# Quality of life in the Elders has not Been Regarded as much as their Life Span: A Population-Based Study From Iran

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# Abstract

Background Quality of life (QOL) in the elderly people was not addressed as much as their life expectancy. Aim The aim of this study was to evaluate the QOL in the elders. Method In this cross-sectional study, the elders were selected by multi-stage cluster random sampling from health centers-covered population of Shiraz, Iran and interviewed individually. The Persian version of the Leiden-Padua (LIEPAD) questionnaire, consisting of core components (CCQOL) and moderators (MQOL) of QOL was used. SPSS software (version 25) was applied for data analysis. Results The mean age of 386 participants was 68.12 ± 6.24 years. The female to male ratio was 1.1 and 350 (90.7%) educated up to 12 years. The mean score of QOL (sum of CCQOL and MQOL) was 83.67 ± 13.75 (out of 147); consisting of 27 (6.9%) participants with low, 316 (81.8%) with moderate and 43 (11%) with high level of QOL. The mean scores of CCQOL and MQOL were 70.68 ± 9.42 (out of 93) and 14.14 ± 2.46 (out of 54), respectively. Multivariable analysis showed that sleep disorder (B = -0.15), osteoporosis (B = -0.14), female gender (B = -0.13), and not being the source of family income (B = -0.13) were significantly and inversely associated with QOL, while sleep disorder, facing to violence, female gender, migraine, psychological disease and not being the source of family income were inversely associated with CCQOL. Sexual problem, facing to violence, not having supplementary insurance, inability to walk and migraine had a significant and an inverse correlation with MQOL. Conclusion Four out of five elders in the Shiraz region have moderate level of QOL, while the elder females and the elders with chronic diseases, as well as the elders who are not the source of their family income had a lower level of QOL. Quality of life in the elders can be improved through an integrated care program in the health centers.

## Introduction

There are growing numbers of older people worldwide [1], since their life expectancy has markedly increased over the past century, mainly due to public health improvements [2]. By 2050, the world's population aged 60 years and older is expected to reach 2 billion, up from 900 million in 2015 [3, 4]. Similarly, it is estimated that the population of Iran will increase to 90 million with an increasing rate about 30% till 2050 [5]. Besides life expectancy, maintaining quality of life (QOL) is also important as it was emphasized by World Health Organization (WHO) and many other institutions [6, 7]. Therefore, it is necessary to implement strategies for healthy and active aging by focusing improvement of QOL in this group of people [8]. The quality of life (QOL) is a broad-ranging concept which is affected in a complicated manner by a person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment [9]. The QOL among older people tends to decline as age increased, partially due to their poorer health than younger people that is associated with impaired mobility, lack of social activities, depression, and low performance in the activities of daily life [10]. Therefore, the objective of this study was to investigate the QOL-associated factors and especially modifiable ones to prevent their negative health outcomes.

## Method

This cross-sectional study was performed in 2019 in Shiraz, capital city of Fars Province located in the southwest of Iran. Considering the QOL level of 78% in the elders [11], 95% level of confidence and 5% error, the sample size was calculated 264 using the Cochran formula. However, the final sample size reached to 381 considering the effect size of 1.2 (due to multistage sampling) and drop out of 20%,. Shiraz with a population around 2 million that more than 172000 of them are elders was divided into three main health networks. Each health network consisted of several health centers. About 95% of the older adults in Shiraz are under the coverage of these networks. First, the sample size in each network was determined proportionally according to their elderly population. Then, three health centers were selected by random sampling in each health network. The participants were selected based on the proportion of registered elders in each health center by systematic random sampling from existed family records. One elder was chosen from each family. Then, selected elders (or their family members) were contacted by phone and they were informed about the study. The elders, who agreed to the study conditions were invited to come to the Shiraz University of Medical Sciences (SUMS) affiliated Motahari Clinic (Shiraz, Iran), based on their convenience in one of the offered dates. The elders who had Alzheimer's disease were excluded from this study as this issue was indicated by their roommate in the first phone call.

