in model 3 (Adj.  $R^2 = 0.19$ ,  $p < 0.001$ ), loneliness (M =  $-0.24$ ; SD =  $0.11$ ;  $p < 0.03$ ) and affect balance (M =  $0.12$ ; SD =  $0.03$ ;  $p < 0.001$ ) added to the explained variance in life satisfaction. Lastly, the data supported our hypothesis that after controlling for the effects of sociodemographic characteristics, physical well-being, and psychosocial well-being, geographic locale (urban vs. rural) would be significantly associated with life satisfaction (Adj.  $R^2 = 0.209$ ,  $p < 0.006$ ).

## Discussion

This study furthers our understanding of determinants of life satisfaction among older adults in Mongolia and adds important information to international conversations about well-being indicators of human development, the positive psychology movement in later life, and policy

frameworks on healthy-active aging. We will briefly discuss the findings on each set of variables in our multivariate models.

### Demographics

Beyond the development of a country's national economy, individual demographics [9], health and social-psychological factors [25], and living environments influence older adults' assessments of life satisfaction [26]. In the current study, neither age, gender, nor number of adult children was related to life satisfaction, although living with grandchildren had a positive impact. Fertility rates have steadily declined in Mongolia, and the government encourages childbirth as a means to increase population growth. Rural older adults had more children on average than urban dwellers [27]. Caring for grandchildren can lead to happiness in the long run. Having more grandchildren, but not spending more time with them, increased life satisfaction [28]. Similarly, the SHARE cohort study of 13 European countries concluded that seeing their grandchildren significantly impacts older women's life satisfaction [29].

Education is an investment that bears life-long benefits. Higher levels of education are associated with better health and mental health [30] and social participation [31]. We found that completion of vocational or higher education as compared to no formal education was related to greater life satisfaction. Rural older adults had lower levels of formal education than their urban counterparts due to post-transition educational

**Table 4.** Multiple regression analysis for life satisfaction predictors

	Model 1		Model 2		Model 3		Model 4	
$R^2$ /Adj. $R^2$	0.105/0.077		0.147/0.115		0.233/0.191		0.253/0.209	
sig.F.Change	$p < 0.000$		$p < 0.001$		$p < 0.0001$		$p < 0.006$	
predictor	beta	sig.	beta	sig.	beta	sig.	beta	sig.
	95% CI [LL, UL]		95% CI [LL, UL]		95% CI [LL, UL]		95% CI [LL, UL]	
(Intercept)	6.673**	<0.0001	8.328**	<0.0001	7.265**	<0.0001	6.948**	<0.0001
Age	-0.006	0.748	-0.005	0.78	-0.005	0.777	-0.007	0.691
Sex = male	0.453	0.121	0.368	0.199	0.493	0.08	0.523	0.06
Marital_new = double	-0.004	0.987	0.059	0.814	-0.065	0.789	-0.092	0.702
Edu_level = secondary	0.535	0.188	0.383	0.338	0.393	0.307	0.243	0.527
Edu_level = high_school	0.944	0.013	0.794*	0.035	0.772*	0.033	0.484	0.194
Edu_level = vocational	1.475**	<0.0001	1.122**	0.008	1.126**	0.006	0.711	0.099
Edu_level = bachelor_more	1.075**	0.006	0.911*	0.018	0.962**	0.01	0.49	0.229
Grandchildren in household	0.28*	0.021	0.271*	0.022	0.285*	0.013	0.257*	0.024
Paid work	0.889**	0.007	0.707*	0.029	0.57	0.07	0.583	0.06
Self-rated health			-0.554*	0.001	-0.348*	0.028	-0.382*	0.015
ADL impairments			-0.053	0.591	0.012	0.898	0.045	0.639
Number of adult children					0.031	0.567	0.033	0.544
Social participation					0.033	0.598	0.088	0.17
Loneliness					-0.241*	0.034	-0.218	0.053
Affect balance					0.115**	<0.0001	0.118**	<0.0001
Social isolation					0.025	0.204	0.033	0.098
Living area = urban							0.737**	0.006

\*indicates  $p < 0.05$ . \*\*indicates  $p < 0.01$ .

inequality and semi-nomadic lifestyles [32]. However, the impact of education on life satisfaction was not as strong as living areas.

