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

Habtamu Sewunet Mekonnen,1 Helena Lindgren,2 Biftu Geda,3 Telake Azale,4 Kerstin Erlandsson2,5

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.

Main outcome measure Level of life satisfaction.

Results The mean age of the respondents was 68.2 years with an SD±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 perceived 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.1 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.2 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.3 Thus, ageing satisfactorily means remaining...
physically and psychologically well, and socially engaged in an individually defined meaningful life.4

In Ethiopia, over the last 10 years, the life expectancy at birth increased from 61.63 years to 66.95 years in 2020.5 A longer life provides an important opportunity for older people, their families and at large the societies.6 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.7

So, in the late adult stage, satisfaction leads to integrity, while dissatisfaction creates a sense of despair.8 9

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,10–13 whereas in Zambia and Nepal it was only 37% and 7.9%, respectively.14 15 In the nursing home of Sivas municipality, Turkey, 6.4%, 71.8% and 21.8% reported low, moderate and high life satisfaction, respectively.16

The study in Brazil among community-dwelling elderly reported 6.1% dissatisfied, 28.2% moderately satisfied and 65.6% were very satisfied with life.13 In the South Korea study, 34%, 38% and 27% of the elderly reported adequate, average and poor life satisfaction, respectively.17

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 (β=−1.369, p<0.001), daily living activities, sense of coherence, mental health, social support, living environment quality and nutrition (β=0.48, bias-corrected and accelerated (BCa 95% CI 0.27, 0.69) were significantly associated with the life satisfaction.16 18–21

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 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 ≥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,22 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), (2) Katz Index of Independence in Activities of Daily Living (Katz ADL). (3) participation in activities scale. (4) Kessler Psychological Distress Scale (K10). (5) Sense of Coherence scale (SOC). (6) Duke-UNC Functional Social Support Questionnaire (FSSQ). 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. 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
- 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. 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 averages 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. 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.

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.

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.

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.26

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.27

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,33 as well as neighbours and coworkers.34 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.28

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.25

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 ≥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 ≤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±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 medium 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 >25 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).
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 had 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

### 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 |
|-----------|-----------|----------|
| 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    |

Mekonnen HS, et al. BMJ Open 2022;12:e061931. doi:10.1136/bmjopen-2022-061931
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 vs 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 vs 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). 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, 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 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). This difference might be due to variation in the study population. In South Korea, elderly...
aged ≥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 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) 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. As our study showed, life satisfaction is very crucial in the utilisation of health knowledge among the elderly. 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 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       | 14.0     |
| No                                     | 702       | 86.0     |
| 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 | |          |

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     |
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.10 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,39 measuring by using a single question might underestimate or overestimate 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.40 These conditions greatly affect the level of life satisfaction and show the

### 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.

### 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       |
| Variables                      | Level of life satisfaction (n) | Dissatisfied | Moderately satisfied | Satisfied | AOR (95% CI) | P value |
|-------------------------------|--------------------------------|--------------|----------------------|-----------|--------------|---------|
|                               |                                |              |                      |           |              |         |
| 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) | 0.03*     |
| 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) | 0.007*    |
| Known chronic disease         |                                |              |                      |           |              |         |
| Yes                           | 63                             | 214          | 43                   | Ref.      |              |         |
| No                            | 77                             | 307          | 112                  | 1.48 (1.03 to 2.11) | 0.03*     |
| 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      |
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.\(^4\) The better life satisfaction is vital for the health of older people and is an indicator of the better living standards\(^5\) 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.\(^4\) Income is one of the contributing factors to life

| Variables | Level of life satisfaction (n) | Dissatisfied | Moderately satisfied | Satisfied | AOR (95\% CI) | P value |
|-----------|--------------------------------|--------------|----------------------|-----------|---------------|---------|
| Daily living activities | | | | | | |
| Severe functional impairment | | 18 | 10 | 5 | Ref. | |
| Moderate functional impairment | | 9 | 30 | 6 | 5.43 (1.81 to 16.24) | 0.002* |
| 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) | < 0.001*** |
| Meal frequency | | | | | | |
| Once per day | | 9 | 5 | 3 | Ref. | |
| Two times per day | | 61 | 146 | 36 | 2.66 (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) | 0.02* |
| Good | | 44 | 381 | 147 | 4.51 (2.40 to 8.45) | < 0.001*** |
| 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) | 0.001** |
| 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) | < 0.001*** |

The bold values meaning statistically significant *P<0.05, **p<0.01, ***p<0.001.
AOR, adjusted OR.
satisfaction, 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. 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. 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. 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. 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. 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 had only moderate functional impairment in ADL were more likely to have a higher level of life satisfaction. Similarly, an association between self-perception and disease prevention programmes was reported in China, South Korea and Southern Brazil. 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. 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. 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 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. 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, 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 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. 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.
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, 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 policymakers (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
1School of Nursing, Department of Medical Nursing, University of Gondar College of Medicine and Health Sciences, Gondar, Ethiopia
2Department of Women’s and Children’s Health, Karolinska Institutet, Solna, Sweden
3College of Health Science, Department of Nursing, Madda Walabu University, Shashamene Campus, Robe, Ethiopia
4Institute of Public Health, Department of Health Education and Behavioral Sciences, University of Gondar College of Medicine and Health Sciences, Gondar, Ethiopia
5Dalarna 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/RC5/05/2263/2020.

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. Ashvarya 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/

7. Decoster A, Nicol S, Taylor D. Measurement 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, Krokkstad 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 2015;43:337–44.

11. Daniele Didino EAF, Taran EA, Gorodetskii K. Predictors of life satisfaction among older adults in siberia the European Proceedings of Social and Behavioral Sciences(EpSSB) 2018:400–7.

