Original Article

Relationship of health, sociodemographic, and economic factors and life satisfaction in young-old and old-old elderly: a cross-sectional analysis of data from the Korean Longitudinal Study of Aging

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Abstract. [Purpose] The purpose of the present study was to investigate the relationship of health, sociodemographic, and economic factors and life satisfaction in young-old and old-old elderly groups. [Subjects and Methods] In the 2012 data from the Korean Longitudinal Study of Ageing, 4,134 of the final survey subjects aged 65 or older were analyzed. Multivaribale linear regression was performed to examine the degrees of explanatory power as factors (health, sociodemographic, and economic) in young-old (65 to 79 years) and old-old (80 years or older). [Results] Common variables that affected life satisfaction in both young-old and old-old subjects were health-related factors (depression, moderate to severe cognition, activities of daily living score), sociodemographic factors (level of education, familial communication, social activities), and economic factors (household assets, type of medical insurance). In the old-old group, age was an important associated factor. Mild cognitive impairment did not significantly affect life satisfaction in the old-old group, and only low-intensity social activities had an influence in the old-old group. [Conclusion] Difference in life satisfaction between the young-old and old-old elderly could be explained by gaps in the acceptance of the aging in health. Therefore, a personalized health consultation by life cycle could minimize these differences.
Key words: The elderly, Life satisfaction, Health-related factor

INTRODUCTION

Population aging is a serious global problem. As individuals reach old age, they experience a decline in physical function

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that can lead to reduced activity and infrequent social interaction, causing a loss of confidence that can trigger depression[1]. Life satisfaction in older adults who experience physical, psychological, or social changes with aging is not affected simply by one factor, but rather by multifaceted interactions between various factors, including individual characteristics and environmental factors[2, 3]. Understanding these factors will provide fundamental information to help solve problems facing the elderly. The rapidly growing elderly population also increases the oldest-old (85 years or older) population. Due to the increases in average life expectancy and the super-aged, researchers have found it necessary to subdivide the elderly population, which originally was broadly grouped as individuals aged 65 years or older. Menec et al. divided older adulthood into 'the young-old' (65–79 years old) and 'the old-old' (80 years or older)[4].

There are distinct differences between the young-old and the old-old groups; in general, the old-old elderly have poorer physical health than do the young-old[5]. Compared to young-old individuals, old-old tend to become dependent on others for help due to poor health condition, to have greater financial burdens for medical treatment for chronic disease or functional disability, and to experience the death of a spouse and the associated decreased physical and mental health. It has been shown that old-old adults are more vulnerable to negative life events than are the young-old[6]. A study approach that divides old adults into subgroups can be useful for studying an elderly population because the two age groups have different health care needs[7].

Researchers studying life satisfaction also suggest to divide the elderly population into several groups according to age[8]. According to previous studies on life satisfaction among the elderly, the relationship between age and life satisfaction is not clear. While the previous study concluded that the level of life satisfaction decreases with age[9], another study reported that life satisfaction is not strictly linearly aligned with age and fluctuates throughout the lifetime[10]. Meanwhile, Blanchflower and Clark found that life satisfaction decreases initially and then increases after a threshold age, showing a U-shaped curve[11, 12]. Therefore, the purpose of the present study was to investigate the relationship of health, sociodemographic, and economic factors and life satisfaction in young-old and old-old elderly groups using representative data from an elderly population.

SUBJECTS AND METHODS

This study used the 2012 data of the Korean Longitudinal Study of Ageing (KLoSA) conducted by the Korea Employment Information Service to identify the factors associated with life satisfaction among the elderly. This survey was performed using computer-assisted personal interview of individuals aged 45 years or older in order to obtain comprehensive data, including sociodemographic factors, employment status, health status, finance, family, and social networks.

The sampling frame is based on the 2005 Population and Housing Census and covers a total of 251,237 population enumeration districts. In the first wave, sample households were randomly selected in the 1,000 sampled enumeration districts from the effective sample size of 10,000. For the 2012 survey data in this study, 7,813 individuals were interviewed out of the 10,254 original samples, a 76.2% sample retention rate. In this study, 4,134 of the final survey subjects aged 65 years or older from the 7,813 individuals of the 2012 data sample were analyzed, excluding 327 individuals who died. The data were analyzed using the age of 80 as a divider between young-old and old-old[4, 13]. This study was reviewed and approved by the Institutional Review Board of Eulji University (EU13-44) with a waiver for informed consent because the data were obtained from a public database which is freely accessible online at http://survey.keis.or.kr and analyzed anonymously.

