

# BMJ Open Satisfaction with life and associated factors among elderly people living in two cities in northwest Ethiopia: a community-based cross-sectional study

Habtmu Sewunet Mekonnen <sup>1</sup>, Helena Lindgren,<sup>2</sup> Biftu Geda,<sup>3</sup> Telake Azale,<sup>4</sup> Kerstin Erlandsson<sup>2,5</sup>

**To cite:** Mekonnen HS, Lindgren H, Geda B, *et al*. Satisfaction with life and associated factors among elderly people living in two cities in northwest Ethiopia: a community-based cross-sectional study. *BMJ Open* 2022;12:e061931. doi:10.1136/bmjopen-2022-061931

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-061931>).

Received 10 February 2022  
Accepted 15 May 2022



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

## Correspondence to

Habtmu Sewunet Mekonnen; [habtsew@gmail.com](mailto:habtsew@gmail.com)

## ABSTRACT

**Objective** This study aimed to determine the level of life satisfaction and identify associated factors among elderly people living in two cities in northwest Ethiopia.

**Design** Community-based cross-sectional study.

**Setting** Two cities in northwest Ethiopia (Gondar and Bahir Dar).

**Participants** 816 elderly people age 60 years and above living in Gondar and Bahir Dar, northwest Ethiopia. Systematic random sampling was used to select study participants.

**Main outcome measure** Level of life satisfaction. Considering the mean and SD, three levels of satisfaction appeared to suffice as the basis for analysis and discussion: 23.5–34.4 dissatisfied, 34.5–56.5 averagely satisfied and 56.6–67.5 satisfied. Multivariable ordinal regression analysis was done to control the confounders. Since the outcome variable has an ordinal category, ordinal regression analysis is appropriate. A  $p \leq 0.05$  and AOR (adjusted OR) with a 95% CI were considered to determine the statistically significant variables and strength of the association.

**Results** The mean age of the respondents was 68.2 years with an  $SD \pm 7.2$ . The level of life satisfaction was: dissatisfied 17.2%, moderately satisfied 63.8% and well satisfied 19.0%. Overall, 45.8% (95% CI 42.2% to 49.2%) of the participants had a score equal to or above the mean. Regarding associated factors; retired current occupation (AOR=2.23, 95% CI 1.09 to 4.55), good self-rated health status (AOR=2.54, 95% CI 1.29 to 4.99), having no chronic disease (AOR=1.48, 95% CI 1.03 to 2.11), somewhat-good (AOR=2.15, 95% CI 1.12 to 4.13) and good (AOR=4.51, 95% CI 2.40 to 8.45) self-perception on ageing life, moderate functional impairment on daily living activities (AOR=5.43, 95% CI 1.81 to 16.24), high sense of coherence (AOR=3.80, 95% CI 2.04 to 7.08), house rent as a source of finance (AOR=2.60, 95% CI 1.49 to 4.52) and high perceived social support (AOR=2.13, 95% CI 1.44 to 3.16) had statistically significant association with the life satisfaction.

**Conclusion** The life satisfaction level in our study group was lower than in some more highly developed countries. To improve the level of life satisfaction in Ethiopia, a holistic programme of nursing care for elderly people, particularly as concerns about their health and psychosocial conditions is crucial in both community and clinical settings.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The study had a representative sample of elderly men and women, young-old to old-old, unable to read and write to well educated, with very good to very bad perceived health status.
- ⇒ The data were collected in the participants' residential homes which enabled us to have sufficient time to get the necessary data, and the high response rate also helped.
- ⇒ The study was done among Amharic speaker Ethiopian elders that might not be representative of all Ethiopians other than Amharic speakers.
- ⇒ The study was limited to households in two cities of northwest Ethiopia, which may not be representative of elderly living in streets, religious places, temporary settlements and rural residents.

## INTRODUCTION

Life satisfaction is a feeling of being satisfied with one's present life and even earlier life up to the present. An individual or an outside analyst may try to evaluate the degree of satisfaction. This is important because being content with one's current life may be seen as an indication of successful ageing.<sup>1</sup> Life Satisfaction is not a persistent objective quality; rather, it is susceptible to contextual changes and may be judged based on people's perceptions and interpretations.<sup>2</sup> The level of satisfaction may be related not only to health but also to the living standards of an individual. Thus, improving elderly people's life satisfaction requires attention not only to their health but to the social and economic conditions in their environment. Besides, being satisfied with past and present life may be seen by many elderly people as a success story. As life expectancy increases, health and satisfaction with life become more important than they were when life expectancy was short.<sup>3</sup> Thus, ageing satisfactorily means remaining

physically and psychologically well, and socially engaged in an individually defined meaningful life.<sup>4</sup>

In Ethiopia, over the last 10 years, the life expectancy at birth increased from 61.63 years to 66.95 years in 2020.<sup>5</sup> A longer life provides an important opportunity for older people, their families and at large the societies.<sup>6</sup> However, these changes also bring a sociodemographic shift and can create new challenges for healthcare services. When people live longer, they require more attention to their health and therefore are often hospitalised for chronic and degenerative diseases, functional and physical dependency, mental health problems, cognitive disorders and other age-related diseases. As a result, this can greatly affect the economies, living arrangements, and personal and professional aspirations to maintain their services.<sup>7</sup> So, in the late adult stage, satisfaction leads to integrity, while dissatisfaction creates a sense of despair.<sup>8,9</sup>

As studies have revealed, overall life satisfaction is higher among some people in high-income countries than in middle-income and low-income countries. In Norway, Russia, Sweden and Brazil, the magnitude of life satisfaction was 90.9%, 68.0%, 66.0% and 65.6%, respectively,<sup>10–13</sup> whereas in Zambia and Nepal it was only 37% and 7.9%, respectively.<sup>14,15</sup> In the nursing home of Sivas municipality, Turkey, 6.4%, 71.8% and 21.8% reported low, moderate and high life satisfaction, respectively.<sup>16</sup> The study in Brazil among community-dwelling elderly reported 6.1% dissatisfied, 28.2% moderately satisfied and 65.6% were very satisfied with life.<sup>13</sup> In the South Korea study, 34%, 38% and 27% of the elderly reported adequate, average and poor life satisfaction, respectively.<sup>17</sup>

Studies in various parts of the world showed sex (adjusted OR, AOR=1.42, 95% CI 1.01 to 2.00), marital status ( $F=16.5$ ,  $p<0.001$ ), educational status (AOR=3.84, 95% CI 2.38 to 6.18), occupation, living style, income ( $F=9.5$ ,  $p<0.001$ ), religion, working status, physical activities, perception of self-health, chronic disease (AOR=2.07, 95% CI 1.51 to 2.84), perceived loneliness ( $\beta=-1.369$ ,  $p<0.001$ ), daily living activities, sense of coherence, mental health, social support, living environment quality and nutrition ( $\beta=0.48$ , bias-corrected and accelerated (BCa 95% CI 0.27, 0.69) were significantly associated with the life satisfaction.<sup>16,18–21</sup>

However, evidence is scarce about the level and associated factors of life satisfaction of Ethiopian elderly people, particularly in the study area. Therefore, the study aimed to determine the level of life satisfaction and associated factors among elderly people living in Metropolitan cities of northwest Ethiopia.

Determination of life satisfaction and identifying its associated factors would help health professionals to know more about the elderly people's situations and to consider these in their evidence-based practices. By knowing more about the level of life satisfaction and determinant factors, we can increase awareness and update services for elders and possibly begin to change some of the negative stereotypes pointed at elderly people.