A face-to-face and in personal interview was done with each of the elders by the same gender interviewer in the clinic. Demographic, socioeconomic and medical backgrounds of interviewees were asked of them or their companions. The elders' body mass index (BMI) was calculated according to the Bassey's equation [12], and their daily kilocalories intake was measured by analysis of their nutritional status using 72-hour recall checklist. Leiden-Padua (LIEPAD) questionnaire which was utilized to assess QOL of elders in this study was used first in Italy (Padua and Brescia) and the Netherlands (Leiden). The questionnaire includes two parts [13]. The first and the main part of LIEPAD questionnaire is core component of QOL (CCQOL) and the second part is moderators of QOL (MQOL). The core component of QOL consists of 31 questions divided into seven dimensions as follow: Physical function (5 questions), self-care (6 questions), depression and anxiety (4 questions), cognitive function (5 questions), social performance (3 questions), sexual function (2 questions), and life satisfaction (6 questions). Each question of CCQOL is scored on a four-point Likert scale from zero to three; yields the maximum score of 93. The MQOL part of the LEIPAD questionnaire consists of 18 questions divided into five dimensions: perceived personality (6 questions), anger (4 questions), social desirability (3 questions), trust in God (2 items), and self-esteem (3 items). Questions are scored by four-point Likert scale (0 - 3) and 2-point scale (0 - 1) with the maximum score of 34. In this study we used the Persian version of LEIPAD questionnaire to assess QOL of participants [14]. Validity of the questionnaire was approved by experts' opinion and its reliability (Cronbach's alpha = 94%) was approved based on other studies [15, 16]. The reliability of each of the seven components of CCQOL was also assessed by us in this study using Cronbach's alpha formula as follow: Physical function (87%), cognitive function (85%), social performance (84%), self-care (83%), sexual function (83%), life satisfaction (82%) and depression and anxiety (81%). For CCQOL, the overall Cronbach's alpha value was 0.83. We also measured the reliability of each of the five items of MQOL as follow: social desirability (89%), perceived personality (85%), self-esteem (84%), anger (81%), and trust in

god (79%). The overall Cronbach's alpha value for MQOL was 0.84. Total score of QOL was calculated by summation of scores of CCQOL and MQOL. In this scale, scores below 50, between 50 and 98, and above 98 were classified as low, moderate, and high level of QOL, respectively.

## Statistical analysis

Data was entered into the IBM SPSS statistics software package version 25 and the accuracy of data entry was checked by randomly selecting the data from the software and matching them with the related questionnaires. Spearman test was used to evaluate the correlations between the total score of QOL and each item of CCQOL and MQOL, between the total score of CCQOL and its components, and between total score of MQOL and its items. Homogeneity and equality of variances were checked by Levene's test. Univariable analysis was done using independent $t$-test to determine the factors that were associated with QOL, CCQOL and MQOL. For multivariable analysis, factors with a $p \leq 0.2$ on univariable analysis were fitted into the linear regression model (forward type). In this study, $p$-values less than 0.05 were considered as the significant difference.

## Ethical statement

This study was conducted according to the guidelines laid down in the Declaration of Helsinki. Voluntary participation in this study, using anonymous questionnaire, possibility of access to executives of this study via two exclusive phone lines and keeping confidentiality in all aspects of research were some of the ethical aspects that were applied. Further, the research protocol, as described above, was approved by SUMS ethics board committee by No: IR.SUMS.REC.1395.S254.

# Results

## Participants and their characteristics

Twenty-two out of 408 elders were excluded due to Alzheimer's disease and 386 (94.6%) were entered to the study. The mean age of participants was 68.12 ± 6.24 years. They consisted of 248 (64.2%) participants aged 60 - 69 years, 200 (51.8%) females, 272 (70.5%) married, and 350 (90.6%) who educated up to 12 years. The mean number of persons living with elders was 3 ± 1.5 (median = 3). The socioeconomic, demographic, anthropometric and medical backgrounds of interviewees are shown in the Table 1.

## Total score of QOL, CCQOL, and MQOL

The mean total score of QOL was 83.67 ± 13.75 (out of 127); representing a moderate level of QOL among the elders. Accordingly, 12 (0.5%) participants had low QOL, while 281 (72.8%) and 84 (21.9%) had moderate and high levels of QOL, respectively. For 9 elders, QOL could not be categorized due to incomplete answers. Total score of CCQOL was 70.68 ± 9.42 (out of 93), with an interquartile range (IQR) from 66 - 77. Total score of MQOL was 20.94 ± 2.30 (out of 34) with an IQR from 19 - 22.

## Correlates of QOL

Univariable analysis showed that being female, single life, level of education up to 12 years or being jobless (elders and their spouses) and not being the source of family income had a negative statistical association with the total score of QOL (Table 2). Moreover, the history of chronic diseases (vascular, skeletal, and neurological diseases, sleep-related disorders, and hyperlipidemia), chronic pain, facing to violence and not taking medical supplements found to have an inverse correlation with the total score of QOL ($p < 0.2$; Table 2). Other socioeconomic, demographic, anthropometric and medical characteristics of the elders were not correlated with the total score of QOL ($p > 0.2$). Multivariable analysis showed that sleep disorder (B = -0.15), osteoporosis (B = -0.14), female gender (B = -0.13), and not being the source of family income (B = - 0.13) had a significant and inverse association with the total score of QOL ($p < 0.05$) (Table 3).

## Correlates of CCQOL

Figure 1 demonstrates the association of the total score of CCQOL with each of its seven components. Physical functioning had the most correlation (0.81) and sexual functioning (0.17) had the least correlation with the total score of CCQOL.