The KLoSA assessed life satisfaction based on the anchor points of 0 (unsatisfied) and 100 (satisfied). The scale consisted of a horizontal line every 10 units and was labeled 0, 10, …, 90, 100. The question was framed: "On the scale, please point out which point best represents your overall life satisfaction level." Subjects responded to the question on the scale of 0 to 100. Rowe and Kahn concluded that the determents of successful aging should include physical health, mental health, and social interaction[14]. Second to health, continued participation in economic activity is strongly associated with life satisfaction, as evidenced by previous findings that the economic status of the elderly is directly associated with life satisfaction[15]. Therefore, independent variables were classified into sociodemographic factors, economic factors, and health-related factors.

Depression, cognitive impairment, daily living function, and number of chronic diseases were assessed for health-related factors. The 10-item Center for Epidemiological Studies-Depression (CES-D10) scale, a shortened form of the CES-D, was translated into Korean to screen for depression. The KLoSA used the Korean Mini-Mental State Examination (K-MMSE) developed Scores of 24 or higher were considered as normal cognition, 23 to 20 points as mild cognitive impairment, and less than 19 points as moderate to severe cognitive impairment. An activities of daily living assessment was performed using the Korean version of the Activities of Daily Living (K-ADL) tool. Chronic diseases included diabetes, hypertension, lung disease, liver disease, heart disease, cerebrovascular disease, rheumatic disease, mental disease, and cancer. Respondents were asked to answer 'yes' or 'no' to the question for each disease: "Have you been diagnosed by a physician?"

Gender, age, level of education, marital status, social activities, and familial communication were considered for sociodemographic factors. Levels of education were categorized as 'less than elementary school', 'middle school graduate', 'high school graduate', and 'college graduate or beyond'. Marital status was categorized as 'married' and 'unmarried', which includes 'separated', 'divorced', 'widowed or disappeared', and 'never married'. Social activity was defined as participation in one or more of the following: religious group, social group, leisure/culture/sports group, school reunion/hometown friends committee, volunteer group, and political party/non-government organization/interest group. Frequency of familial communication measures how often the subject communicates with family members by phone, letter, or e-mail. Respondents

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Table 1. General characteristics of the study subjects

Variables[‡]	Subcategory	Total (n=4,134) N (%)[†]	Young-old (65 to 79 years) (n=3,207) N (%)[†]	Old-old (80 years or older) (n=927) N (%)[†]
Age[***]	Mean ± SD	74.5 ± 6.6	71.7 ± 4.1	84.2 ± 3.8
Gender[***]	Male	1,754 (42.4)	1,427 (44.5)	327 (35.3)
	Female	2,380 (57.6)	1,780 (55.5)	600 (64.7)
Life satisfaction score[***]	Mean ± SD	56.3 ± 18.3	57.5 ± 17.7	52.1 ± 19.6
Depression[***]	No	1,857 (45.3)	1,550 (48.8)	307 (33.4)
	Yes	2,239 (54.7)	1,627 (51.2)	612 (66.6)
Cognitive impairment[***]	Fair	2,225 (53.8)	1,963 (61.2)	262 (28.3)
	Mild	769 (18.6)	583 (18.2)	186 (20.1)
	Moderate or severe	1,140 (27.6)	661 (20.6)	479 (51.7)
K-ADL score[***]	Mean ± SD	0.4 ± 1.4	0.2 ± 1.1	0.9 ± 2.1
Chronic diseases[***]	No	972 (23.5)	795 (24.8)	177 (19.1)
	Yes	3,162 (76.5)	2,412 (75.2)	750 (80.9)
Level of education[***]	Less than elementary school	2,693 (65.1)	1,933 (60.3)	760 (82.0)
	Middle school	539 (13.0)	474 (14.8)	65 (7.0)
	High school	635 (15.4)	570 (17.8)	65 (7.0)
	College or higher	267 (6.5)	230 (7.2)	37 (4.0)
Marital status[***]	Widowed/divorced/single	1,393 (33.7)	834 (26.0)	559 (60.3)
	Married	2,741 (66.3)	2,373 (74.0)	368 (39.7)
Social activities[***]	None	1,349 (32.6)	908 (28.3)	441 (47.6)
	1	2,188 (52.9)	1,782 (55.6)	406 (43.8)
	2	508 (12.3)	436 (13.6)	72 (7.8)
	3+	89 (2.2)	81 (2.5)	8 (0.9)
Familial communications[***]	Mean ± SD	84.9 ± 74.9	87.2 ± 74.9	76.8 ± 74.4
Economic activities[***]	No	3,197 (77.3)	2,337 (72.9)	860 (92.8)
	Yes	937 (22.7)	870 (27.1)	67 (7.2)
Household assets[***]	1st quartile (lowest)	961 (23.9)	679 (21.6)	282 (31.7)
	2nd quartile	978 (24.3)	767 (24.5)	211 (23.7)
	3rd quartile	1,071 (26.6)	869 (27.7)	202 (22.7)
	4th quartile (highest)	1,016 (25.2)	822 (26.2)	194 (21.8)
Medical insurance[***]	Medical aid	330 (8.0)	217 (6.8)	113 (12.2)
	NHI (Self-employed)	928 (22.5)	724 (22.6)	204 (22.1)
	NHI (Workers)	2,872 (69.5)	2,264 (70.6)	608 (65.7)