12. Katarina Wilhelmson EF. Social and emotional mastery in community-dwelling elderly: FIBRA study. Cadernos de Saúde Pública 2013;29:2447–58.

13. Mbozi MKS-NaEH. Contextual factors affecting the attainment of life satisfaction among elderly people in Tanzania's North-Western province. Knowledge For Justice 2016:189–205.

14. Ghimire S, Baral BK, Karmacarya I, et al. Life satisfaction among elderly patients in Nepal: associations with nutritional and mental well-being, Health Qual Life Outcomes 2018;16:118.

15. Mollaoglu M, Tuncay Fatma Ozkan, Fertelli TK. Mobility disability and life satisfaction in elderly people. Arch Gerontol Geriatr 2010;51:615–9.

16. Kimm H, Sull GM, Gomjbaov B, et al. Life satisfaction and mortality in elderly people: the Kangwa cohort study. BMC Public Health 2012;12:54:12–54.

17. Zeinalhajou AA, Alizadeh M, Sahebigha M. Life satisfaction and its contributors among noninstitutionalized older people in Tabriz, Islamic Republic of Iran. Eastern Mediterr Health J 2019.

18. 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.

19. Puvill T, Lindberg J, de Craen AJM, et al. Impact of physical and mental health on life satisfaction in a population-based observational study. BMC Geriatr 2016;16:194.

20. Janusz K. Strong sense of coherence contributes to successful aging and higher satisfaction with life. J Educat Health Sport 2017;7:537–44.

21. Mekonnen HS, Lindgren H, Gedá 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.

22. Barrett II A, Mupr P. Life satisfaction index for the third age – short form (LSITA-SF): an improved and Briefer measure of successful aging 2009.

23. Katz S, Downs TD, Cash HR, et al. Progress in development of the index of ADL. Gerontologist 1970;10:20–30.

24. Blace NP. Functional ability, participation in activities and life satisfaction of the older people Asian social science 2012;8:75–87.

25. 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.

26. Holmeun 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.

27. 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.

28. Barrett II A, Mupr P. Life satisfaction index for the third age (LSITA): a measurement of successful aging 2006.

29. Government of the Federal Democratic Republic of Ethiopia. National plan of action on older persons (1998 – 2008) E. Ministry of Labor and Social Affairs, 2006. Available: http://adapt.it/adapt-indice-a-z/wp-content/uploads/2015/01/ethiopia_oldies_2006.pdf

30. Bogaardt WH. Information needs for research, policy and action on ageing and older adults 2000.

31. 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.

32. Shumaker SA, Hill DR. Gender differences in social support and physical function. Health Psychol 1991;10:1602–11.

33. Snyder M, Cantor N. Testifying and hypotheses about other people: the use of historical knowledge. J Exp Soc Psychol 1979;15:330–42.

34. 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.

35. Akandere M. Impact on the life satisfaction levels of physical activity in an elderly nursing home. Sosyal Bilimler Enstitusu Dergisi 2007;18:1–9.

36. Chereasnogha M, Bastamnia 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.

37. Niedjat S, Sahaf R, Khankhe HR, et al. Life satisfaction as the main factor behind the elderly’s health knowledge and education: a qualitative study in an Iranian context. Med J Islam Repub Iran 2018:32:115.

38. Saris WE, Veenhoven R, Scherpenzeel AC. A comparative study of satisfaction with life in Europe. Eötvös University Press, 1996: 11–48.

39. 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

40. Jaisson Joseph KR, Kaur I, Gai S. Life satisfaction among inhabitants of selected old age homes at Chandigarh - A cross sectional study. Delhi Psychosoc J 2014:17.

41. 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.

42. Fagerström C, Borg C, Balducci C, et al. Life Satisfaction and Associated Factors Among People Aged 60 Years and Above in Six European Countries. Journals of Gerontology, Series B: Psychological Sciences and Social Sciences 2007;2:3–9.

43. 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.

44. Ocampo JM. Self-rated health: importance of use in elderly adults. Colomb Med 2010;41:275–89.

45. Joa LC, Ruiz T, Donaliso MR. [Life satisfaction among elderly population in the city of Botucatu, Southern Brazil]. Rev Saude Publica 2007;41:131–8.

46. Holmen K, Furukawa H, Loneliness, health and social network among elderly people—a follow-up study, Arch Gerontol Geriatr 2005:23:651–74.

47. Kane RA. Long-term care and a good quality of life: bringing them closer together. Gerontologyist 2001;41:293–304.

48. Banjare P, Dwivedi R, Pradhan J. Factors associated with the life satisfaction amongst the older elderly in Odisha, India. Health Qual Life Outcomes 2015;13:201.

49. All Answers Ltd. Dorothea Orem’s theory of self-care deficit, 2018. Available: https://nursingsanswers.net/essays/dorothea-orems-theory-of-self-care-deficit-nursing-essay.php?vref=1

50. Dezutter J, Wismann 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.

51. 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.

52. Antonovsky A. Health, stress and coping. San Francisco: Jossey- Bass, 1979.

53. Kolossitsyna 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.

54. Boonphadung S. Factors effecting life satisfaction of the elderly in Bangkok. J Community Comput 2013;10:894–903.

55. 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;1:1–7.

56. Veenhoven R. The study of life satisfaction. Available: http://www2. Measuring social well-being: A user's guide. Washington, DC: FHI 360/FANTA, 2013.

57. Li C, Chi I, Zhang X. Urban and rural factors associated with life satisfaction among older Chinese adults. Aging Mental Health 2014.
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 2016:1–9.