Univariable analysis showed that female gender, single life, being jobless of the elders, and not being the source of family income had a negative association with the total score of CCQOL (Table 2). Further, having history of chronic diseases (cardiovascular, hematological, renal, skeletal, neurological, rheumatic, and psychological diseases, sleep disorders, and hyperlipidemia), chronic pain , facing to violence and taking medical supplements found to have an inverse correlation with CCQOL ($p < 0.2$; Table 2). Other socioeconomic, demographic, anthropometric and medical characteristics of the elders were not correlated with QOL score ($p > 0.2$). Multivariable analysis showed that sleep disorder (B = -0.21), facing to violence (B = -0.21), female gender (B = -0.17), migraine (B = -0.14), psychological disease (B = -0.13), and not being the source of family income (B = -0.09) had a significant and inverse correlation with CCQOL ($p < 0.05$; Table 3).

## CCQOL components

### Physical functioning

The mean score of physical function was 11.3 ± 2.6 (out of 15). Sleep disorder (B = -0.20), chronic pain (B = -0.18), being female (B = -0.16), osteoporosis (B = -0.12), low age of marriage (B = -0.12), and migraine (B = -0.11) had a negative and significant association with physical function of the older adults.

### Cognitive functioning

The mean score of cognitive function was 12.1 ± 2.5 (out of 15). Sleep disorder (B = -0.20), migraine (B = -0.17), and facing to violence (B = -0.14) had a significant association with decrease of cognitive functioning.

### Depression and anxiety

The mean score of depression and anxiety was 9.4 ± 2.9 (out of 12). Migraine (B = 0.19), psychological disease (B = 0.17), being female (B = 0.16), sleep disorder (B = 0.14), and facing to violence (B = 0.11) had a significant and positive association with depression and anxiety scale in the elders.

### Self-care

The mean score of self-care was 16.6 ± 2.3 (out of 18). Female gender (B = -0.19), older age (B = -0.19), osteoporosis (B = -0.15), facing to violence (B = -0.10), and hypertension (B = -0.10) significantly decreased the self-care of the elders.

### Social Functioning

The mean score of social function was 6.6 ± 2.0 (out of 9). Facing to violence (B = -0.25), single life (B = -0.19), female gender (B = -0.13), and not being the source of family income (B = -0.13) had a significant and opposite association with social functioning of the elders.

### Life satisfaction

The mean score of life satisfaction was 10.30 ± 2.36 (out of18). Facing to violence (B = -0.18), sexual problem (B = -0.15), sleep disorder (B = -0.12), and not being the source of family income (B = -0.15) decreased the life satisfaction among the elders.

### Sexual functioning

The mean score of sexual function was 4.1 ± 1.6 (out of 6). Single life (B = -0.66), female gender (B = -0.18), sexual problem (B = -0.16) and older age (B = - 0.14) had a significant and inverse association with the sexual functioning of the elders.

### MQOL Components and its Correlates

The mean score of perceived personality was 4.02 ± 1.22 (out of 8) and the mean score of anger was 9.20 ± 1.06 (out of 12). Moreover, social desirability had a mean score of 0.28 ± 0.55 (out of 3), compared to self-esteem that had mean of 6.42 ± 0.79 (out of 9), and trust in God with the mean of 1.0 ± 0.07 (out of 2). Among the five items of MQOL; perceived personality (0.78) and trust in God (0.1) had the most and the least correlation with total score of MQOL, respectively (Figure 2). Univariable analysis showed that female gender, not having supplementary insurance, not being the source of family income and sleep disorder had an inverse and significant association with MQOL (Table 2). Moreover, having history of chronic diseases (liver disease, psychological disease, osteoporosis, skin disease, migraine, hematological disease, inability to walking, and sexual problem), chronic pain and facing to violence found to have an inverse correlation with MQOL ($p < 0.2$; Table 2). Multivariable analysis showed that, sexual problem (B = -0.17), facing to violence (B = -0.16), not having supplementary insurance (B = -0.15),

inability to walking (B = -0.14), and migraine (B = -0.12) had an inverse association with MQOL ($p < 0.05$; Table 3).

## Discussion

The results of this study revealed that at least seven out of ten elders in the study region had a moderate level of QOL. Also, the elder women, the elders with chronic diseases (sleep disturbance, osteoporosis) or those who were not the source of their family income had a lower level of QOL. Moreover, facing to violence was inversely associated with both CCQOL and MQOL in the elders and sexual problems and not having the supplementary insurance decreased the elders' MQOL. Among chronic diseases; sleep disturbance had the most inverse association with QOL and CCQOL, while sexual problems had the most association with MQOL. Furthermore, physical functioning and perceived personality had the most correlation with CCQOL and MQOL, respectively.

Population aging is one of the most challengeable public health issues in the today's world [3, 17]. As a result, prevalence of chronic diseases and need to care of older adults has been increased [18]. On the other hand, to achieve a higher level of QOL in the elders has been more concerned by policy makers compared to solely rising their life expectancy [19]. However, developing countries, unlike developed countries, are not prepared enough to manage the health, social and economic consequences of aging [20].