The findings would be the baseline and an input for the national plan of action for Ethiopia on elderly populations. Also, it will help policy-makers, non-governmental organisations, volunteer associations and other stakeholders working with elderly people.

## METHODS

### Study design and setting

A community-based cross-sectional study was conducted from 19 December 2020 to 21 February 2021. The study was done in two cities in northwest Ethiopia namely Gondar and Bahir Dar.

### Participants

Residents 60 years old and older—hereafter referred to as elderly—in the two cities were the study population. In both cities, there are an estimated 23 348 elderly. Elderly aged  $\geq 60$  years and who have lived for 6 months and above during the study periods were the source population. Those elders who were present during the specified data collection periods were the study population. The elderly whose ages were  $\geq 60$  years and who were residents of the cities were included in the study, yet individuals who were living in streets, religious institutions and temporary settlements were excluded.

The sample size was determined using the single population proportion formula with the assumption of a 95% level of confidence, 5% marginal error, proportion ( $p$ ) 56.9% taken from the pilot study,<sup>22</sup> design effect 2 and 10% non-response rate. The final sample size was 830 which represented 3.56% of the eligible people. Each city was stratified into the subcities and in each subcities, kebeles (the lowest administrative level) were selected by the lottery method considering the number of kebeles. In Bahir Dar administrative city, nine kebeles and one satellite town were selected and, in Gondar administrative city, eight kebeles were selected. Participants were allocated proportionally depending on the number of elderly people and were selected by systematic random sampling using the registered lists in each selected kebele.

### Data collection tools and procedures

The data were collected using a face-to-face interview approach using a culturally adapted and validated structured questionnaire that was adapted by using an intensive literature review. The questionnaire contains 10 sections. The first section provides the sociodemographic characteristics of the study participants, the second section deals with life satisfaction and the third is concerned with a health conditions, nutritional status, and behavioural factors. The fourth section is concerned with psychosocial and environmental conditions and the fifth with activities that are part of daily living. Sections 6–10 are concerned with participation in various activities, mental health, sense of coherence, social support and urban wealth index-related questions, respectively (online supplemental file 1).

The following tools were culturally adapted and validated for use with the target population: (1) Life Satisfaction Index for the Third Age-Short Form (LSITA-SF),<sup>23</sup> (2) Katz Index of Independence in Activities of Daily Living (Katz ADL),<sup>24</sup> (3) participation in activities scale,<sup>25</sup> (4) Kessler Psychological Distress Scale (K10),<sup>26</sup> (5) Sense of Coherence scale (SOC),<sup>27</sup> (6) Duke-UNC Functional Social Support Questionnaire (FSSQ).<sup>28</sup> The LSITA-SF was found to have an excellent face and content validity index, acceptable in concurrent and divergent validities. These tools also have substantial internal consistency, test-retest reliability and inter-rater reliability.<sup>22</sup> The scales were found to be excellent in terms of feasibility, readability, consistency of styles, formatting and clarity of the language. The Cronbach alpha values were 0.80, 0.87, 0.93, 0.79 and 0.90 for Katz ADL, Participation in activities, K10, SOC and FSSQ scales, respectively.

During the data collection, there was communication with the associations that support the elderly people and with key figures concerned with matters of interest for the elderly people, for example, health extension workers. Then with the help of these people (workforce people), the participants were traced and interviewed in the quiet areas of their homes after the interviewer briefly explained the purpose of the study and obtained consent from each participant. If the selected participants' houses were closed and no one was present, they were revisited for three subsequent days. If no contact was made at a home this was considered a non-response location or individual. The data were collected and supervised by 18 trained BSc nurse data collectors and 9 MSc nurse trained supervisors.

### Variables of the study

#### Dependent variable

o Level of life satisfaction.

#### Independent variables

The independent variables include.

#### Sociodemographic variables

Age, sex, marital status, level of education, religion, religious practice, occupation, economic status, presence of children, household size and living conditions.

#### Health condition/status related variables

Sense of coherence, self-rated health status, physical activity, functional ability, mental health, chronic disease, accidents, disability (impairment), wear of eyeglasses or contact lenses, use of a hearing aid, health check-up and health education.

#### Nutritional and risky behaviours

Frequency of meal, smoking, alcohol consumption, chat chewing, sedentary behaviour.

#### Psychosocial

Self-perception, social relationship (family, friend, neighbourhood), presence of a caregiver.

### Environmental conditions

Housing condition, residential facilities/quality of the living environment, source of financial support, availability of social service, accessibility of health service and health insurance.

### Measurements

#### Life satisfaction

Life satisfaction was measured by using the LSITA-SF scale. The scale has 12 items with 6 Likert response categories from 1 to 6 points. The possible minimum and maximum points are 12 and 72, respectively. The mean value of responses was 45.5 and the SD was 11. Considering the mean and SD, categories or levels of life satisfaction were designated as follows: <23.5 very dissatisfied, 23.5–34.4 dissatisfied, 34.5–56.5 (mean±SD) moderately satisfied, 56.6–67.5 quite well satisfied and >67.5 very satisfied. First, the mean±SD for average satisfaction was calculated, then for the dissatisfied group the value of SD was subtracted to get the lower cut point and for the satisfied group, the SD was added from the next category to get the upper group.<sup>23 29</sup> In this study, the minimum and maximum points were 24 and 67, respectively, and three levels of satisfaction appeared to suffice as the basis for analysis and discussion: 23.5–34.4 dissatisfied, 34.5–56.5 averagely satisfied and 56.6–67.5 satisfied.

#### Elderly/older people/aged people

There are a variety of names used to refer to elderly people. According to the UN definition, elderly persons are those people whose age is 60 years and over. This definition has gained acceptance in the Ethiopian context as it coincides with the country's official retirement age.<sup>30 31</sup> Thus, in this study people referred to as elderly people are all age 60 or older. Terminology for subgroups is as follows: Young-old 60–69, middle-old 70–79 and old-old >80 years of age.<sup>32</sup>

#### Activities of daily living

It is the measurement of the daily living activities of an individual. ADL were measured by using the Katz ADL. The Index ranks adequacy of performance in six functions: bathing, dressing, toileting, transferring, continence and feeding. A score of 6 indicates a full or satisfactory function for all 6, 3–5 indicates moderate impairment and 2 or less indicates severe functional impairment.<sup>24</sup>

#### Participation in activities/physical activities

Measurement of participation in personal activities, physical activities and activities with formal and informal support networks is important. The mean scores of the respondents on their levels of participation in the various activities were interpreted using the following scale: 1.00–1.80=very Low; 1.81–2.60=low; 2.61–3.40=moderate; 3.41–4.20=high and 4.21–5.00=very High.<sup>25</sup>

#### Mental health

Mental health was assessed using the K10. A score under 20 is seen as indicating well-functioning mental health,



20–24 indicates possible mild mental disorder, a score of 25–29 indicates the presence of moderate mental disorder, a score of 30, and over person likely to have a severe mental disorder.<sup>26</sup>

#### Sense of coherence

It refers to a person's ability to use existing and potential resources to combat stress and promote health. Sense of coherence was assessed by using the SOC. Overall, scores 13–57, scores 58–74, and scores 75–91 were levelled as low, medium and high sense of coherence.<sup>27</sup>

#### Social support

Social support is defined as the perceived availability of support, affection and instrumental aid from significant social partners, primarily family members and close friends,<sup>33</sup> as well as neighbours and coworkers.<sup>34</sup> The perceived social support was assessed by using FSSQ. A score less than average was classified as indicating low perceived social support and a score equal to or greater than the average value was seen as indicating high perceived social support.<sup>28</sup>

#### Mid Upper Arm Circumference

A value of mid upper arm circumference (MUAC) <22.0 cm indicates severe malnutrition, 22.0–23.0 cm moderate malnutrition and >23.0 cm normal nutritional level.<sup>35</sup>

#### Data quality control techniques

Culturally adapted and validated tools were used. Two days of training were given in each city for data collectors and supervisors to aid them in using the data collection tools and following the data collection procedures. A pilot trial of the questionnaire was carried out in the study area 1 week before the actual data collection.

