

# Association Between Happiness and Objective/Subjective Economic Status Among Older Adults in Myanmar

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# Abstract

## Background

Few studies have examined whether objective or subjective economic status (ES) has a greater effect on the happiness of older adults in developing countries with ageing populations. This study examined whether objective/subjective economic status (ES) is associated with happiness in older adults in Myanmar.

## Method

A multistage, random sampling procedure and face-to-face interviews were conducted in urban and rural areas in Myanmar. The happiness of 1,200 participants aged 60+ was evaluated using a single happiness score of 0 (very unhappy) to 10 (very happy). The wealth index, used as an objective economic indicator, was calculated from household asset items. Subjective economic status was assessed by asking "Which of the following best describes your current financial situation in light of general economic conditions?" The possible responses ranged from (1) very difficult to (5) very comfortable.

## Results

The mean happiness score was lower among participants with low objective and subjective ES than among those with medium or high objective ES (6.24 versus 6.80 points,  $p < 0.001$ ) and average or higher subjective ES (5.62 versus 6.83 points,  $p < 0.001$ ), respectively. Both low objective and subjective ES were negatively associated with happiness after adjusting for confounding variables (B: -0.41, 95% confidence interval [CI]: -0.69, -0.13 and B: -0.71, 95% CI: -1.00, -0.42, respectively) and stratification by region (low objective ES, urban: B: -0.52, 95% CI: -1.03, -0.02; low subjective ES, urban: B: -0.50, 95% CI: -0.96, -0.03; low objective ES, rural: B: -0.37, 95% CI: -0.73, -0.02; and low subjective ES, rural: B: -0.80, 95% CI: -1.18, -0.41).

## Conclusions

In Myanmar, both objective and subjective ES might influence happiness among older adults. Although they had a similar impact on happiness in urban areas, subjective ES had a stronger impact in rural areas. Interventions for promoting happiness in older adults should consider differences in how objective/subjective ES impacts happiness in different regions, and focus should be placed not only on improving objective ES but also subjective ES in society.

## Introduction

There is growing interest in the role that well-being plays in improving a population's health. The European Commission argued that current measures of economic performance, such as gross domestic product, are insufficient as indicators of a society's progress, and that personal well-being should also be

taken into account[1, 2]. It has also been argued that psychological well-being should be addressed in measures of health valuation, and be considered in health care resource allocation [1, 3].

Happiness, defined as “the overall appreciation of one’s life-as-a-whole,” is a key marker of psychological well-being[4] and is closely related to health[1]. Many studies have reported that happiness is associated with better health outcomes, such as lower mortality, reduced morbidity, and functional independence in both community-dwelling and clinical populations [5– 11]. The link between happiness and health may become more important as one ages, as the prevalence of chronic illness increases with age[1].

A number of physiological mechanisms might explain these findings[12]. Happiness appears to be inversely related to perceived stress[13] and may protect against illness through improved immune responses[4]. Happy people typically enjoy better health outcomes because they demonstrate more successful adaptation; better problem-solving skills and coping strategies; more creative, imaginative, and integrative thinking; greater resilience; and a stronger ability to deal with adversity[8, 14, 15].

Identifying the determinants of happiness is not only important for improving personal well-being, but also for gaining insight into the factors that affect health and longevity. The recognition of these determinants may lead to elevated health status, increased life expectancy, and lower medical expenses [16]. Previous studies have reported that happiness is associated with having high self-perceived health[15, 17], health insurance coverage[18, 19], social support[15], living partners[15, 20–22] (or not living alone)[23], and lower stress[21]; the male gender[15, 24]; longevity[1, 12, 24]; the absence of depression[23]; and smoking history[24].

Objective economic status (ES) is also known to be correlated with happiness. For example, people with high ES as measured by objective indicators such as household income are more likely to be happier than people with low ES [15– 17, 20–22, 25–27]. There are also suggestions that subjective ES (i.e., perceptions of having higher ES or better financial status) is of importance [26, 28–30]. For example, a study in five sub-Saharan countries showed that people who were moderately to completely satisfied with their financial situation were significantly more likely to report richer health and happiness relative to those who were completely dissatisfied [29]. However, to our knowledge, few studies have examined whether objective or subjective ES has a greater effect on the happiness of older adults, despite concerns about the growing economic cost of morbidity and functional dependence of older adults in developing countries with ageing populations[31].