Zeitlhofer et al. in Austria revealed that a substantial association was found between sleep quality and total score of QOL. They suggested that poor sleep quality could be used as a screening method in exploration of patient's QOL [21], which is in line with our study. Association of quality of sleep with QOL was also found in another study [22].

Similar to our results, Lips and van Schoor [23] and Madureira et al. [24] found that osteoporosis was associated with deterioration of QOL in the elders. Lee et al. revealed that gender was not correlated with QOL [25], which is in contrast to our results, as well as the results from the study by Lemos et al., in which they concluded that QOL was lower in the elderly women than elderly men [26]. Despite some other studies [27-29], we did not find any association between the low level of income and QOL, although a positive association was found between being the source of family income and QOL; a new finding that was not assessed in other studies. We also showed that birthplace (urban versus rural) of the elders and their spouse did not have any association with their QOL. This finding is inconsistent with the results from another study conducted in Spain [30].

In the recent years, scientists have been more concerned about different aspects of sexuality as the determinants of QOL in the elders. Flynn and Gow concluded that sexual function is a significant predictor of QOL in the older adults [31]. We showed that sexual function, was positively associated with MQOL in the elders. In addition, the incidence of depression has increased in many countries, as well as in the Middle East in the past two decades [32]. Similar to our study, Canuto et al. found that the incidence of depression and anxiety disorders had negative relationship with QOL in the elders, especially

in women [33]. In another study, violence toward elders was associated with diminishing of QOL in them, as we concluded in this study [34]. Brovold et al. showed that physical function had a significant association with aging, which means it is important to encourage elders to being active physically and thereby increasing their QOL [35]. Similarly, we found that physical function was the strongest predictor of CCQOL among its components.

Our study had some limitations and strengths. We could not assess the QOL of those elders who were not under the coverage of health centers. However, this group consisted of only about 5% of all elders in Shiraz city. Moreover, there are limited nursing homes this city. Another point is that, to detect a cause and effect between QOL and other factors, it is needed to conduct a kind of longitudinal study. On the other hand, and as strength points, this study is among scarce studies that assessed MQOL and its association with QOL in the elders. In addition, we measured the correlation between different socioeconomic, demographic, anthropometric, and medical backgrounds with QOL, CCQOL and MQOL. Also, the correlations between the components of CCQOL and MQOL with their related scores were investigated.

## Conclusions

Four out of five elders in the Shiraz region have a moderate level of QOL, while the elder females and the elders with chronic diseases (especially those with sleep disturbance or osteoporosis), as well as the elders who are not the source of their family income have a lower level of QOL. Facing to violence also has an association with lower scales of both CCQOL and MQOL, while sexual problems and not having the supplementary insurance, decrease MQOL. Therefore, QOL in the elders can be improved through an integrated care program in the health centers for changing the above conditions, especially in the women, while the role of elders' families in this regard could not be overlooked.

## Abbreviations

**QOL:** Quality of life; **WHO:** World Health Organization; **LIEPAD:** Leiden-Padua Questionnaire; **IQR:** Interquartile Range; **CCQOL:** Core Components of Quality of Life; **MQOL:** Moderators of Quality of Life

## Declarations

### Ethics approval and consent to participate

This study was approved by Shiraz University of Medical Sciences ethics board committee by No: IR.SUMS.REC. 1395.S254.

### Consent for publication

Not applicable

### Availability of data and materials

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

## Authors' contributions

BH: Conceptualization, supervision, writing - review & editing, PK: writing - original draft, EKH: analysis and interpretation of the data, writing - review & editing, YM: collected the data, MB: collected the data, writing - review & editing