#### *Physical Well-Being*

Previous studies confirm that self-rated health directly affects older adults' life satisfaction [33] and that illness reduces satisfaction [34]. In the current study, older adults who rated their health as good reported better life satisfaction, regardless of demographic or psychosocial factors. With increased urbanization and social development, progress in economic and health equity is improving the health status of the population [35]. Therefore, to improve life satisfaction among the older adult population, the emphasis now must be on improving access to health services in rural areas.

#### *Psychosocial Well-Being*

A wealth of evidence exists on the positive impact of social networks, social integration, and social participation on the life satisfaction of older adults [36]. In a dataset in the USA and Japan, friends and family relationships significantly affected the life satisfaction of older adults [37]. In our data, neither social participation nor social isolation was significantly associated with life satisfaction. Consistent with previous studies in, for example, China [38], Poland [39], and South Korea [40], greater loneliness reduced life satisfaction. Affect balance was also significantly associated with life satisfaction. Positive feelings predicted higher levels of satisfaction and vice versa. Whereas life satisfaction is a general assessment of one's quality of life, affect balance is a more general assessment of angry, happy, and depressed feelings over the past few days. It is a dynamic process that strongly affects older adults' life satisfaction, regardless of age, gender, education, or where they live [41].

To summarize, this study aimed to examine older adults' assessment of life satisfaction in rural and urban Mongolia and to determine whether sociodemographic, physical health, and psychosocial characteristics were related to observed differences in the two groups. Consistent with previous research [42, 43], we found that life satisfaction was significantly lower for rural older adults. We suggest several possible reasons for this finding and recommendations for improvement.

*First*, access to quality health and social services is far better in urban areas [44]. *Second*, Mongolia's countryside is different from rural communities in more developed Western countries, with poor housing, low income, large families, and poor access to services [45]. For example, in Canada, England, and

Eastern Europe, rural older adults report higher life satisfaction than urban ones [46]; yet, our findings are consistent with those of developing countries such as China [47]. The F-change scores in our hierarchical regression show that each step in the model added significantly to the variance in life satisfaction. It is therefore important to consider the overall contributions of sociodemographic characteristics, health and functional well-being, and psychosocial measures. Yet, even after controlling for the effects of these essential features of life satisfaction, living in a non-urban area was associated with lower levels of life satisfaction. Rural and remote areas in developing countries have more pronounced population aging than urban areas and thus tend to have a greater share of older adults. Lower population density and geographic dispersion make it more difficult and costly to develop comprehensive, sustainable service infrastructures [44]. There is thus a grave mismatch between the availability and accessibility of resources and the needs of older adults, who are more likely to experience diminished economic resources and opportunities, declining physical, functional, and cognitive health, reduced mobility, loss of social networks with internal rural-to-urban and cross-national migration, and harsh weather and degradation of the environment on which their livelihood depends.

To address these needs, innovations in policies, programs, and practice should highlight both near- and long-term care to address the economic, health, and mental health needs of older adults in rural areas. Reducing educational inequalities and developing sustainable opportunities for generational and inter-generational economic and social engagement can also enhance older adults' life satisfaction in more rural and remote areas. It may also be important to reconsider the current mandatory retirement ages for men and women and to systematically explore the needs and resources available to older adults by age group, gender, and geographic region.

#### *Limitations*

This study has several limitations. Life satisfaction was measured by a single item rather than a multidimensional measure and may therefore be influenced by respondents' mood during the interview. Seasonal effects might also influence the data collected during the winter season. Owing to our cross-sectional design and non-probability sampling strategy, we cannot make causal inferences about our findings or can we generalize our results to a larger population.

## Acknowledgments

We want to thank the geriatricians, senior associations' staff, and health centers' practitioners who helped recruit study participants.

## Statement of Ethics

The Mongolian National University of Medical Sciences Ethics Review Committee approved this study (protocol 15:32016-15). A written informed consent was obtained from participants.

## Conflict of Interest Statement

The authors have no conflicts of interest to declare.