In Myanmar, the proportion of the population aged  $\geq 60$  years will almost double to 15% between 2010 and 2030 and is projected to reach 25% of the overall population by 2050[32]. The implications of the increasing rate of functional dependence in Myanmar are expected to be significant, as effective medical care systems are still in the developmental stages after a long period of military control between 1962 and 2011[33, 34]. In such a situation, it is important to examine the factors affecting happiness, which has been reported to buffer the risk of morbidity and functional dependence among older adults in Myanmar.

# Methods

## Aim

The aim of this study was to examine whether objective/subjective ES is associated with happiness in older adults in Myanmar.

## Study design and participants

This was a baseline survey of the 2018 longitudinal study “Healthy and Active Aging in Myanmar,” which examined the predictors of physical and psychological health in community-dwelling Myanmar adults aged  $\geq 60$  years.

The field sites were the Yangon region and the Bago region, which is located 91 kilometers north-east of Yangon. Multistage random sampling was conducted in the two regions. There are 45 townships in the Yangon region and 28 in the Bago region. First, six townships were randomly selected from each region via population proportional sampling based on the population of each township. Next, in Yangon, 10 wards were further randomly selected from each township, while in Bago, 10 village tracts were selected from each township again based on the population of each township/village tract. Finally, 10 people were randomly selected from each extracted ward/village tract using the ledger lists of residents aged 60 years or more. In rural areas, there are multiple villages within a single village tract. In such cases, one of the villages was randomly selected from the village tract.

The differences between wards and village tracts involve the degree of urbanization. Urban areas are defined as wards, and rural areas are defined as village tracts or villages. Wards and village tracts sometimes co-exist within a township. In the survey, we selected only wards from townships in the Yangon region and only village tracts from among those in the Bago region, as we considered the Yangon region representative of urban areas and the Bago region as representative of rural areas.

Trained surveyors visited homes with public health nurses from each community to conduct face-to-face interviews with the study participants. In Yangon, the surveyors visited 1,083 older adults; 610 were at home. Ten were excluded due to refusing the survey ( $n = 6$ ) or to severe dementia or being bedridden ( $n = 4$ ); the response rate was 98.4% in Yangon. In Bago, surveyors visited 1044 older adults; 694 were at home. Ninety-four were excluded due to severe dementia or being bedridden, thus the response rate was 86.5% in Bago. In total, six hundred people each from the Yangon (222 men and 378 women) and Bago regions (261 men and 339 women) were surveyed.

## Study tools

A structured questionnaire for the face-to-face interviews was developed for this study (Additional file), following the Japan Gerontological Evaluation Study (JAGES), which is a nationwide, population-based, prospective cohort study for older community-dwelling Japanese adults [35]. The linguistic translation and validation process followed the “Linguistic Validation Manual for Health Outcome Assessments[36].

It was first translated into English. Thereafter, it was translated into the local language and back translated into English to ensure clarity and consistency.

We hired research staff from the Myanmar Perfect Research Company, a group that conducts epidemiological surveys in Myanmar. The interviewers were recruited from the company. Before the commencement of the actual survey, a two-day training course on the research protocol, administration of the questionnaire, and ethical concerns was conducted for the interviewers.

A small pilot study was carried out before the actual survey for face validity in Urban Health Center, Dagon township, Yangon. Participants were the older adults, age of above 60 came to the out-patient clinic in the center. We recruited the 25 respondents who were gave consent to participate in the pilot study. During the pilot study, the interviewers ensured sequence, flow, and clarity of the study. After the feedback from the interviewers, the questionnaire was revised accordingly.

The inclusion criteria were an age of  $\geq 60$  years and residence in a selected ward or village tract. The exclusion criteria were being bed-ridden or having severe dementia. Severe dementia was defined as an Abbreviated Mental Test score of  $\leq 6$ [37, 38].

### **Dependent variable**

We assessed happiness through the following question: "How do you rate your overall happiness level on a score of 0 for very unhappy to a score of 10 for very happy?" This question was previously validated[16, 39].