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# Tables

**Table 1.** Socioeconomic, demographic, anthropometric and medical characteristics of elders (n = 386)

| Characteristic | n (%) | Characteristic | n (%) | Characteristic | n (%) |
|---|---|---|---|---|---|
| Age (year) | | Supplementary Insurance | | Chronic Pain | |
| 60 - 69 | 248 (64.2) | Yes | 281 (72.7) | Yes | 259 (67) |
| 70 - 79 | 114 (29.5) | No | 105 (27.2) | No | 127 (32.9) |
| ≥ 80 | 24 (6.2) | House Ownership Status | | Renal Disease | |
| Gender | | Landlord | 346 (89.6) | Yes | 78 (20.2) |
| Male | 186 (48.1) | Tenant | 40 (10.3) | No | 308 (79.7) |
| Female | 200 (51.8) | Being the Main Decision Maker about Family Finances | | Osteoporosis | |
| Level of Education | | Yes | 254 (65.8) | Yes | 175 (45.3) |
| ≤ 12(year) | 350 (90.6) | No | 132 (34.1) | No | 211 (54.6) |
| >12 | 36 (9.3) | Occupation | | Hematological Disease | |
| Level of Education of Spouse | | Yes | 43 (11.1) | Yes | 65 (16.8) |
| ≤ 12(year) | 356 (92.2) | No | 343 (88.8) | No | 321 (83.1) |
| >12 | 27 (6.9) | Tobacco Smoking | | Auditory Impairment | |
| Marital Status | | Yes | 44 (11.3) | Yes | 378 (97.9) |
| Married | 272 (70.4) | No | 342 (88.6) | No | 8 (2) |
| Single life | 114 (29.5) | Daily Calories Intake (kcal) | | Diabetes Mellitus | |
| Birth Place | | < 1600 | 266 (68.9) | Yes | 119 (30.8) |
| Village | 33 (8.5) | ≥ 1600 | 117 (30.3) | No | 267 (69.1) |
| City | 353 (91.4) | Cardiac Disease | | Hyperlipidemia | |
| Relativity with Spouse | | Yes | 66 (17) | Yes | 184 (47.6) |
| 1st degree | 90 (23.3) | No | 320 (82.9) | No | 202 (52.3) |
| Non 1st degree | 294 (76.1) | Hypertension | | Sexual Problem | |
| Age at the First Marriage | | Yes | 216 (56) | Yes | 58 (15) |
| < 18 | 161 (41.7) | No | 170 (44) | No | 328 (84.9) |
| 18 - 24 | 113 (29.2) | BMI Kg/m$^2$ (Bassey Method) | | Inability to Walk | |
| ≥ 25 | 110 (28.4) | Mean ± SD (Median) | 25.8 ± 5.0 (25.6) | Yes | 46 (11.9) |
| Income to Cost ratio | | Migraine | | No | 340 (88) |
| ≤ 1 | 206 (53.3) | Yes | 77 (19.9) | Taking Medical Supplement | |
| > 1 | 84 (21.7) | No | 309 (80.1) | Yes | 346 (89.6) |
| Being the Source of Family Income | | Psychological Disease | | No | 40 (10.3) |

| Yes | 222 (57.5) | Yes | 84 (21.7) | | |
| No | 159 (41.1) | No | 302 (78.2) | | |

**Table 2.** Univariable analysis of association between studied characteristics and quality of life and its components in the elders

[1]**CCQOL**: Core Components of Quality of Life, [2]**MQOL**: Moderators of Quality of Life, [3]**QOL**: Quality of Life

Table 3. Multivariable analysis showing statistically significant correlates of QOL,CCQOL and MQOL in the elders

[1]*P*: *p* value, [2]**CI**: Confidence Interval, [3]**QOL**: Quality of Life, [4]**CCQOL**: Core Components of Quality of Life, [5]**MQOL**: Moderators of Quality of Life