Significance level: *p<0.05, **p<0.01, ***p<0.001
†Values are presented as n (%), unless otherwise indicated.
‡χ^2 test or independent t-test were performed respectively, for discrete and continuous variables.
K-ADL: Korean version of activities of daily living; NHI: National Health Insurance; SD: standard deviation

were asked to report the annual frequency of familial communication, which is categorized in 10 responses from 'almost every day' to 'none in a year' and it was adjusted for number of children.

Participation in economic activities, total household assets, and type of medical insurance were assessed for economic factors. Economic activity was assessed by the question, "Are you currently working?" The definition of work includes paid employment, self-employment, and helping with the family business. Assets include real estate, financial assets, and personal property such as a car, excluding debt. The type of medical insurance was categorized into National Health Insurance (NHI) (either employee-insured or self-insured) and Medical Aid.

T-test, analysis of variance, and correlation analysis were performed for binary, discrete, and continuous variables, respectively. In analyzing the factors related to life satisfaction, multivariable linear regression was performed by age group to assess the impact of sociodemographic, economic, and health-related factors. The variance inflation factor (VIF) was examined to assess multicollinearity in a regression model. All statistical procedures were carried out using the Stata 14.2 (Stata Corp., College Station, TX, USA), and significance was defined as p<0.05 (two-tailed).

REULTS

Table 1 shows the general characteristics of the subjects. There were significant differences in life satisfaction between the young-old and old-old group for all factors (p<0.001) (Table 1). The analysis of life satisfaction for the young-old and old-old groups was associated with health, sociodemographic, and economic factors and showed the following results: in young-old adults, all factors (health, sociodemographic, and economic) showed significant relationships on life satisfaction (p<0.01). In the old-old group, certain health-related factors including depression, cognitive impairment, K-ADL score