### **Independent variables**

The wealth index, used as an objective economic indicator, was calculated from household asset items (radio, washing machine, TV, electric rice cooker, video/DVD player, air conditioner, electric fan, bicycle, refrigerator, motorcycle, computer, car/truck, store-bought furniture, microwave oven, personal music player, mobile phone, and internet) using a method described in a previous report [40]. Subjective economic status was assessed by asking the following question: "Which of the following best describes your current financial situation in light of general economic conditions?" The possible responses were (1) very difficult, (2) difficult, (3) average, (4) comfortable, and (5) very comfortable. Based on the responses, participants were categorized as "difficult or very difficult" (answering 1 or 2) or "average or higher" (answering 3 to 5).

### **Confounding variables**

The socio-demographic characteristics of the study participants included information regarding age, sex, subjective health status (excellent/good or fair/poor), illness during the preceding year, depressive symptoms (geriatric depression scale [GDS]  $\Rightarrow 5$  or  $< 5$ ), educational level (no school, monastic, some/all primary school, middle/high school or higher), residential area (the Yangon or Bago regions), marital status (married or widow/divorced/never married), living status (alone or not), social supports (giving and

receiving emotional & instrumental help), religion (Buddhism or other), and frequency of visits to religious facilities (less than once per week or once per week or more).

## **Statistical analysis**

The mean happiness scores of the socio-demographic variables that were categorized as above were compared using a one-way analysis of variance test. A linear regression analysis was performed to identify the factors associated with being happy. The multivariate adjusted results were expressed as non-standardized coefficients (B) with 95% confidence interval (CI). We used STATA 14 (StataCorp, College Station, TX, USA) to perform all statistical analyses, and the statistical significance level was set at  $p < .05$ .

## **Results**

### **Characteristics of respondents who were happy and unhappy**

Table 1 shows the happiness scores for each socio-demographic variable. For the 1,200 respondents, the mean happiness score was 6.58 ( $\pm 2.01$ ). Regarding ES, respondents with low objective ES had significantly lower happiness scores than those with middle/high objective ES (6.24 points versus 6.80 points,  $p < 0.001$ ). Similarly, the respondents with low subjective ES had significantly lower scores than those with average or higher subjective ES (5.62 points versus 6.83 points,  $p < 0.001$ ). For details, see Table 1.

### **Associations between objective/subjective SES and happiness**

Low objective and subjective ES were both negatively associated with happiness, even after adjusting for the confounding variables (B: -0.41, 95% CI: -0.69, -0.13; B:-0.71, 95% CI: -1.00, -0.42, respectively) (Table 2). After being stratified into an urban area (Yangon) and a rural area (Bago), low objective and subjective ES were both still negatively associated with happiness in the urban and rural areas (for low objective ES in urban areas: B:-0.52, 95% CI: -1.03, -0.02, for low subjective ES in urban areas: B: -0.50, 95% CI: -0.96, -0.03; for low objective ES in rural areas: B: -0.37, 95% CI: -0.73, -0.02; and for low subjective ES in rural areas: B:-0.80, 95% CI: -1.18, -0.41).

## **Discussion**

To the best of our knowledge, this is the first study to investigate whether objective or subjective ES is associated with happiness using data from urban and rural areas in Myanmar. Using project data from 2018, we found that the mean happiness score was estimated to be 6.58 ( $\pm 2.01$ ) points. Overall, the model with potential confounding factors adjusted suggested that older adults with low objective ES were more likely to have a lower happiness score than those with average or higher objective ES, and the association was similar for low subjective ES. The associations between objective or subjective ES and happiness scores remained significant in both the urban (Yangon) and rural (Bago) areas, even after they

were stratified by region. Both objective and subjective ES had a similar impact on happiness in urban areas, while subjective ES had more than double the impact on happiness compared to objective ES in rural areas.

To compare the happiness scores among other Asian populations, we calculated the mean happiness score of the participants of the JAGES[35], which we referred to for this Myanmar study; the mean happiness score for adults aged 65 years and above was estimated to be 7.22 ( $\pm$  1.93) points in the JAGES study (n = 180,324). Although we cannot directly compare the mean happiness score in this study with that of the previous study due to differences in the sample size and the age range, the mean happiness score in Myanmar might be relatively lower than that in Japan. This might be related to Myanmar's relatively lower socioeconomic status and higher prevalence of poverty. According to the Myanmar Living Conditions Survey from 2017, one in four people perceived themselves as poor, and another 32% were just above the poverty line, facing the risk of falling into the poverty trap in the event of any adversity[41, 42]. In addition, it might be related to the relatively higher prevalence of depressive symptoms in Myanmar (22.2%) compared with the median prevalence rate of depressive symptoms among adults aged 60 years and above around the world (10.3%)[43, 44].