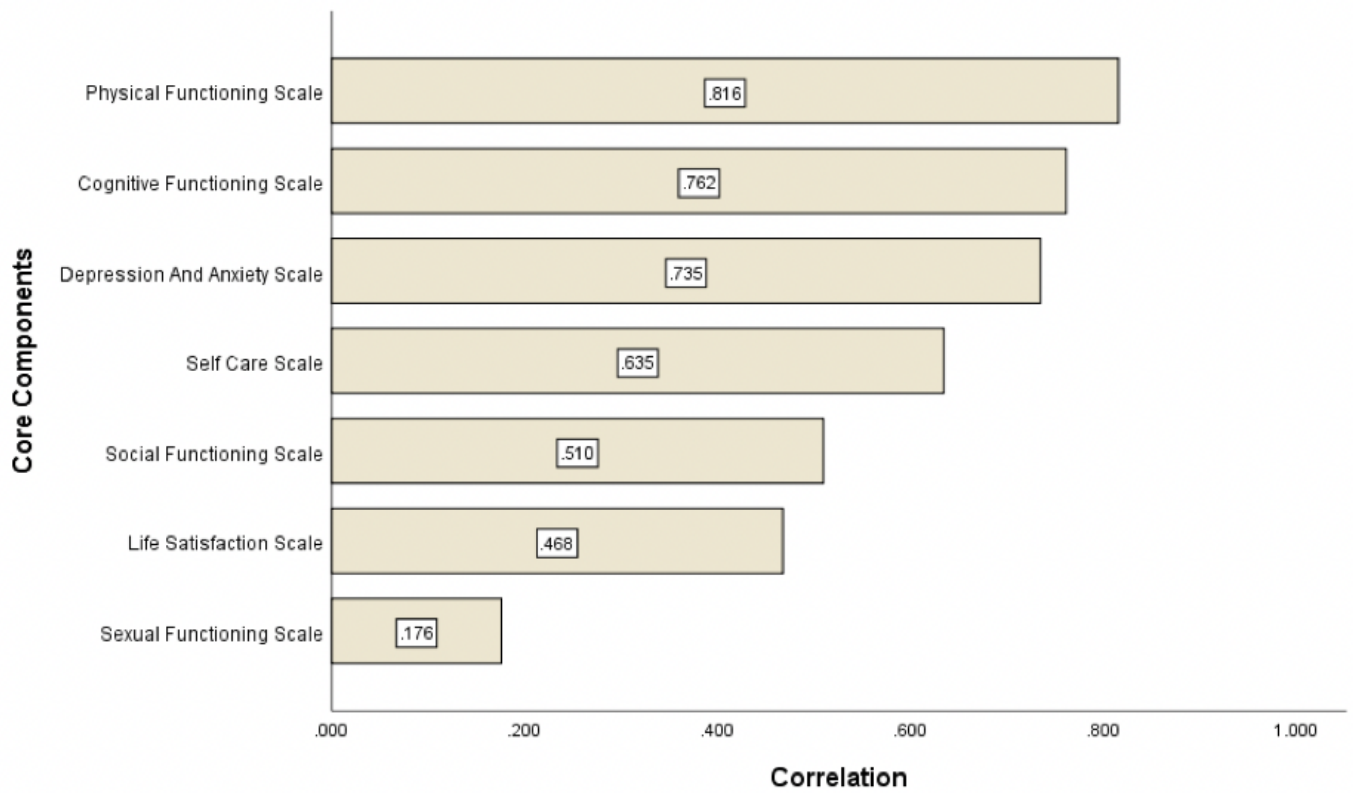# Figures

| Characteristic | CCQOL[1] | MQOL[2] | QOL[3] | Characteristic | CCQOL | MQOL | QOL |
|---|---|---|---|---|---|---|---|
| Gender | | | | Sexual Problem | | | |
| Male | 72.5 ± 8.1 | 21.2 ± 2.1 | 93.7 ± 8.2 | Yes | 69.0 ± 9.5 | 20.8 ± 2.0 | 89.8 ± 9.9 |
| Female | 68.9 ± 10.1 | 20.6 ± 2.4 | 89.5 ± 10.6 | No | 70.9 ± 9.3 | 21.9 ± 2.3 | 91.9 ± 9.7 |
| p value | < 0.01 | 0.031 | < 0.001 | p value | 0.276 | 0.001 | 0.149 |
| Marital status | | | | Migraine | | | |
| Single/Single Life | 69.5 ± 10.4 | 20.7 ± 2.3 | 90.1 ± 11.1 | Yes | 67.0 ± 11.6 | 20.0 ± 2.2 | 88.0 ± 12.4 |
| Married | 71.1 ± 8.9 | 21.0 ± 2.2 | 92.1 ± 9.1 | No | 71.6 ± 8.5 | 21.9 ± 2.4 | 92.4 ± 8.8 |
| p value | 0.120 | 0. 372 | 0.060 | p value | 0.002 | 0.008 | < 0.001 |
| Education (year) | | | | Hyperlipidemia | | | |
| < =12 | 70.5 ± 9.5 | 20.8 ± 2.2 | 86.2 ± 9.9 | Yes | 69.1 ± 9.9 | 20.8 ± 2.3 | 89.8 ± 10.3 |
| >12 | 72.3 ± 8.3 | 21.4 ± 2.5 | 91.3 ± 9.8 | No | 72.1 ± 8.7 | 21.0 ± 2.2 | 93.1 ± 9.0 |
| p value | 0.244 | 0.698 | 0.021 | p value | 0.002 | 0.578 | 0.035 |
| Education of spouse (year) | | | | Rheumatic Disease | | | |
| ≤ 12 | 70.5 ± 9.5 | 20.9 ± 2.3 | 91.4 ± 9.8 | Yes | 66.2 ± 11.7 | 20.8 ± 0.9 | 86.0 ± 11.6 |
| > 12 | 72.3 ± 8.1 | 21.2 ± 2.3 | 93.6 ± 9.3 | No | 70.8 ± 9.3 | 20.9 ± 2.3 | 91.7 ± 9.7 |
| p value | 0.286 | 0.902 | 0.024 | p value | 0.116 | 0.949 | 0.116 |
| Having Job | | | | Severe Weight Loss | | | |
| Yes | 72.8 ± 5.7 | 20.9 ± 1.5 | 93.7 ± 6.2 | Yes | 67.8 ± 10.5 | 20.6 ± 2.2 | 88.5 ± 10.9 |
| No | 70.4 ± 9.7 | 20.9 ± 2.3 | 91.3 ± 10.1 | No | 70.8 ± 9.3 | 20.9 ± 2.3 | 91.8 ± 9.6 |
| p value | 0.022 | 0.951 | 0.011 | p value | 0.117 | 0.428 | 0.117 |
| Spouse having job | | | | Facing Violence | | | |
| Yes | 70.9 ± 9.0 | 20.9 ± 2.2 | 91.8 ± 9.4 | Yes | 67.8 ± 10.5 | 20.6 ± 2.0 | 88.4 ± 10.5 |
| No | 69.3 ± 11.1 | 20.8 ± 2.4 | 90.0 ± 11.6 | No | 72.7 ± 7.8 | 21.1 ± 2.4 | 93.9 ± 8.5 |
| p value | 0.269 | 0.501 | 0.131 | p value | < 0.001 | < 0.001 | < 0.001 |
| Being the Source of Family Income | | | | Hematological Disease | | | |