To ensure consistency of the collection technique and the acquisition of quality data, random checks were carried out by field supervisors and the principal investigator. Before the analysis, the collected data were checked for completeness and accuracy.

#### Data processing and analysis

The data were checked for completeness and consistency. EpiData V.4.6 and Stata V.14 were used for data entry and analysis, respectively. Before running the ordinal regression analysis, assumptions were checked. The outcome variable was an ordinal type, and the independent variables were categorical and ordinal, but the ordinal independent variables were treated as categorical.

The cell adequacy was checked by carrying out cross-tabulation of each independent variable with the dependent variable. Variables with non-zero cells and  $\geq 80\%$  greater than 5 cell counts were considered for further assumption check and analysis. Multicollinearity was checked by the variance inflation factor (VIF). Variables with  $VIF > 10$  were removed from the analysis. The parallel line/proportional odds assumption was checked by computing the o-model, Brant test and o-parallel. Overall

model fitness was assessed by computing the likelihood ratio test.

Ordinal regression analysis was used to test the association between dependent and independent variables. Descriptive statistics were carried out to illustrate the frequencies, percentages, means and SD and were presented in texts and tables. Variables that fulfilled the assumptions were entered into the multivariable ordinal regression analysis to control the confounders and those with a  $p \leq 0.05$  were considered statistically significant. An OR with a 95% CI was used to determine the presence, strength, and direction of association between the independent and dependent variables.

#### Patient and public involvement

Neither patients/participants nor the public were involved in the design, conduct, reporting or dissemination of our research.

## RESULTS

### Sociodemographic characteristics of participants

A total of 816 participants were included with a 98.3% response rate. The mean age of participants was 68.2 (SD $\pm$ 7.2) years. More than half, 433 (53.1%) of participants, were males and 511 (62.6%) were married. The majority, 764 (93.6%) had children, of which 369 (48.2%) owned 4–6 children and 690 (84.6%) were Orthodox Christian by religion. About 235 (28.8%) were unable to read and write, and 165 (20.2%) were in the middle quantile in the wealth index status (table 1).

### Level of elderly people's life satisfaction

In this study, overall, 45.8% (95% CI 42.2% to 49.2%) of the participants had a mean or above score and the majority (63.8%) were moderately satisfied (figure 1).

### Health condition of the study participants

In this study, 471 (57.7%) of the participants had good self-rated health status, and 320 (39.2%) had one or more chronic diseases of which the majority were hypertension (21.1%) and the least Dementia/Alzheimer's disease (1.5%). The majority, 738 (90.4%) of the participants had a full function in daily living activities status, and 328 (40.2%) had low-level participation in activity/physical activity. About 480 (58.8%), 478 (58.6%) and 477 (58.5%) of the participants reported themselves to be well in mental health, have a medium sense of coherence and high perceived social support respectively (table 2).

### Nutritional and behavioural characteristics of the study participants

About three-fourths 614 (75.2%) of the participants had MUAC >23 cm and 477 (58.4%) had three times per day meal frequency. The majority, 776 (95.1%) and 756 (92.6%) had never smoked cigarettes or chewed khat respectively. About 495 (60.7%) had consumed alcohol (table 3).

**Table 1** Sociodemographic characteristics of elderly people in two cities of northwest Ethiopia, 2021 (n=816)

Variables	Frequency	Per cent
Sex		
Male	433	53.1
Female	383	46.9
Age		
Young-old	548	67.2
Middle-old	190	23.3
Old-old	78	9.5
Place of birth/grownup		
Urban	356	43.6
Rural	460	56.4
Marital status		
Married	511	62.6
Widowed	228	27.9
Divorced	77	9.5
Having children/life		
Yes	764	93.6
No	52	6.4
No of live children (n=766)		
1–3	299	39
4–6	369	48.2
>6	98	12.8
Family size		
1–3	208	25.5
4–6	393	48.2
>6	215	26.3
Educational status		
Unable to read and write	235	28.8
Able to read and write	226	27.7
Grade 1–8	138	16.9
Grade 9–12	74	9.1
Certificate and above	143	17.5
Religion		
Orthodox	690	84.6
Muslim	95	11.6
Protestant	31	3.8
Religious practice		
Always	466	57.1
Sometimes	188	23
Occasionally	144	17.7
Never	18	2.2
Current occupation		
Retired	253	31
Employed	72	8.8
Housewife	153	18.7
Private work	193	23.7

Continued

**Table 1** Continued

Variables	Frequency	Per cent
Non employed	145	17.8
Living condition		
Live alone	65	8
Live only with partner	134	16.4
Live with children/grandchildren	246	30.1
Live with partner/children/relatives	371	45.5
Wealth index		
Lowest quantile	164	20.1
Second quantile	164	20.1
Middle quantile	165	20.2
Fourth quantile	160	19.6
Highest quantile	163	20

### Psychosocial and environmental conditions of the study participants

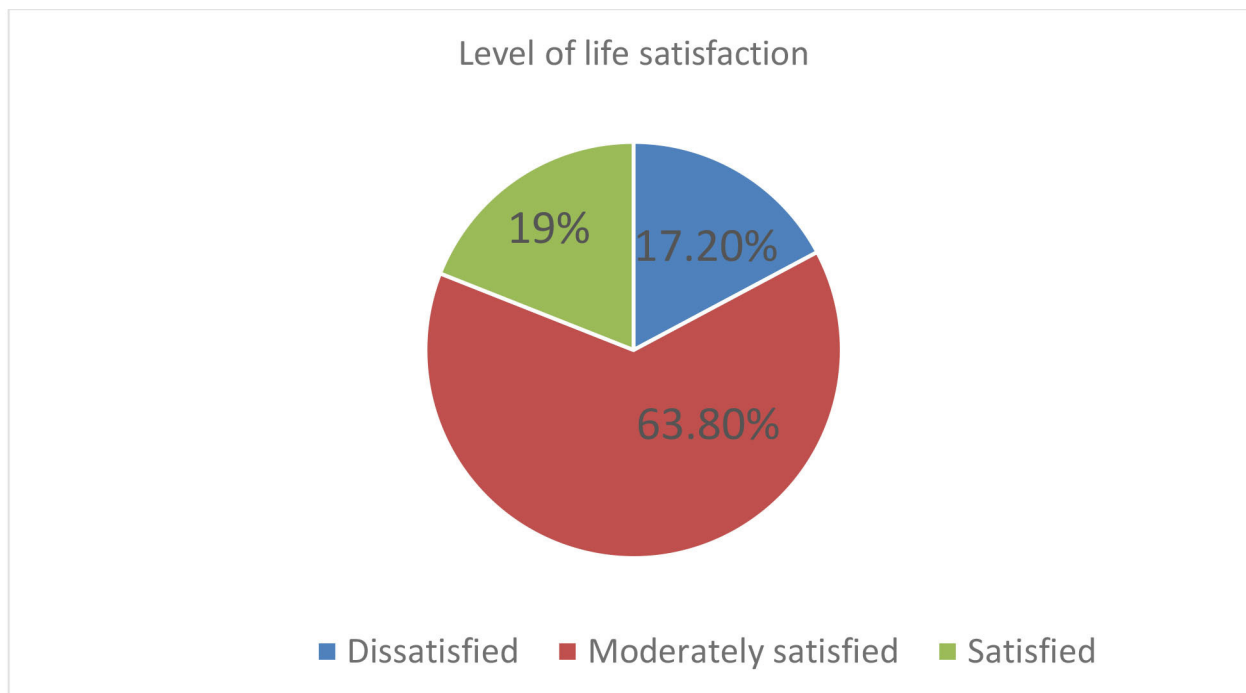
Five hundred and seventy-two (70.1%) of the participants had good self-perception of ageing life and 709 (86.9%) had a good relationship with family, friends and neighbourhood. About three-fourths 622 (76.2%) had a caregiver in their home and 501 (61.4%) had detached houses made of soil and wood. Three-fourths 619 (75.8%) had a good perception of their residential facility (living environment quality) and 234 (28.7%) had a pension (salary) as the main source of financing their lives (table 4).