In this study, low objective and subjective ES were both associated with a lower happiness score even after adjusting the confounding factors (Table 2). There is a possible reason why older adults with low objective/subjective ES were less likely to be happy than those with average/high objective/subjective ES in Myanmar. In a previous systematic review and meta-analysis, there appeared to be a consistent and statistically significant increase in the odds of cancer, angina, asthma, depression, and comorbidity prevalence when comparing low objective ES with middle/high objective ES [45, 46]. Similarly, the risk of coronary artery disease, hypertension, diabetes, and dyslipidemia was higher when comparing low and high subjective social status [47]. Consistent with previous studies, in this study, low objective/subjective ES was found to potentially affect physical health due to poverty, which is associated with a lack of public services like education, health services, access to clean water, sanitation, and clean fuel. This exacerbates the vulnerability of poor people and the perception of status differentiation, which could lead to low happiness. Although we adjusted for self-rated health, health disparities due to differences in objective/subjective ES could influence happiness in older adults in Myanmar. Even in Japan, which is considered an egalitarian society with relatively few inequalities in health, subjective ES (perceived income inequality) was negatively associated with happiness, and objective ES (income status) attenuated the association[26].

Although a previous study indicated that low subjective ES could increase stress directly or increase vulnerability to the effects of stress more than low objective ES[48], to the best of our knowledge, this is the first study to reveal that this influence is pronounced in rural areas. One of the reasons for this might be the influence of relative deprivation (RD). Previous studies offered the RD hypothesis as a possible explanation for the damaging implications of inequalities in health [49–53]. The idea behind this hypothesis is that an individual's health or health-related behavior is not only determined by that individual's own resources (such as income or educational attainment), but also by their relative position

in reference to those resources (i.e., how much others have versus how much they have), and by the distribution of income within society [51, 53]. Subjective ES might be more strongly linked with RD than objective ES, especially in rural areas, since rural areas tend to be small and strongly united [54, 55], making it easier to see the economic situation of people in the same community. Even if older adults are objectively poor, they might feel happy if there is little RD in their society. On the other hand, it is harder for them to be happy if they have high neighborhood social cohesion and feel poorer than others in such rural areas.

Moreover, Myanmar is classified as a country with a critical shortage of health workers, which jeopardizes access to health services, resulting in poorer health status in people in hard-to-reach places[56], and healthcare disadvantages could be particularly detrimental to older adults, whose healthcare needs are high[57]. Despite ongoing changes in rural Myanmar, a considerable rural-urban gap not only in human resources (education, knowledge, and skills) but also in access to material (land, farms, and savings) and social resources (trust-based bonds) could affect residents' happiness and their psychological process of coping with chronic diseases[58]. In such an environment, it is possible that subjective ES was more likely to affect happiness than objective ES among older adults living in a rural area, although we adjusted for possible confounding variables.

The strength of this study is that it is, to the best of our knowledge, the first study to investigate happiness with a focus on ES among older adults in Myanmar. In addition, this study reported on the current situation of older adults after significant circumstantial changes in Myanmar. Some previous papers explored the sociodemographic status of older adults in Myanmar using survey data from 2012[59–62] and from the national census conducted in 2014 [63]. However, the changes due to Myanmar's democratization happened after those surveys.

The findings of this study should be interpreted within the context of several limitations. First, this analysis adopted a cross-sectional design, so causal relationships between objective/subjective ES and happiness could not be determined. We plan to employ a cohort study approach to explore any potential causality. Second, the happiness measure was based on a single item and was self-reported. Therefore, although this measure has been commonly used in previous studies and has been shown to be moderately reliable [16, 64–66], the results do not necessarily translate to clinical significance for psychological health. Objective multi-item measures of happiness should be considered for future studies [16]. However, the mitigation of the impact of low objective/subjective ES on happiness ( $B=-0.41$  and  $-0.71$ , respectively) was comparable to the aggravation of the impact of low self-rated health and depressive symptoms ( $B=-0.43$  and  $-0.99$ , respectively; data not shown), which has exceptional predictive validity with respect to mortality and morbidity [67–69]. Third, it is unknown whether these findings are generalizable beyond the Yangon and Bago regions of Myanmar. People who live in the Bago region may enjoy better access to urban areas and health facilities relative to those living in other rural areas further away from Yangon. This social epidemiological survey should be extended to include the surrounding regions and states throughout the country in the future.