| Yes | 72.2 ± 8.5 | 20.9 ± 2.2 | 93.2 ± 8.9 | Yes | 68.5 ± 8.2 | 20.3 ± 1.8 | 89.1 ± 10.3 |
| No | 68.6 ± 10.0 | 20.8 ± 2.3 | 89.4 ± 10.4 | No | 71.1 ± 9.6 | 21.0 ± 2.3 | 92.4 ± 9.4 |
| p value | < 0.001 | 0.023 | < 0.001 | p value | 0.003 | 0.108 | 0.353 |
| Supplementary Insurance | | | | Hepatic Disease | | | |
| Yes | 70.9 ± 9.6 | 23.9 ± 2.3 | 91.9 ± 9.8 | Yes | 69.2 ± 11.9 | 20.8 ± 2.2 | 90.0 ± 12.2 |
| No | 69.8 ± 8.7 | 20.9 ± 2.3 | 90.6 ± 9.5 | No | 70.8 ± 9.0 | 21.9 ± 2.3 | 91.7 ± 9.4 |
| p value | 0.206 | 0.003 | 0.312 | p value | 0.603 | 0.036 | 0.312 |
| Inability to walk | | | | Osteoporosis | | | |
| Yes | 65.5 ± 12.8 | 20.1 ± 2.3 | 86.6 ± 13.1 | Yes | 68.4 ± 10.3 | 20.5 ± 2.2 | 88.9 ± 10.6 |
| No | 71.3 ± 8.6 | 21.1 ± 2.2 | 92.2 ± 9.0 | No | 72.4 ± 8.1 | 22.2 ± 2.3 | 93.6 ± 8.4 |
| p value | 0.004 | 0.020 | 0.015 | p value | < 0.001 | 0.103 | < 0.001 |
| Sleep Disorder | | | | Cardiac Disease | | | |
| Yes | 68.2 ± 9.4 | 20.1 ± | 88.9 ± 9.5 | Yes | 81.3 ± | 20.1 ± 1.7 | 87.5 ± 7.3 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2.2 | | | 13.9 | | |
| No | 73.6 ± 8.5 | 21.2 ± 2.3 | 94.8 ± 9.0 | No | 84.1 ± 13.6 | 20.9 ± 2.3 | 91.7 ± 9.8 |
| *p* value | < 0.001 | 0.012 | < 0.001 | *p* value | 0.126 | 0.705 | 0.215 |
| Chronic Pain | | | | Hypertension | | | |
| Yes | 69.3 ± 9.6 | 20.7 ± 2.3 | 90.0 ± 10.0 | Yes | 69.5 ± 10.0 | 20.9 ± 2.3 | 90.3 ± 10.6 |
| No | 73.3 ± 8.4 | 21.3 ± 2.1 | 94.6 ± 8.6 | No | 72.1 ± 8.3 | 20.9 ± 2.2 | 93.2 ± 8.3 |
| *p* value | < 0.001 | 0.024 | 0.011 | *p* value | 0.005 | 0.984 | 0.102 |
| Taking Medical Supplement | | | | Psychological Disease | | | |
| Yes | 74.5 ± 6.2 | 21.0 ± 2.4 | 95.5 ± 7.4 | Yes | 80.8 ± 10.9 | 20.5 ± 2.1 | 87.5 ± 9.7 |
| No | 70.2 ± 9.6 | 20.9 ± 2.2 | 91.1 ± 9.9 | No | 84.4 ± 14.3 | 21.0 ± 2.3 | 92.7 ± 9.5 |
| *p* value | < 0.001 | 0.804 | 0.030 | *p* value | 0.032 | 0.166 | 0.207 |
| Dermatological Disease | | | | Renal Disease | | | |
| Yes | 67.9 ± 9.1 | 20.4 ± 2.2 | 88.3 ± 9.7 | Yes | 69.2 ± 11.9 | 20.8 ± 2.4 | 89.6 ± 10.7 |
| No | 70.8 ± 9.4 | 21.9 ± 2.3 | 91.8 ± 9.7 | No | 70.8 ± 9.0 | 20.9 ± 2.2 | 92.0 ± 9.5 |
| *p* value | 0.336 | 0.034 | 0.147 | *p* value | 0.042 | 0.550 | 0.214 |