### Factors associated with life satisfaction of elderly people

In this study, retired current occupation (AOR=2.23, 95% CI 1.09 to 4.55), good self-rated health status (AOR=2.54, 95% CI 1.29 to 4.99), having no chronic disease (AOR=1.48, 95% CI 1.03 to 2.11), somewhat good (AOR=2.15, 95% CI 1.12 to 4.13) and good (AOR=4.51, 95% CI 2.40 to 8.45) self-perception on ageing life, house rent financial source (AOR=2.60, 95% CI 1.49 to 4.52), moderate functional impairment on daily living activities (AOR=5.43, 95% CI 1.81 to 16.24), high sense of coherence (AOR=3.80, 95% CI 2.04 to 7.08) and high perceived social support (AOR=2.13, 95% CI 1.44 to 3.16) had a significant association with the life satisfaction.

The odds of dissatisfaction versus the combined moderately satisfied and satisfied for the retired elderly people were 2.23 times higher compared with non-employed elderly when other variables were kept constant. The odds of dissatisfaction versus the combined moderately satisfied and satisfied for elderly people having good self-rated health status were 2.54 times higher compared with elderly people having bad self-rated health status when other variables were kept constant.

The odds of dissatisfaction vs the combined moderately satisfied and satisfied for elderly people who have no chronic disease was 1.48 times higher compared with elderly having a chronic disease when other variables were kept constant. The odds of dissatisfied vs the



**Figure 1** Level of elderly life satisfaction in two cities of northwest Ethiopia, 2021 (n=816).

combined moderately satisfied and satisfied for elderly people having somewhat and good self-perception on ageing life were 2.15 and 4.51 times higher compared with elderly people having bad self-perception on ageing life respectively when other variables were kept constant. The odds of dissatisfaction vs the combined moderately satisfied and satisfied for elderly people having house rent as the main financial source was 2.60 times higher compared with elderly people having a private business when other variables were kept constant.

The odds of dissatisfaction versus the combined moderately satisfied and satisfied for elderly people having a moderate functional impairment in ADL was 5.43 times higher compared with elderly people having severe functional impairment when other variables were kept constant. The odds of dissatisfaction vs the combined moderately satisfied and satisfied for elderly people having a high sense of coherence was 3.80 times higher compared with older people having a low sense of coherence when other variables were kept constant. The odds of dissatisfaction versus the combined moderately satisfied and satisfied for elderly people having high perceived social support was 2.13 times higher compared with older people having low perceived social support when other variables were kept constant (table 5).

## DISCUSSION

This study reported on the level of life satisfaction and associated factors among elderly people in two cities in northwest Ethiopia. The study had 816 elderly people, both men and women, with a mean age and SD of 68.2 (SD±7.2) years. The study included participants who were unable to read and/or write, had not reached a

first-degree educational status and had good to bad perceived health status.

The percentage of subjects who were dissatisfied or had at most a moderate level of life satisfaction was much higher than those reported in the Brazil study and the percentage of the satisfied level was much lower (6.1% dissatisfied, 28.2% moderately satisfied and 65.6% were very satisfied in Brazil).<sup>13</sup> The lower satisfaction level in this study might be due to the difference in the socio-economic status of the populations. Economic status has an impact on life satisfaction,<sup>11 14 15</sup> and Ethiopians have low economic status compared with Brazilians. The low economic status could have an impact on health maintenance and the health check-up of older people. In this study, less than half (46.94%) of the participants had a health check-up of which the majority were visited at the health facilities when they had become sick and had symptoms of illness. Only 34.0% of the participants have health insurance. This indicates that that the majority of the older people must pay privately for healthcare services which is a great challenge for a population with a low economic status. It would be difficult to provide holistic nursing care for the older people in these cities since 66% would have to pay. Thus, the ministry of health, health bureau, social affairs office, and other concerned bodies should work more for the coverage of health insurance and economical support for elderly people.

The average life satisfaction in this study was higher than that reported in the South Korean study. However, the satisfied and dissatisfied levels were lower (27%, 38% and 34% reported poor, average and adequate life satisfaction, respectively).<sup>17</sup> This difference might be due to variation in the study population. In South Korea, elderly

**Table 2** Health condition of the study participants in two cities of northwest Ethiopia, 2021 (n=816)

Variables	Frequency	Per cent
Self-rated health status		
Good	471	57.7
Average	242	29.7
Bad	103	12.6
Known chronic disease		
Yes	320	39.2
No	496	60.8
Hypertension		
Yes	172	21.1
No	644	78.9
Kidney disease		
Yes	20	2.5
No	796	97.5
Diabetic mellitus		
Yes	114	14
No	702	86
Dementia/Alzheimer's disease		
Yes	12	1.5
No	804	98.5
Heart disease		
Yes	22	2.7
No	794	97.3
Asthma		
Yes	53	6.5
No	763	93.5
Physical disability		
Yes	604	7.4
No	756	92.6
Wear eyeglass		
Yes	140	17.2
No	676	82.8
Use hearing aid		
Yes	10	1.2
No	806	98.8
Health check-up		
Yes	383	46.9
No	433	53.1
Get health education		
Yes	715	87.6
No	101	12.4
Daily living activities		
Severe functional impairment	33	4.1
Moderate functional impairment	45	5.5
Full function	738	90.4
Participation in activities/physical activities		

Continued

**Table 2** Continued

Variables	Frequency	Per cent
Very low	165	20.2
Low	328	40.2
Moderate	249	30.5
High	55	6.8
Very high	19	2.3
Mental health		
Likely to be well	480	58.8
Likely to have a mild mental disorder	156	19.1
Likely to have a moderate mental disorder	84	10.3
Likely to have a severe mental disorder	96	11.8
Sense of coherence		
Low	159	19.5
Medium	478	58.6
High	179	21.9
Social support		
Low perceived social support	339	41.5
High perceived social support	477	58.5

aged  $\geq 55$  years old were included, but in the current study were aged 60 years old and above. With increasing age, there would be age-related health deterioration which is a major indicator of life satisfaction and differentiation in lifestyle and social relationships in line with the changes in sensory and mental activities<sup>36</sup> this could influence life satisfaction. As there is variability in the satisfaction with life within the age groups of the older people in our study, nurse professionals are expected to prepare the nursing care plan in advance and provide the intended care while considering variations in patient groups. Social workers, hospital administrators and other concerned bodies also should consider such variation.