Finally, our survey sample excluded those who were bed-ridden or had severe dementia. Assuming that the happiness of those people was lower (due to their poor health) [16], happiness may have been overrated in our analysis, and our findings may not depict the whole picture of older adults in Myanmar.

In conclusion, both objective and subjective ES might influence happiness among older adults in Myanmar. However, subjective rather than objective ES has a stronger impact on happiness in rural areas. Future studies should look into the effectiveness of increasing levels of happiness through specific interventions considering regional differences. As population ageing is a growing issue in Myanmar, it is necessary to look beyond just ameliorating illnesses and implement changes that enable longevity with good physical and mental health and happiness.

## Abbreviations

CI

Confidence interval

ES

Economic status

GDS

Geriatric depression scale

JAGES

the Japan Gerontological Evaluation Study

RD

Relative deprivation

## Declarations

### Ethical approval and consent to participate

The survey protocol was reviewed and approved by the ethical review committee of the Department of Medical Research at the Ministry of Health and Sports, the Republic Union of Myanmar (Ethics/DMR/2018/038); the World Health Organization ethics committee; the ethics board at Niigata University (2018-0096); and the National Institute of Public Health in Japan (NIPH-IBRA#12279). Written informed consent was obtained from all participants before the interviews. Voluntary participation and the right to withdraw participation at any time were assured. Individual data could not be identified from the aggregated format; thus, confidentiality was preserved. The study conformed to the principles of the Declaration of Helsinki.

### Consent for publication

Not applicable

### Availability of data and materials

The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

### **Competing interests**

None declared

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### **Author Contributions**

Yuri Sasaki analyzed the data and produced the first draft of the manuscript. Yugo Shobugawa, Ikuma Nozaki, Daisuke Takagi, Yuiko Nagamine, Masafumi Funato, Yuki Shirakura, Yuki Chihara, Kay Thi Lwin, Poe Ei Zin, Thae Za chi Bo, Tomofumi Sone, and Hla Hla Win collected the data and revised the manuscript intensively. All authors approved the final manuscript, and Sasaki is the guarantor.

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## Tables

| Table 1. Happiness scores by socio-demographic characteristics (n = 1,200) |                          |       |      |       |         |
|--|--------------------------|-------|------|-------|---------|
|  |                          | N     | Mean | ±SD   | p value |
| <b>Happiness score</b>   |                          | 1,200 | 6.58 | 2.01  |         |
| <b>Objective SES</b>   | Middle/High              | 718   | 6.80 | 1.88  | <0.001  |
| <b>(wealth index)</b>  | Low                      | 480   | 6.24 | 2.14  |         |
| <b>Subjective SES</b>  | Average or more          | 953   | 6.83 | 1.89  | <0.001  |
| <b>(self-rated economic status)</b>  | Difficult/Very difficult | 247   | 5.62 | 2.14  |         |
| <b>Sex</b>   | Male                     | 483   | 6.86 | 2.00  | <0.001  |
|  | Female                   | 717   | 6.38 | 2.02  |         |
| <b>Age</b>   | 60-69                    | 670   | 6.61 | 2.00  | 0.25    |
|  | 70-79                    | 380   | 6.61 | 2.04  |         |
|  | 80+                      | 150   | 6.32 | 2.06  |         |
| <b>Subjective health status</b>  | Excellent/Good           | 354   | 7.10 | 1.89  | <0.001  |
|  | Fair/Poor                | 846   | 6.36 | 2.01  |         |
| No   | 582                      | 6.75  | 2.08 | <0.01 |         |
| Yes  | 615                      | 6.41  | 1.92 |       |         |
| <b>Depressive symptoms</b>   | GDS <5                   | 921   | 6.89 | 1.89  | <0.001  |
|  | GDS ≥5                   | 265   | 5.48 | 2.01  |         |
| <b>Education</b>   | No school/Monastic       | 396   | 6.27 | 2.00  | <0.001  |
|  | Some/Finished primary    | 417   | 6.55 | 2.06  |         |
|  | Middle school or higher  | 387   | 6.92 | 1.91  |         |
| <b>Region</b>  | Yangon                   | 600   | 6.71 | 1.86  | <0.05   |
|  | Bago                     | 600   | 6.45 | 2.13  |         |
| <b>Marital status</b>  | Married                  | 642   | 6.77 | 1.93  | <0.001  |
|  | Widow/Divorced/Never     | 558   | 6.35 | 2.07  |         |
| <b>Living status</b>   | Alone                    | 68    | 6.04 | 2.45  | <0.05   |
|  | Not alone                | 1132  | 6.61 | 1.97  |         |
| <b>Social Support</b>  |                          |       |      |       |         |
| <b>Receiving emotional support</b>   | No                       | 176   | 6.60 | 2.14  | 0.85    |