| Characteristic | Standardized ß | $p^1$ | Unstandardized ß | 95% CI[2] |
|---|---|---|---|---|
| QOL[3] | | | | |
| Sleep disorder | -0.15 | < 0.001 | -4.09 | (-5.86,-2.32) |
| Osteoporosis | -0.14 | < 0.001 | -3.25 | (-7.90,-2.59) |
| Gender (Female vs Male) | -0.13 | < 0.001 | -3.69 | (-5.47,-1.91) |
| Not being the source of family income | - 0.13 | 0.042 | -1.86 | (-3.66,-0.06) |
| CCQOL[4] | | | | |
| Sleep disorder | -0.21 | 0.028 | -4.01 | (-6.58,-1.43) |
| Facing to violence | - 0.21 | 0.031 | -2.16 | (-5.34,-0.25) |
| Gender (Female vs Male) | -0.17 | 0.007 | -4.11 | (-7.10,-1.11) |
| Migraine | -0.14 | 0.006 | -5.68 | (-9.72,-1.63) |
| Psychological Disease | -0.13 | 0.012 | -0.95 | (-2.48,-0.80) |
| Not being the source of family income | -0.09 | 0.018 | -2.37 | (-5.73,-0.53) |
| MQOL[5] | | | | |
| Sexual problem | -0.17 | 0.001 | -1.15 | (-1.82,-0.48) |
| Facing to violence | -0.16 | 0.001 | -0.80 | (-1.82,-0.48) |
| Not having supplementary insurance | -0.15 | 0.002 | -0.83 | (-1.36,-0.30) |
| Inability to walk | -0.14 | 0.006 | -1.02 | (-1.76,-0.29) |
| Migraine | -0.12 | 0.013 | -0.76 | (-1.37,-0.16) |

**Figure 1**

Correlation between the total score of core components of quality of life and each of its seven scales in the elders
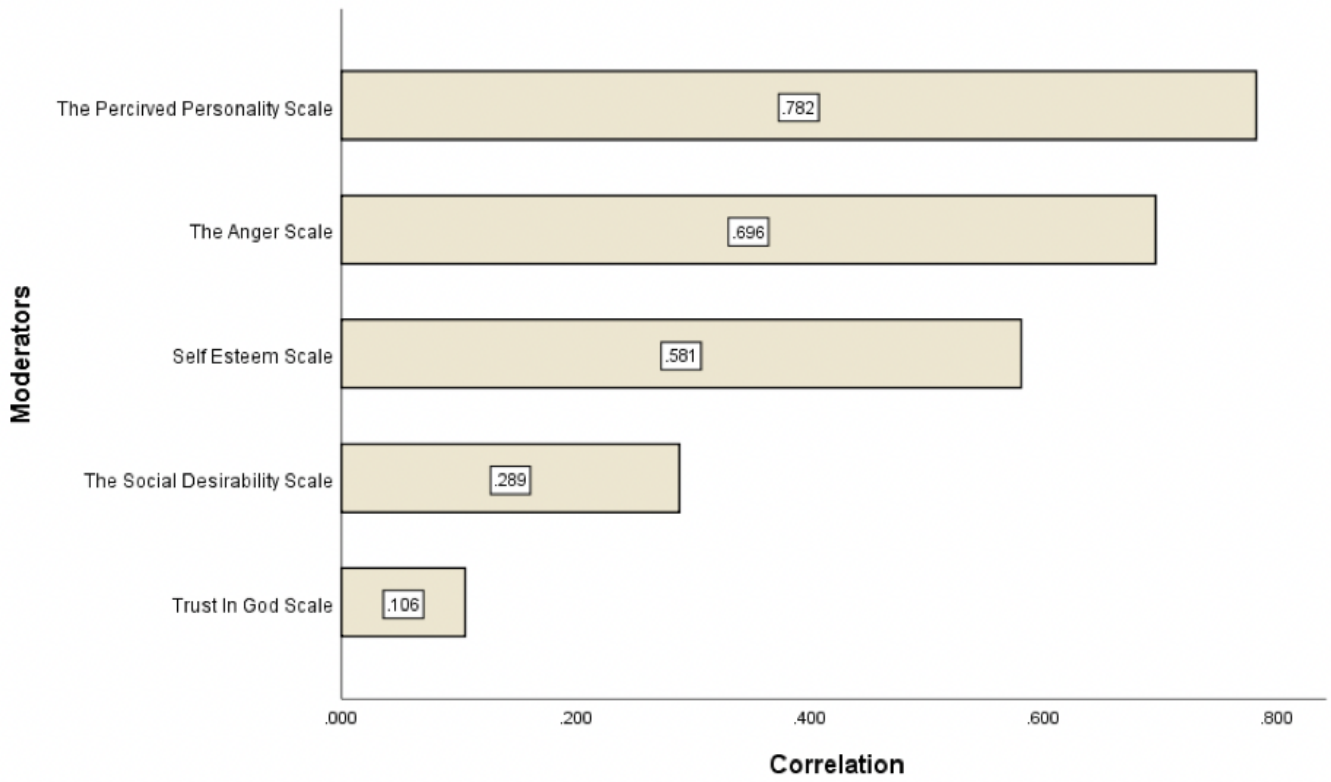
**Figure 2**

Correlation between the total score of moderator components of quality of life and each of the its five scales in the elders