The dissatisfied level of life satisfaction was higher than was reported in the study in the nursing home of Sivas municipality, Turkey (6.4%, 71.8% and 21.8% were reported low, moderate and high life satisfaction)<sup>16</sup> but moderate and high levels of satisfaction were slightly lower. Similarly, the magnitude of dissatisfied and satisfied levels was lower but the average satisfaction was higher compared with the results from the study in Gorgan, Iran and Zambia in which the dissatisfied, neutral and satisfied, levels of life satisfaction were 34%, 40% and 26%, and 59%, 5% and 37%, respectively.<sup>14 37</sup> As our study showed, life satisfaction is very crucial in the utilisation of health knowledge among the elderly.<sup>38</sup> Having a lower life satisfaction could lead to a deficit of health knowledge among older people who may not have the possibility of getting a health check-up and getting appropriate healthcare services. Thus, older people with lower life satisfaction



**Table 3** Nutritional and behavioural characteristics of the study participants in two cities of northwest Ethiopia, 2021 (n=816)

Variables	Frequency	Per cent
MUAC		
<22 cm	109	13.4
22–23 cm	93	11.4
>23 cm	614	75.2
Meal frequency		
Once per day	17	2.1
Two times per day	243	29.8
Three times per day	477	58.4
Four times per day	79	9.7
Living style		
Have sedentary behaviour	57	7
Sometimes do exercises/activities	418	51.2
Always do exercises/activities	341	41.8
Ever smoked cigarettes?		
Yes	40	4.9
No	776	95.1
Currently, smoking cigarettes?		
Yes	15	1.8
No	801	98.2
Ever chewed khat?		
Yes	60	7.4
No	756	92.6
Currently, chewing khat?		
Yes	31	3.8
No	785	96.2
Ever consumed any alcohol?		
Yes	495	60.7
No	321	39.3
Alcohol consumption within the past 12 months?		
Yes	448	54.9
No	368	45.1
MUAC, mid upper arm circumference.		

need special consideration, particularly focusing on how good their health knowledge is.

The satisfaction level was much lower than in the study in Norway, in which 78.7% of the hospital sample and 90.9% of the population sample were satisfied with their life.<sup>10</sup> The lower satisfaction level might be due to the difference in measurement tools and the socioeconomic status of the populations. In Norway, life satisfaction was measured by a single question. As the source of life satisfaction is a complex combination of individual behaviour, simple sensory experiences, higher cognition and stable characteristics of the individual,<sup>39</sup> measuring by using a single question might underestimate or overestimate

**Table 4** Psychosocial and environmental conditions of the study participants in two cities of northwest Ethiopia, 2021 (n=816)

Variables	Frequency	Per cent
Self-perception on ageing life		
Good	572	70.1
Somewhat good	138	16.9
Bad	106	13
Relationship with family, friends and neighbourhood		
Good	709	86.9
Somewhat good	82	10
Bad	25	3.1
Do you have a caregiver?		
Yes	622	76.2
No	194	23.7
Housing condition		
Detached house made in soil and wood	501	61.4
Detached house made in cement/ceramic	243	29.8
Built-in connection with another house	55	6.7
Communal apartment	10	1.2
Apartment	7	0.9
Perception of the quality of residential facilities/environment		
Good	619	75.8
Somewhat good	140	17.2
Bad	57	7
The main source of finance		
Private work	230	28.2
Pension/salary	234	28.7
From house rent	169	20.7
Help from others	183	22.4
Participation in social services		
Yes	702	86
No	114	14
Health insurance		
Yes	277	34
No	539	66

the level of life satisfaction. As the economic status has an impact on life satisfaction, Ethiopian older people probably have a lower economic status than Norwegians of the same age. As the source of life satisfaction has a complex combination, Ethiopian older people faced health problems, lack of balanced diet, shelter, unsuitable residential areas, absence of family and community support, limited social security services, absence of education and training opportunities, limited employment and income-generating opportunities.<sup>40</sup> These conditions greatly affect the level of life satisfaction and show the



**Table 5** Multivariable ordinal logistic regression analysis of factors associated with life satisfaction of elderly people in two cities of northwest Ethiopia, 2021 (n=816)

Variables	Level of life satisfaction (n)			AOR (95% CI)	P value
	Dissatisfied	Moderately satisfied	Satisfied		
Sex					
Male	61	269	103	Ref.	
Female	79	252	52	1.14 (0.73 to 1.74)	0.54
Age					
Old-old	28	47	3	Ref.	
Middle-old	48	114	28	1.10 (0.57 to 2.13)	0.78
Young-old	64	360	124	1.86 (0.97 to 3.55)	0.06
Marital status					
Married	48	342	121	Ref.	
Widowed	72	130	26	0.72 (0.39 to 1.34)	0.3
Divorced	20	49	8	0.73 (0.36 to 1.48)	0.38
Family size					
1–3	58	131	19	Ref.	
4–6	53	260	80	0.88 (0.57 to 1.37)	0.58
>6	29	130	56	1.20 (0.73 to 1.98)	0.47
Living condition					
Live alone	27	32	6	Ref.	
Live only with a partner	15	95	24	2.04 (0.84 to 4.97)	0.12
Live with children/grandchildren	64	152	30	1.53 (0.74 to 3.15)	0.26
Live with partner/children/relatives	32	242	97	2.14 (0.92 to 5.02)	0.08
Current occupation					
Non employed	55	85	5	Ref.	
Employed	10	45	17	1.56 (0.75 to 3.7)	0.24
Housewife	22	108	23	1.08 (0.59 to 1.98)	0.78
Private work	29	130	34	1.20 (0.64 to 2.28)	0.57
Retired	24	153	76	2.23 (1.09 to 4.55)	<b>0.03*</b>
Do you have a caregiver?					
No	57	113	24	Ref.	
Yes	83	408	131	1.37 (0.90 to 2.09)	0.14
Self-rated health status					
Bad	50	46	7	Ref.	
Average	47	165	30	1.52 (0.78 to 2.98)	0.22
Good	40	306	125	2.54 (1.29 to 4.99)	<b>0.007*</b>
Known chronic disease					
Yes	63	214	43	Ref.	
No	77	307	112	1.48 (1.03 to 2.11)	<b>0.03*</b>
Physical disability					
Yes	22	30	8	Ref.	
No	116	486	154	1.48 (0.74 to 2.95)	0.27
Mental health					
Likely to be well	55	294	131	Ref.	
Likely to have a mild mental disorder	25	119	12	0.80 (0.51 to 1.25)	0.33
Likely to have a moderate mental disorder	21	58	5	0.76 (0.42 to 1.41)	0.39
Likely to have a severe mental disorder	39	48	9	1.16 (0.62 to 2.16)	0.65