## References

- 1 Maddux JE. [Subjective well-being, and life satisfaction: an introduction to conceptions, theories, and measures](#): Routledge/Taylor and Francis Group; 2018.
- 2 Wessels NM, Zimmermann J, Leising D. Toward a shared understanding of important consequences of personality. [Rev Gen Psychol](#). 2016;20(4):426–36.
- 3 Vittersø J, Røysamb E, Diener E. [The universality of subjective wellbeing indicators: a multi-disciplinary and multi-national perspective](#); 2002. p. 81–103.
- 4 Diener E, Larsen RJ, Levine S, Emmons RA. Intensity and frequency: dimensions underlying positive and negative affect. [J Pers Soc Psychol](#). 1985;48(5):1253–65.
- 5 Steptoe A, Deaton A, Stone AA. Subjective wellbeing, health, and ageing. [Lancet](#). 2015; 385(9968):640–8.
- 6 Stiglitz J. Towards a better measure of well-being. [Financial Times](#). 2009;13:497.
- 7 Durand M. The OECD better life initiative: how's life? and the measurement of well-being. [Rev Income Wealth](#). 2015;61(1):4–17.
- 8 Veenhoven R. Cross-national differences in happiness: cultural measurement bias or effect of culture? [Int J Wellbeing](#). 2012;2(4).
- 9 Fleche S, Smith C, Sorsa P. Exploring determinants of subjective wellbeing in OECD countries: evidence from the World value survey. [J Prov Soc Jus](#). 2012;20(2):227–33.
- 10 Hudomiet P, Hurd MD, Rohwedder S. The age profile of life satisfaction after age 65 in the US. [J Econ Behav Organ](#). 2021;189:431–42.
- 11 Galambos NL, Krahn HJ, Johnson MD, Lachman ME. The U shape of happiness across the life course: expanding the discussion. [Perspect Psychol Sci](#). 2020;15(4): 898–912.

## Funding Sources

Publication of this work does not have a funding source.

## Author Contributions

Saranchuluun Otgon collected the data, analyzed, interpreted the data, and drafted the manuscript. Denise Burnette designed the manuscript and revised interpretation. Yerkyebulan Mukhtar worked on analysis and data. Fabio Casati revised the manuscript. Sugarmaa Myagmarjav revised the manuscript and interpretation of the data.

## Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

- 12 Puvill T, Lindenberg J, de Craen AJM, Slaets JPJ, Westendorp RGJ. Impact of physical and mental health on life satisfaction in old age: a population-based observational study. [BMC Geriatr](#). 2016;16:194–9.
- 13 Didino D, Taran EA, Gorodetski K, Melikyan ZA, Nikitina S, Gumennikov I, et al. Exploring predictors of life satisfaction and happiness among Siberian older adults living in Tomsk Region. [Eur J Ageing](#). 2018;15(2): 175–87.
- 14 ESCAP U. [Asia and the Pacific SDG progress report 2023: championing sustainability despite adversities](#); 2023.
- 15 Williams GA, Cylus J, Al Tayara L, Roubal T, Tsilaajav T, Barber SL. Can healthy ageing moderate the effects of population ageing on economic growth and health spending trends in Mongolia? A modelling study. [Health Res Policy Syst](#). 2022; 20(Suppl 1):122.
- 16 Otgon S, Myagmarjav S, Burnette D, Lkhagvasuren K, Casati F. Sociodemographic predictors of flourishing among older adults in rural and urban Mongolia. [Sci Rep](#). 2023; 13(1):1756.
- 17 NSO. [Population census](#); 2023.
- 18 Mujahid G, Banzragch O, Oyun-Erdene N. [Assuring income security in old age: views of the Mongolian elderly](#): UNFPA Country Office; 2010.
- 19 Kim JH, Kim HL, Battushig B, Yoo JY. Relationship between socio-demographics, body composition, emotional state, and social support on metabolic syndrome risk among adults in rural Mongolia. [Plos one](#). 2021; 16(9):e0254141.
- 20 OECD. [OECD guidelines on measuring subjective well-being](#); 2013.
- 21 Hunkler C. [Guide to easy SHARE](#). Munich: MEA, Max Planck Institute for Social Law and Social Policy; 2013. p. 1–39.
- 22 Subramanian SV, Huijts T, Avendano M. Self-reported health assessments in the 2002 World Health Survey: how do they correlate with education? [Bull World Health Organ](#). 2010;88(2):131–8.
- 23 Hughes ME, Waite LJ, Hawkey LC, Cacioppo JT. A short scale for measuring loneliness in large surveys: results from two population-based studies. [Res Aging](#). 2004;26(6):655–72.
- 24 Burnette D, Myagmarjav S. Translation and validation of the 18-item lubben social network scale with older adults in Mongolia. [Int Psychogeriatr](#). 2013;25(9):1493–502.
- 25 Boarini R. [What makes for a better life? The determinants of subjective well-being in OECD countries: evidence from the Gallup World Poll](#); 2012.
- 26 Diener E, Suh EM, Lucas RE, Smith HL. Subjective well-being: three decades of progress. [Psychol Bull](#). 1999;125(2):276–302.
- 27 Alvergne A, Lummaa V. Ecological variation in wealth: fertility relationships in Mongolia: the “central theoretical problem of sociobiology” not a problem after all? [Proc Biol Sci](#). 2014;281(1796):20141733.
- 28 Powdthavee N. [Life satisfaction and grandparenthood: evidence from a nationwide survey](#); 2011.
- 29 Tanskanen AO, Danielsbacka M, Coall DA, Jokela M. Transition to grandparenthood and subjective well-being in older Europeans: a within-person investigation using longitudinal data. [Evol Psychol](#). 2019;17(3):1474704919875948.
- 30 Papi S, Cheraghi M. Multiple factors associated with life satisfaction in older adults. [Prz Menopauzalny](#). 2021;20(2):65–71.