Table 2. Life satisfaction score by age group

Variables	Subcategory	Young-old (65 to 79 years) mean ± SD†	Old-old (80 years or older) mean ± SD†
Gender	Male	59.5 ± 17.6**	53.8 ± 18.8
	Female	55.9 ± 17.7	51.2 ± 19.9
Age	(Continuous value)	57.5 ± 17.7**	52.1 ± 19.6
Depression	No	62.6 ± 15.5**	60.5 ± 17.5**
	Yes	52.8 ± 18.3	48.2 ± 19.1
Cognitive impairment	Fair	61.5 ± 15.8**	59.9 ± 16.2**
	Mild	53.9 ± 18.2	53.9 ± 17.6
	Moderate or severe	48.8 ± 19.0	47.2 ± 20.5
K-ADL score	(Continuous value)	57.5 ± 17.7**	52.1 ± 19.6**
Chronic diseases	No	61.6 ± 15.8**	56.4 ± 19.1*
	Yes	56.1 ± 18.1	51.1 ± 19.6
Level of education	Less than elementary school	55.0 ± 17.8**	50.6 ± 19.8**
	Middle school	58.7 ± 17.2	57.1 ± 18.0
	High school	61.7 ± 17.0	58.3 ± 17.3
	College or higher	65.5 ± 16.0	63.0 ± 14.9
Marital status	Widowed/divorced/single	53.6 ± 19.1**	51.2 ± 19.8
	Married	58.9 ± 17.0	53.5 ± 19.2
Social activities	None	49.9 ± 18.9**	47.3 ± 20.1**
	1	59.6 ± 16.0	55.9 ± 17.9
	2	62.8 ± 17.0	58.9 ± 18.7
	3+	68.8 ± 16.7	67.5 ± 14.9
Familial communication	(Continuous value)	57.5 ± 17.7**	52.1 ± 19.6**
Economic activities	No	56.2 ± 18.3**	51.9 ± 19.8
	Yes	60.9 ± 15.7	55.7 ± 16.7
Household assets	1st quartile (lowest)	47.2 ± 19.5**	42.0 ± 20.2**
	2nd quartile	56.0 ± 16.9	52.6 ± 17.3
	3rd quartile	60.4 ± 15.4	58.7 ± 17.5
	4th quartile (highest)	64.1 ± 14.9	58.5 ± 17.0
Medical insurance	Medical aid	43.3 ± 22.2**	37.4 ± 18.7**
	NHI (Self-employed)	58.6 ± 16.9	53.1 ± 18.9
	NHI (Workers)	58.5 ± 16.9	54.6 ± 18.7

Significance level: *p<0.05, **p<0.01, ***p<0.001

†Independent t-test, analysis of variance (ANOVA), or correlation analysis were performed respectively, for binary, discrete, and continuous variables.

K-ADL: Korean version of activities of daily living; NHI: National Health Insurance; SD: standard deviation

(p<0.01), and presence of chronic disease (p<0.05) had significant relationship on life satisfaction, while sociodemographic factors including level of education, social activities, and frequency of familial communication significantly related with life satisfaction (p<0.01). For economic factors, total household assets and type of medical insurance were significant factors (p<0.01) (Table 2).

Result from regression model showed that the VIF values of each variable were 4.08 at maximum, which is lower than the cut-off threshold of 10, indicating the absence of significant multicollinearity. In multivariable regression analysis of the young-old group, individuals with education level of college degree or higher (p<0.05), frequent familial communication (p<0.001), those involved in more social activities (p<0.001), those with higher household assets (p<0.001), or those participated in NHI (p<0.01) had higher life satisfaction. However, individuals with depression (p<0.001), cognitive impairment (p<0.001), higher K-ADL score (p<0.001), or chronic disease (p<0.01) had lower life satisfaction. For the old-old group, age (p<0.01), individuals with education level of college degree or higher (p<0.001) or frequent familial communication (p<0.001), those involved in social activities (one kind; p<0.01), those with higher household assets (p<0.001), or those participated in NHI (workers; p<0.01) had higher life satisfaction. Meanwhile, individuals with depression (p<0.001), moderate or severe cognitive impairment (p<0.01), or higher K-ADL score (p<0.001) had lower life satisfaction (Table 3).

DISCUSSION

This study explored the factors associated with life satisfaction of the elderly based on age group and performed multivariable linear regression analysis to determine the degree of change depending on the variables. The independent variables were defined as health, sociodemographic, and economic factors. A cut-off age of 80 was applied for the dividing line between young-old and old-old, as it was the age at which the trend of life satisfaction changed. Based on the analysis, variables that significantly associated with life satisfaction for the elderly in the young-old group were as follows. In health-related factors

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Table 3. Related factors of life satisfaction by age group-results of multivariable regression analysis