Continued



Table 5 Continued

Variables	Level of life satisfaction (n)			AOR (95% CI)	P value
	Dissatisfied	Moderately satisfied	Satisfied		
Daily living activities					
Severe functional impairment	18	10	5	Ref.	
Moderate functional impairment	9	30	6	5.43 (1.81 to 16.24)	<b>0.002*</b>
Full function	110	477	151	1.64 (0.63 to 4.30)	0.31
Participation in activities/physical activities					
Very low	22	108	35	Ref.	
Low	60	21	56	0.75 (0.48 to 1.15)	0.19
Moderate	42	157	50	0.96 (0.62 to 1.52)	0.89
High	10	37	8	0.65 (0.31 to 1.36)	0.26
Very high	4	7	6	0.76 (0.24 to 2.39)	0.64
Sense of coherence					
Low	54	96	9	Ref.	
Medium	76	343	59	1.08 (0.66 to 1.78)	0.75
High	10	82	87	3.80 (2.04 to 7.08)	<b>&lt; 0.001***</b>
Meal frequency					
Once per day	9	5	3	Ref.	
Two times per day	61	146	36	2.65 (0.78 to 9.01)	0.12
Three times per day	60	318	99	3.04 (0.89 to 10.34)	0.08
Four times per day	8	52	19	2.98 (0.80 to 11.17)	0.12
Self-perception on ageing life					
Bad	55	40	11	Ref.	
Somewhat good	37	94	7	2.15 (1.12 to 4.13)	<b>0.02*</b>
Good	44	381	147	4.51 (2.40 to 8.45)	<b>&lt; 0.001***</b>
Perception on the quality of residential facilities/environment					
Bad	30	22	5	Ref.	
Somewhat good	43	87	10	1.53 (0.71 to 3.33)	0.28
Good	66	409	144	2.02 (0.96 to 4.27)	0.07
The main source of finance					
Private work	35	157	38	Ref.	
Pension/salary	29	146	59	1.07 (0.58 to 2.00)	0.82
From house rent	17	105	47	2.60 (1.49 to 4.52)	<b>0.001**</b>
Help from others	59	113	11	1.23 (0.71 to 2.13)	0.46
Social support					
Low perceived social support	105	208	26	Ref.	1
High perceived social support	35	313	129	2.13 (1.44 to 3.16)	<b>&lt; 0.001***</b>

The bold values meaning stastically significant  
 \*P<0.05, \*\*p<0.01, \*\*\*p<0.001.  
 AOR, adjusted OR.

importance of holistic care, nurse, other professionals and administrative support for elderly people targeting the complexity of life satisfaction.

In this study, life satisfaction was better than was found in the study in Chandigarh, Northern India, in which the life satisfaction was 50% low and 50% moderate and high.<sup>41</sup> The better life satisfaction is vital for the health of older people and is an indicator of the better living

standards<sup>3</sup> and its implication inspires nurses to assess the relations of better satisfaction with the wellness nursing diagnosis in terms of human development, longer lives, healthy ageing and full adaptation/success to ageing.

In this study, the retired elderly were more likely to have a higher level of life satisfaction. A similar study in Turkey reported as income-generating work increased life satisfaction.<sup>42</sup> Income is one of the contributing factors to life

satisfaction,<sup>16 18</sup> and as the  $\chi^2$  test in this study revealed most of the retired elderly were in the highest quantiles of wealth index as compared with the non-employed. Thus, nurses should be the leader to identify the economic needs of older people and provide counsel, support and work with the ministry of health, regional health bureau, social affairs office and other concerned bodies to take part for the financial support and any possible aids.

Elderly people who had good self-rated health status were more likely to have a higher level of life satisfaction. The finding was supported by the studies done in six European countries, Russia, South Korea, Nepal, Turkey and Zambia.<sup>11 14–16 43 44</sup> Self-rated health provides information to aid health personnel and decision-makers in the development and implementation of health promotion and disease prevention programmes, as well as the adequacy and planning of different levels of care for this population.<sup>45</sup> Even though the majority of healthcare facilities in Ethiopia lack separate geriatric care facilities, it is crucial to meet the needs of an ageing population and improve the life satisfaction and health of the elderly in the healthcare facilities as well the community settings.

Elderly people who had no chronic disease were more likely to have a higher level of life satisfaction. A similar finding was also reported in China, South Korea and Southern Brazil.<sup>19 44 46</sup> The elderly population's exposure to chronic diseases and other age-related problems is higher than the young/adult populations. Fast shifting to the older population and the transformation from acute and infectious disease to chronic, non-communicable disease and age-related disease will have an impact on healthcare setups including nursing care.<sup>7</sup> So, nurses should provide health education about the prevention of chronic disease and also focus and incorporate on the nursing care plans and implementations considering the consequence of the chronic disease on the life satisfaction and the overall health of the elders. In addition, the concerned bodies should plan to prevent chronic disease.

Elderly people who had somewhat good and good self-perception of ageing life were more likely to have a higher level of life satisfaction. Similarly, a study across six European countries revealed the presence of a significant association between self-esteem and life satisfaction.<sup>43</sup> As it is well known, with the advancement of age there will be physical changes, chronic diseases and other age-specific psychosocial problems encountered by older people. So, self-perception could be an important and concern for older people. As the psychosocial is one of the main issues in the nursing profession, nurses should build the positive self-images of the older people and should play a vital role in the assessment of the self-perception, identification of the problems, planning, and implementation of the interventions for the build-up of the self-perception and improve the life satisfaction.

Elderly people who could rent the property they owned and had income from renters as a main financial source were more likely to have a higher level of life satisfaction.

Older people might get unremitting income from the house rent with less effort and burden. As well, when older people rent their house, they could have an opportunity for a social relationship with others which might decrease loneliness. As studies showed a relationship with other people is an important part of life satisfaction.<sup>47 48</sup>

Elderly people who had only moderate functional impairment in ADL were more likely to have a higher level of life satisfaction. The study in India also reported a significant relationship between a low score of ADL and lower life satisfaction.<sup>49</sup> Turkey also reported low life satisfaction with decreased ability to do household activities.<sup>16</sup> This is also related to the self-care deficit of Orem's theory. This deficit includes self-care, which is the practice of activities that an individual initiates and performs on his or her behalf to maintain life, health and well-being; self-care agency, which is a human ability that is 'the ability for engaging in self-care,' conditioned by age, developmental state, life experience, sociocultural orientation, health and available resources.<sup>50</sup> So, nurse professionals can use this theory to improve the daily activity performance and the enhancement of the life satisfaction of older people and should provide health education about the importance of activities for general health. Ministry of Health, regional health bureau, social affairs office and other concerned bodies also should emphasise and support the older people with daily activity limitations.

Elderly people who had a high sense of coherence were more likely to have a higher level of life satisfaction. This was supported by the studies in Poland, Belgium and Norway.<sup>21 51 52</sup> The concept of a sense of coherence explains why some people become ill under stress and others stay healthy. It's a mixture of optimism and control and has three components—comprehensibility, manageability and meaningfulness,<sup>53</sup> which is similar to Erikson's theory of personality that states in the late adult stage, 'ego integrity versus despair', individuals search for the meaning of their lives and evaluate their accomplishments. So, nurses and other professionals should play a vital role to support and counsel older people about the stress, their general health and how to control or manage the stressors.

Elderly people who had a high perceived social support were more likely to have a higher level of life satisfaction. A similar finding was also reported in Iran, Russia, South Korea, India, Norway, Sweden and Thailand.<sup>10–12 44 49 54 55</sup> The result informs the importance of collaboration of nurses with the social workers and other related professionals. With such collaboration, the gaps and possible support mechanisms could be identified. As the study finding suggested, the social support problems can be managed by the self-help intervention which included a single 50–70 min session once a week for 12 weeks. This intervention greatly improves self-supportability, health status and life satisfaction. The study also recommends that self-help intervention may be implemented by nurses for older people in the community to improve health and well-being.<sup>56</sup>



As studies showed, age, sex, religious practice, marital status, educational status, economic status, living condition, participation in activities, disability, quality of the living environment, alcohol intake, smoking and nutritional status were significantly associated factors with life satisfaction,<sup>14 16 44 57–59</sup> and these factors are very important concepts in the nursing profession concerning the life satisfaction but were not associated in the current study.