|  |                         |      |      |      |       |
|--|-------------------------|------|------|------|-------|
|  | Yes                     | 1024 | 6.57 | 1.98 |       |
| <b>Providing emotional support</b>   | No                      | 196  | 6.54 | 2.13 | 0.78  |
|  | Yes                     | 1004 | 6.58 | 1.98 |       |
| <b>Receiving instrumental support</b>  | No                      | 27   | 6.11 | 2.24 | 0.22  |
|  | Yes                     | 1173 | 6.59 | 2.00 |       |
| <b>Providing instrumental support</b>  | No                      | 268  | 6.57 | 2.15 | 0.98  |
|  | Yes                     | 932  | 6.58 | 1.96 |       |
| <b>Religion</b>  | Buddhism                | 1147 | 6.57 | 1.99 | 0.47  |
|  | Other                   | 53   | 6.77 | 2.32 |       |
| <b>Frequency of religious visits</b>   | Less than once per week | 617  | 6.40 | 1.99 | <0.05 |
|  | Once per week or more   | 583  | 6.76 | 2.01 |       |
| p-value for one-way ANOVA test; GDS = Geriatric Depression Scale; SES = Socioeconomic Status |                         |      |      |      |       |

| Table 2. Multivariate adjusted association between happiness and objective/subjective socioeconomic status among the older adults in Myanmar   |                          |       |                           |       |       |         |
|--|--------------------------|-------|---------------------------|-------|-------|---------|
| Happiness  |                          | B     | SE                        | 95%CI |       | P-value |
| <b>n=1,182 (Yangon &amp; Bago)</b>   |                          |       |                           |       |       |         |
| Objective SES  | Middle/High              |       |                           |       |       |         |
| (wealth index)   | Low                      | -0.41 | 0.14                      | -0.69 | -0.13 | 0.01    |
| Subjective SES   | Average or more          |       |                           |       |       |         |
| (self-rated economic status)   | Difficult/Very difficult | -0.71 | 0.15                      | -1.00 | -0.42 | 0.00    |
| Adjusted R-squared = 0.14  |                          |       |                           |       |       |         |
| <b>n=591 (Yangon)</b>  |                          |       |                           |       |       |         |
| Objective SES  | Middle/High              |       |                           |       |       |         |
| (wealth index)   | Low                      | -0.52 | 0.26                      | -1.03 | -0.02 | 0.04    |
| Subjective SES   | Average or more          |       |                           |       |       |         |
| (self-rated economic status)   | Difficult/Very difficult | -0.50 | 0.24                      | -0.96 | -0.03 | 0.04    |
| Adjusted R-squared = 0.09  |                          |       |                           |       |       |         |
| <b>n=591 (Bago)</b>  |                          |       |                           |       |       |         |
| Objective SES  | Middle/High              |       |                           |       |       |         |
| (wealth index)   | Low                      | -0.37 | 0.18                      | -0.73 | -0.02 | 0.04    |
| Subjective SES   | Average or more          |       |                           |       |       |         |
| (self-rated economic status)   | Difficult/Very difficult | -0.80 | 0.20                      | -1.18 | -0.41 | 0.00    |
| CI: Confidence Interval; GDS: Geriatric Depression Scale; SE: Standard Error; SES: Socioeconomic Status  |                          |       | Adjusted R-squared = 0.18 |       |       |         |
| Adjusted for age, sex, subjective health, illness during preceding year, depressive symptoms, education, region, marital status, living status, social supports, religion, frequency of religious visits |                          |       |                           |       |       |         |

## Supplementary Files

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