Variables	Subcategory‡	Young-old (65 to 79 years) coefficient†	Old-old (80 years or older) coefficient†
Age	(Continuous)	−0.097	0.479**
Gender	Male	0.159	−0.716
Depression	Yes	−5.505***	−7.716***
Cognitive impairment	Mild	−3.292***	−1.555
	Moderate or severe	−5.579***	−4.625**
K-ADL score	(Continuous)	−2.344***	−2.190***
Chronic diseases	Yes	−1.932**	−1.961
Level of education	Middle school	−0.398	2.278
	High school	1.539	3.902
	College or higher	2.789*	8.517***
Marital status	Married	−0.252	−1.903
Familial-communication	(Continuous)	0.013***	0.028***
Social activities	1	3.824***	3.039**
	2	4.010***	1.45
	3+	7.800***	3.28
Economic activities	Yes	1.201	0.327
Household assets	2nd quartile	5.869***	6.130***
	3rd quartile	9.109***	11.019***
	4th quartile	11.820***	12.294***
Medical insurance	NHI (Self-employed)	4.688**	3.696
	NHI (Workers)	5.122**	6.696**
F-value		48.66***	23.08***
r²		0.2717	0.3388
VIF		1.04–4.08	1.04–2.96

Significance level: *p<0.05, **p<0.01, ***p<0.001
†Linear regression analysis were performed.
‡Reference group: depression (no), dementia (no), chronic disease (no), economic activities (no), household assets (1st quartile), medical insurance (Medical Aid), gender (female), level of education (less than elementary school), marital status (widowed/divorced/single), social activities (none), cognitive impairment (fair).
K-ADL: Korean version of activities of daily living; NHI: National Health Insurance; VIF: variance inflation factor

were associated with depression, cognitive impairment, K-ADL score, and the presence of chronic diseases; in sociodemographic factors were level of education, frequency of communication with family, and degree of social activity participation; and in economic factors were total household assets and type of medical insurance. For subjects in the old-old groups, the health factors were related with depression, cognition impairment, and the K-ADL score; in sociodemographic factors were age, level of education, frequency of communication with family, and degree of social activity; and in economic factors were total household assets and type of medical insurance.

As a result, this study found that depression, cognitive impairment, independence for daily activities, and presence of chronic disease had the significant relationship with life satisfaction for both young-old and old-old subjects. Depression was significantly related to life satisfaction in both groups, which is consistent with findings from prior study[16]. Within both young-old and old-old groups, those who were depressed had lower levels of life satisfaction than non-depressed subjects. As depression strongly affects satisfaction with oneself and often leads to pessimistic views, those with severe depression are typically not content with their own lives[17]. In this research, life satisfaction of old-old subjects was more associated strongly by depression than that of young-old subjects. While some prior studies have suggested no difference in life satisfaction of elderly who have lost cognitive function and that of those who have not[18], most previous reports have found that satisfaction with life varies depending on cognitive function, and that lower cognitive awareness and cognitive impairment are associated with lower degree of life satisfaction[19]. Also, cognitive impairment was confirmed to be associated with life satisfaction in both young-old and old-old groups. For the young-old group, mild and moderate or severe levels of cognitive decline were associated with a lower level of life satisfaction. While similar results were found in the old-old subjects, but only moderate or severe decline of cognition was a significant. As the incidence rate of cognitive impairment and its symptoms are worse in the oldest elderly people, it is suspected that the mild level does not significantly influence life satisfaction. This finding supports prior reports that suggest a difference in life satisfaction depending on the degree of self-awareness[20].

Although the dataset were gathered over time, it was difficult to determine changes over time and causality because this study performed a cross-sectional comparison. As the sample size of the old-old elderly is smaller than that of the young-old, the former group is more likely to be affected by outliers than the latter. While we eliminated extreme annual variations

before performing analysis to address this concern, future studies with greater sample sizes are necessary. Nevertheless, this study used a nationally representative sample to investigate young-old and old-old groups of the elderly while previous studies in Korea sampled in a specific gender or the elderly in a limited age range[21, 22].

Level of education and frequency of family contact were significant factors in both groups, consistent with prior studies that showed that higher education level is associated with higher satisfaction with life in the elderly[8], that life satisfaction increases with increased closeness to one's children[23], and that those with strong social networks show a high level of satisfaction with life. The elderly with a high level of education tend to distance themselves from detracting factors, leading to higher health and life satisfaction. This is consistent with prior findings that educational activities can enhance life satisfaction and lead to more success during aging[24].