The finding from this study may fill the evidence gaps in the approach and intervention the elderly people. In addition, it can be a baseline for other researchers and other bodies working on elderly people. The policy-makers (Federal ministry of health, regional Health Bureau, Zonal health departments and social affairs offices) should identify the economic needs and sources of support of elderly people. In addition, they should develop and implement health promotion and disease prevention programmes, as well as the adequacy and planning of different levels of care for the elderly population. Healthcare facilities should facilitate and equipped the health facilities targeting the need and conditions of elderly people. They also should emphasise and support the older people who have chronic diseases, psychosocial health problems and daily activity limitations. Further study is also needed using a follow-up study.

### Strengths and limitations

To the best of our knowledge, this is the first study of life satisfaction and associated factors among the Ethiopian elderly. The study had a representative sample of elderly men and women, young-old to old-old, unable to read and write to well educated, very good to very bad perceived health status. The data were collected in the participants' residential homes. This enabled us to have sufficient time to get the necessary data, and the high response rate also helped.

However, the study has some limitations. First, the study was done among Amharic speaker Ethiopian elders. It might not be representative of all Ethiopians other than Amharic speakers. Second, the study was limited to households in two cities of northwest Ethiopia, which may not be representative of elderly living in streets, religious places, temporary settlements and rural residents.

### Conclusion

In this study, about two-thirds (63.68%) of the participants were averagely satisfied in their life. Current occupation, self-rated health status, chronic disease, self-perception of ageing life, financial source, daily living activity, sense of coherence and social support were statistically significant factors influencing life satisfaction.

The finding is informed us of the importance of nurses to be the leader to plan and intervene in those significantly associated factors with life satisfaction and it is necessary to provide counsel, support and work with the ministry of health, regional health bureau, social affairs office and other concerned bodies to take part to improve the life satisfaction of elderly people.

To improve life satisfaction, it is paramount important to give special consideration to elderly people, working and supporting them to be physically and psychologically well, economically and socially engaged in an individually defined meaningful life. In addition, further research is crucial to targeting the elderly people living in the street, temporal residents and religious places.

### Author affiliations

<sup>1</sup>School of Nursing, Department of Medical Nursing, University of Gondar College of Medicine and Health Sciences, Gondar, Ethiopia

<sup>2</sup>Department of Women's and Children's Health, Karolinska Institutet, Solna, Sweden

<sup>3</sup>College of Health Science, Department of Nursing, Madda Walabu University, Shashamene Campus, Robe, Ethiopia

<sup>4</sup>Institute of Public Health, Department of Health Education and Behavioral Sciences, University of Gondar College of Medicine and Health Sciences, Gondar, Ethiopia

<sup>5</sup>Dalarna University School of Education Health and Social Studies, Falun, Sweden

**Acknowledgements** The authors would like to express our gratitude to the University of Gondar for the fund and the approval of the ethical clearance. The authors would like to thank the respective administration offices of the Bahir Dar and Gondar town for their permission letter and data collectors and supervisors for their commitment and the study participants for their valuable information. Besides we would like to acknowledge and thank Larry Lundgren for the language edition.

**Contributors** HSM wrote the proposal, participated in data collection, analysed the data and drafted the manuscript. KE, HL, BG and TA approved the proposal with revisions, participated in supervision, data analysis and revised subsequent drafts of the manuscript. HSM is responsible for the overall content as guarantor. All authors read and approved the final manuscript.

**Funding** This study was funded by the University of Gondar. N/A for the award/grant number.

**Disclaimer** The funder had no role in data collection, preparation of the manuscript, and decision to publish.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study involves human participants and was approved by Name of Ethics committee: Institutional review board of the University of Gondar Reference number: V/P/RCS/05/2263/2020.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** Data are available on reasonable request. The data from the study are available from the corresponding author on reasonable request.