- 31 Khodabakhsh S. Factors affecting life satisfaction of older adults in Asia: a systematic review. *J Happiness Stud.* 2022;23(3):1289–304.
- 32 Steiner-Khamsi G, Gerelmaa A. Quality and equity in the Mongolian education sector. *Prospects.* 2008;38(3):409–14.
- 33 Kim BJ, Chen L, Xu L, Lee Y. Self-Rated health and subjective economic status in life satisfaction among older Chinese immigrants: a cross-sectional study. *Healthcare.* 2021;9(3):342.
- 34 Pinto JM, Neri AL. Factors associated with low life life satisfaction in community-dwelling elderly: FIBRA Study. *Cad Saude Publica.* 2013;29(12):2447–58.
- 35 Bayarsaikhan D, Kwon S, Chimeddagva D. Social health insurance development in Mongolia: opportunities and challenges in moving towards Universal Health Coverage. *Int Soc Secur Rev.* 2015;68(4):93–113.
- 36 Humpert S. Gender differences in life satisfaction and social participation. *Int J Econ Sci Appl Res.* 2013;6(3):123–42.
- 37 Bath PA, Gardiner A. Social engagement and health and social care use and medication use among older people. *Eur J Ageing.* 2005;2(1):56–63.
- 38 Bai X, Yang S, Knapp M. Sources and directions of social support and life satisfaction among solitary Chinese older adults in Hong Kong: the mediating role of sense of loneliness. *Clin Interv Aging.* 2018;13:63–71.
- 39 Szcześniak M, Bielecka G, Madej D, Piękowska E, Rodzeń W. The role of self-esteem in the relationship between loneliness and life satisfaction in late adulthood: evidence from Poland. *Psychol Res Behav Manag.* 2020;13:1201–12.
- 40 Kim S, Choe K, Lee K. Depression, loneliness, social support, activities of daily living, and life satisfaction in older adults at high-risk of dementia. *Int J Environ Res Public Health.* 2020;17(24):9448.
- 41 Dehi Aroogh M, Mohammadi Shahboulaghi F. Social participation of older adults: a concept analysis. *Int J Community Based Nurs Midwifery.* 2020;8(1):55–72.
- 42 Requena F. Rural–urban living and level of economic development as factors in subjective well-being. *Soc Indic Res.* 2016;128(2):693–708.
- 43 Sørensen JF. The rural happiness paradox in developed countries. *Soc Sci Res.* 2021;98:102581.
- 44 Yiengprugsawan VS, Dorj G, Dracakis JG, Batkhorol B, Lkhagvaa U, Battengel D, et al. Disparities in outpatient and inpatient utilization by rural-urban areas among older Mongolians based on a modified WHO-SAGE instrument. *BMC Health Serv Res.* 2021;21(1):1183–10.
- 45 Du P, Wood A, Ditchman N, Stephens B. Life satisfaction of downtown high-rise vs. suburban low-rise living: A Chicago case study. *Sustainability.* 2017;9(6):1052.
- 46 Clark K, John PS, Menec V, Cloutier D, Newall N, O’Connell M, et al. Healthcare utilisation among Canadian adults in rural and urban areas: the Canadian Longitudinal Study on Aging. *Can J Rural Med.* 2021;26(2):69–79.
- 47 Li C, Chi I, Zhang X, Cheng Z, Zhang L, Chen G. Urban and rural factors associated with life satisfaction among older Chinese adults. *Ageing Ment Health.* 2015;19(10):947–54.