Meanwhile, age and degree of social activity showed different patterns of relationship in young-old and old-old people[8]. It was found that increased satisfaction with life with increased age in the old-old elderly. This finding is considered to be due to better acceptance of the consequences of aging, including physical and mental decline. While the young-old group had higher life satisfaction with greater intensity of social activities, the old-old group displayed higher life satisfaction with low-intensity social activities, while high-intensity ones had no effect. It is possible that this is due to a reduced frequency of high-intensity social activity in the old-old population. Indeed, on average, the elderly suffer declining functional status, which consequently leads to reduced social activities. For the elderly, social activities not only maintain social networks, leading to more chances for new connections, but also help provide self-worth and contribute to increased satisfaction with life[25]. It is clear that social activity has an important relationship with life satisfaction in the old-old group, despite decreasing functional status and overall health. However, this study elucidated that it is not high-intensity social activity but low-intensity activity that significantly affects satisfaction.

Total household asset was used as a variable to reflect the economic status of the subjects. As most people older than 65 years do not have regular incomes, assets were determined to more accurately reflect economic status. Household assets had a significant relationship with life satisfaction for both young-old and old-old subjects. This agrees with prior knowledge that materialistic factors affect life satisfaction[23], that economic status is an important variable that associated with life satisfaction[26], and that those better off financially have relatively higher levels of life satisfaction. Type of medical insurance was also a unique variable that associated with life satisfaction in both groups. Those participating in the NHI had higher life satisfaction than those receiving Medical Aid. This is likely because that type of medical insurance reflects higher economic status[27].

When comparing the differences between young-old and old-old groups, most of significant factors were commonly associated with all two groups. However, mild cognitive impairment and chronic diseases were not significantly related with life satisfaction in the old-old group. In addition, only low-intensity social activities had a relationship on life satisfaction in the old-old group. Those findings could be interpreted as being due to a greater acceptance of the aging in health in the old-old elderly[28]. As this study indicates that the young-old group showed lower life satisfaction and the old-old group showed higher life satisfaction, the elderly might present a U-shaped relationship between subjective life satisfaction and age. Several studies reported that the relationship between age and life satisfaction was U-shaped[11, 12], but could not explained its mechanism clearly[29, 30]. This study found that by the comparison of life satisfaction and related factors between the young-old and old-old groups, the old-old group presented increasing life satisfaction when they are aging. In addition, mild cognitive impairment and chronic diseases were not significantly related with life satisfaction. It suggests that health-related factors have relatively less effect on life satisfaction in the old-old group. It could be considered that people who are in the old-old group have a positive attitude in their lives. Difference in life satisfaction between the young-old and old-old elderly could be explained by gaps in the acceptance of the aging in health. Therefore, a personalized health consultation by life cycle could minimize these gaps and need to be considered in health policy for the elderly.

Conflict of interest

The authors declare no conflict of interest.

REFERENCES

1) Steffens DC, Fisher GG, Langa KM, et al.: Prevalence of depression among older Americans: the aging, demographics and memory study. Int Psychogeriatr, 2009, 21: 879–888. [Medline] [CrossRef]

2) Missotten P, Squelard G, Ylieff M, et al.: Quality of life in older Belgian people: comparison between people with dementia, mild cognitive impairment, and controls. Int J Geriatr Psychiatry, 2008, 23: 1103–1109. [Medline] [CrossRef]

3) Sparks M, Zehr D, Painter B: Predictors of life satisfaction: perceptions of older community-dwelling adults. J Gerontol Nurs, 2004, 30: 47–53. [Medline] [CrossRef]

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4) Menec VH, Chipperfield JG: The interactive effect of perceived control and functional status on health and mortality among young-old and old-old adults. J Gerontol B Psychol Sci Soc Sci, 1997, 52: 118–126. [Medline] [CrossRef]

5) Clark G: Functional assessment in the elderly. Williams TP, 1984, 11.