**Supplemental material** This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

### ORCID iD

Habtamu Sewunet Mekonnen <http://orcid.org/0000-0001-9396-7437>



## REFERENCES

- 1 Lazar KA. *Current life engagement factors as a predictor of elder life satisfaction*. Stout: University of Wisconsin, 2000.
- 2 Aishvaryya S, Maniam T, Karuthan C, *et al*. Psychometric properties and validation of the satisfaction with life scale in psychiatric and medical outpatients in Malaysia. *Compr Psychiatry* 2014;55:S101–6.
- 3 Seligman M. *Positive emotions undo negative ones. Authentic happiness*. New York, NY: Simon & Schuster, 2002.
- 4 Flood M. A mid-range theory of successful aging. *J Theory Construct Test* 2006;9:35–9.
- 5 Ethiopia: Life expectancy at birth from 2010 to 2020. Available: <https://www.statista.com/statistics/455141/life-expectancy-at-birth-in-ethiopia/>
- 6 World Health Organization. Global health and aging, 2011. Available: [https://www.who.int/ageing/publications/global\\_health/en/](https://www.who.int/ageing/publications/global_health/en/)
- 7 Dahlan A, Nicol M, Maciver D. Elements of life satisfaction amongst elderly people living in institutions in Malaysia: a mixed methodology approach. *Hong Kong J Occupat Ther* 2010;20:71–9.
- 8 Erikson E. *Childhood and society*. New York, NY: W. W. Norton, 1963.
- 9 Erikson EH, Erikson JM, Kivnick HQ. *Vital involvement in old age: the experience of old age in our time*. New York, NY: W. W. Norton, 1986.
- 10 Helvik A-S, Engedal K, Krokstad S, *et al*. A comparison of life satisfaction in elderly medical inpatients and the elderly in a population-based study: nord-trondelag health study 3. *Scand J Public Health* 2011;39:337–44.
- 11 Daniele Didino EAF, Taran EA, Gorodetski K. Predictors of life satisfaction among older adults in siberia the European Proceedings of Social and Behavioral Sciences(EpSBS) 2018:400–7.
- 12 Katarina Wilhelmson EF, Eklund K, Synneve Dahlln-Ivanoff life satisfaction and frailty among older adults. *Health Psychol Res* 2013;1:e32:167–72.
- 13 Pinto JM, Neri AL. Factors associated with low life life satisfaction in community-dwelling elderly: FIBRA study. *Cadernos de Saúde Pública* 2013;29:2447–58.
- 14 Mbozi MKS-NaEH. Contextual factors affecting the attainment of life satisfaction among elderly people in Zambia's North-Western province. *Knowledge For Justice* 2016:189–205.
- 15 Ghimire S, Baral BK, Karmacharya I, *et al*. Life satisfaction among elderly patients in Nepal: associations with nutritional and mental well-being. *Health Qual Life Outcomes* 2018;16:118.
- 16 Mollaoglu M, Tuncay Fatma Özkan, Fertelli TK. Mobility disability and life satisfaction in elderly people. *Arch Gerontol Geriatr* 2010;51:e115–9.
- 17 Kimm H, Sull JW, Gombojav B, *et al*. Life satisfaction and mortality in elderly people: the Kangwha cohort study. *BMC Public Health* 2012;12:54:12–54.
- 18 Zeinalhajlou AA, Alizadeh M, Sahebihagh MH. Life satisfaction and its contributors among noninstitutionalized older people in Tabriz, Islamic Republic of Iran. *East Mediterr Health J* 2019.
- 19 Sydney XX, WIL H, Chao KK. Common chronic health problems and life satisfaction among Macau elderly people. *Int J Nurs Sci* 2016;3:367–70.
- 20 Puvill T, Lindenberg J, de Craen AJM, *et al*. Impact of physical and mental health on life satisfaction in old age: a population based observational study. *BMC Geriatr* 2016;16:194.
- 21 Janusz K. Strong sense of coherence contributes to successful aging and higher satisfaction with life. *J Educat Health Sport* 2017;7:537–44.
- 22 Mekonnen HS, Lindgren H, Geda B, *et al*. Translation, cultural adaptation, and psychometric properties of the life satisfaction index for the third Age-Short form (LSITA-SF12) for use among Ethiopian elders. *Nurs Rep* 2021;11:981–96.
- 23 Barrett II A, Murk P. Life satisfaction index for the third age – short form (LSITA-SF): an improved and Briefer measure of successful aging 2009.
- 24 Katz S, Downs TD, Cash HR, *et al*. Progress in development of the index of ADL. *Gerontologist* 1970;10:20–30.
- 25 Blace NP. Functional ability, participation in activities and life satisfaction of the older people Asian social science 2012;8:75–87.
- 26 Kessler RC, Andrews G, Colpe LJ, *et al*. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med* 2002;32:959–76.
- 27 Holmefur M, Sundberg K, Wettergren L, *et al*. Measurement properties of the 13-item sense of coherence scale using Rasch analysis. *Qual Life Res* 2015;24:1455–63.
- 28 Broadhead WE, Gehlbach SH, de Gruy FV, *et al*. The Duke-UNC functional social support questionnaire. Measurement of social support in family medicine patients. *Med Care* 1988;26:709–23.
- 29 Barrett II A, Murk P. Life satisfaction index for the third age (LSITA): a measurement of successful aging 2006.
- 30 Government of the Federal Democratic Republic of Ethiopia. National plan of action on older persons (1998 - 2007) E.C. Ministry of Labor and Social Affairs, 2006. Available: [http://adapt.it/adapt-indice-a-z/wp-content/uploads/2015/01/ethiopia\\_oldies\\_2006.pdf](http://adapt.it/adapt-indice-a-z/wp-content/uploads/2015/01/ethiopia_oldies_2006.pdf)
- 31 Organization WH. Information needs for research, policy and action on ageing and older adults 2000.
- 32 Forman DE, Berman AD, McCabe CH, *et al*. PTCA in the elderly: the "young-old" versus the "old-old". *J Am Geriatr Soc* 1992;40:19–22.
- 33 Shumaker SA, Hill DR. Gender differences in social support and physical health. *Health Psychol* 1991;10:102–11.
- 34 Snyder M, Cantor N. Testing hypotheses about other people: the use of historical knowledge. *J Exp Soc Psychol* 1979;15:330–42.
- 35 Alice MT, Kimberly D, Megan D. *Use of cutoffs for Mid-Upper arm circumference (MUAC) as an indicator or predictor of nutritional and HealthRelated outcomes in adolescents and adults: a systematic review*. Washington, DC: FHI 360/FANTA, 2013.
- 36 Akandere M. Impact on the life satisfaction levels of physical activity in an elderly nursing home. *Sosyal Bilimler Enstitusu Dergisi* 2007;18:1–9.
- 37 Chehregosha M, Bastamina A, Vahidian F, *et al*. Life satisfaction index among elderly people residing in Gorgan and its correlation with certain demographic factors in 2013. *Glob J Health Sci* 2016;8:52103.
- 38 Nedjat S, Sahaf R, Khankeh HR, *et al*. Life satisfaction as the main factor behind the elderly's health knowledge utilization: a qualitative study in an Iranian context. *Med J Islam Repub Iran* 2018;32:115
- 39 Saris WE, Veenhoven R, Scherpenzeel AC. *A comparative study of satisfaction with life in Europe*. Eötvös University Press, 1996: 11–48.
- 40 Vulnerability of Older People in Ethiopia. The case of Oromia, Amhara and SNNP Regional States. HelpAge International, 2013. Available: <https://www.helpage.org/silo/files/a-study-of-older-peoples-livelihoods-in-ethiopia.pdf>
- 41 Jaison Joseph KRR, Kaur I, Ghai S. Life satisfaction among inhabitants of selected old age homes at Chandigarh -A cross sectional study. *Delhi Pschosoc J* 2014;17.
- 42 Celik SS, Celik Y, Hikmet N, *et al*. Factors affecting life satisfaction of older adults in turkey. *Int J Aging Hum Dev* 2018;87:392–414.
- 43 Fagerström C, Borg C, Balducci C, *et al*. Life Satisfaction and Associated Factors Among People Aged 60 Years and Above in Six European Countries. *Appl Res Qual Life* 2007;2:33–50.
- 44 Jung M, Muntaner C, Choi M. Factors related to perceived life satisfaction among the elderly in South Korea. *J Prev Med Public Health* 2010;43:292–300.
- 45 Ocampo JM. Self-rated health: importance of use in elderly adults. *Colomb Med* 2010;41:275–89.
- 46 Joia LC, Ruiz T, Donalisio MR. [Life satisfaction among elderly population in the city of Botucatu, Southern Brazil]. *Rev Saude Publica* 2007;41:131–8.
- 47 Holmén K, Furukawa H. Loneliness, health and social network among elderly people—a follow-up study. *Arch Gerontol Geriatr* 2002;35:261–74.
- 48 Kane RA. Long-term care and a good quality of life: bringing them closer together. *Gerontologist* 2001;41:293–304.
- 49 Banjare P, Dwivedi R, Pradhan J. Factors associated with the life satisfaction amongst the rural elderly in Odisha, India. *Health Qual Life Outcomes* 2015;13:201.
- 50 All Answers Ltd. Dorothea Orem's theory of self-care deficit, 2018. Available: <https://nursinganswers.net/essays/dorothea-orems-theory-of-self-care-deficit-nursing-essay.php?vref=1>
- 51 Dezutter J, Wiesmann U, Apers S, *et al*. Sense of coherence, depressive feelings and life satisfaction in older persons: a closer look at the role of integrity and despair. *Aging Ment Health* 2013;17:839–43.
- 52 Langeland E, Wahl AK, Kristoffersen K, *et al*. Sense of coherence predicts change in life satisfaction among home-living residents in the community with mental health problems: a 1-year follow-up study. *Qual Life Res* 2007;16:939–46.
- 53 Antonovsky A. *Health, stress and coping*. San Francisco: Jossey-Bass, 1979.
- 54 Kolosnitsyna M, Khorkina N, Dorzhiev K. What happens to happiness when people get older? Socio-economic determinants of life satisfaction in later life. *SSRN Electronic Journal* 2014;3.
- 55 Boonphadung S. Factors effecting life satisfaction of the elderly in Bangkok. *J Commun Comput* 2013;10:894–903.
- 56 Sahar J, Riasmini NM, Kusumawati DN, *et al*. Improved health status and life satisfaction among older people following self-help group intervention in Jakarta. *Curr Gerontol Geriatr Res* 2017;2017:1–7.
- 57 Veenhoven R. The study of life satisfaction. Available: <http://www2.eur.nl/fsw/research/veenhoven/Pub1990s/96d-full.pdf>
- 58 Li C, Chi I, Zhang X. Urban and rural factors associated with life satisfaction among older Chinese adults. *Aging Mental Health* 2014.



59 Roger C, Gibson NKW, Wendel D. Abel, Denise Eldemire-Shearer, Kenneth James and Kathryn Mitchell-Fearon alcohol use,

depression, and life satisfaction among older persons in Jamaica. *Int Psychogeriatr Assoc* 2016:1–9.