6) Adams RG, Blieszner R: Aging well with friends and family. Am Behav Sci, 1995, 39: 209–224. [CrossRef]

7) Baltes PB, Smith J: New frontiers in the future of aging: from successful aging of the young old to the dilemmas of the fourth age. Gerontology, 2003, 49: 123–135. [Medline] [CrossRef]

8) Gwozdz W, Sousa-Poza A: Ageing, health and life satisfaction of the oldest old: an analysis for Germany. Soc Indic Res, 2010, 97: 397–417. [CrossRef]

9) Schilling OK: Cohort-and age-related decline in elder's life satisfaction: is there really a paradox? Eur J Ageing, 2005, 2: 254–263. [CrossRef]

10) Deaton A: Income, aging, health and wellbeing around the world: Evidence from the Gallup World Poll. http://www.princeton.edu/rpds/papers/WP_247.pdf (Accessed Feb. 17, 2017)

11) Blanchflower DG, Oswald AJ: Is well-being U-shaped over the life cycle? Soc Sci Med, 2008, 66: 1733–1749. [Medline] [CrossRef]

12) Clark AE: Born to be mild? Cohort effects don't explain why well-being is U-shaped in age. PSE Working Papers n2006-35, 2006.

13) Oswald F, Jopp D, Rott C, et al.: Is aging in place a resource for or risk to life satisfaction? Gerontologist, 2011, 51: 238–250. [Medline] [CrossRef]

14) Rowe JW, Kahn RL: Successful aging. Gerontologist, 1997, 37: 433–440. [Medline] [CrossRef]

15) Kuhelen RG: Developmental change in motivation during the years: a reader in social psychology. Chicago: The University of Chicago Press, 1984.

16) Koivumaa-Honkanen H, Honkanen R, Antikainen R, et al.: Self-reported life satisfaction and recovery from depression in a 1-year prospective study. Acta Psychiatr Scand, 2001, 103: 38–44. [Medline] [CrossRef]

17) Judge TA, Locke EA, Durham CC, et al.: Dispositional effects on job and life satisfaction: the role of core evaluations. J Appl Psychol, 1998, 83: 17–34. [Medline] [CrossRef]

18) Scocco P, Fantoni G, Caon F: Role of depressive and cognitive status in self-reported evaluation of quality of life in older people: comparing proxy and physician perspectives. Age Ageing, 2006, 35: 166–171. [Medline] [CrossRef]

19) St John PD, Montgomery PR: Cognitive impairment and life satisfaction in older adults. Int J Geriatr Psychiatry, 2010, 25: 814–821. [Medline] [CrossRef]

20) Hwang RI, Lim JY, Lee YW: [A comparison of the factors influencing the life satisfaction of the elderly according to their cognitive impairment level]. J Korean Acad Nurs, 2009, 39: 622–631. [Medline] [CrossRef]

21) Jo KH, Lee HJ: [Factors related to life satisfaction in young-old, old, and oldest-old women]. J Korean Acad Nurs, 2009, 39: 21–32 (in Korean). [Medline] [CrossRef]

22) Jeon HS, Dunkle RE: Stress and depression among the oldest-old: a longitudinal analysis. Res Aging, 2009, 31: 661–687. [Medline] [CrossRef]

23) Netuveli G, Wiggins RD, Hildon Z, et al.: Quality of life at older ages: evidence from the English longitudinal study of aging (wave 1). J Epidemiol Community Health, 2006, 60: 357–363. [Medline] [CrossRef]

24) Meeks S, Murrell SA: Contribution of education to health and life satisfaction in older adults mediated by negative affect. J Aging Health, 2001, 13: 92–119. [Medline] [CrossRef]

25) Hooyman NR: Social gerontology: a multidisciplinary perspective. Boston: Pearson Education, 2008.

26) Gureje O, Kola L, Afolabi E, et al.: Determinants of quality of life of elderly Nigerians: results from the Ibadan study of ageing. Afr J Med Med Sci, 2008, 37: 239–247. [Medline]

27) Yoon TH, Chon SE, Yi CH: The quality of life and health behavior among the elderly in long term care insurance based on Korea National Health and Nutrition Examination Survey (KNHANES). Phys Ther Korea, 2009, 16: 69–78.

28) Hilleräs PK, Jorm AF, Herlitz A, et al.: Life satisfaction among the very old: a survey on a cognitively intact sample aged 90 years or above. Int J Aging Hum Dev, 2001, 52: 71–90. [Medline] [CrossRef]

29) Baird BM, Lucas RE, Donnellan MB: Life satisfaction across the lifespan: findings from two nationally representative panel studies. Soc Indic Res, 2010, 99: 183–203. [Medline] [CrossRef]

30) Rider CK: Life-span human development. Belmont: Wadsworth Cengage Learning, 2009.