# Quality of Life in Elderly Iranian Population Using Leiden-Padua Questionnaire: A Systematic Review and Meta-analysis

## Abstract

The world population is getting old rapidly; the aging population is the new phenomenon in Iran too. The aim of this meta-analysis was to estimate the overall and subscales mean score of quality of life (QOL) based on the Leiden-Padua (LEIPAD) questionnaire among the elderly population of Iran. The major international and national databases including; Medlin, Scopus, Science Direct, SID, MagIran, IranMedex, and Irandoc was searched. All cross-sectional studies, which measured the QOL among the elderly population in Iran using the LEIPAD questionnaire, were included. Furthermore, we used the following key words, "Quality of life," "aging," "aged," "elderly," and "Iran." Of 2155 records, four articles reminded for the meta-analysis, which involved 628 participants with a mean age of 71.73 ± 4.28 years. The mean scores of QOL in each scale were as follows: 10.80 (9.30–12.31) for physical health, 13.51 (6.81–20.21) for self-care scale, 8.60 (5.07–12.14) for depression and anxiety, 12.48 (10.39–14.58) for cognitive functioning scale, 2.19 (0.67–3.72) for sexual functioning scale, 10.98 (5.87–16.09) for life satisfaction scale, and 5.90 (3.64–8.16) for social desirability scale. This study revealed that the total QOL for the elderly population is relatively low in Iranian society. It is appeared to provide social support, and upgrade their QOL seems to be essential for the elderly population.

**Keywords:** *Elderly, Iran, Leiden-Padua questionnaire, meta-analysis, quality of life*

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## Introduction

Aging is a biologic and inevitable phenomenon, with changes in the physical, mental, and social dimensions of life.[1] Each year about 100,000 deaths occurred due to aging-related diseases globally.[2] According to the World Health Organization (WHO), the world population is getting old rapidly, and it is expected to double from 840 million in 2013 to 2 billion elderly people in 2050.[3] The United Nation, categorized the countries with 7% or more population that is elderly as countries that involved elderly population.[4] Therefore, Iran based on the census in 2011 with 8.26% of ≥60 aged people, was added to the countries that involved aging population.[5] The ageing population is the new phenomenon in Iran. Aged people are face to diseases, syndromes and illness more than younger adults. Aging is a known risk factor for more chronic diseases.[1] The importance of increasing the aged population from the viewpoint of public health is increasing the risk of chronic diseases and disability, and consequently the medical expenses imposed on families and communities, and decreasing of their quality of life (QOL).[6]

The standard definition of QOL provided by the WHO in 1997 is "the understanding of people from their position in life in term of culture, appraisal, goals, hope, standards, and their preferences,"[7] although in detail, the QOL constitutes major aspects of human life, containing physical, social, emotional, and spiritual wellbeing.[8]

There are several different health-related or general tools for measurement of QOL, such as SF-36 questionnaire, WHO-QOL-BRIEF questionnaire, and Leiden-Padua (LEIPAD) questionnaire.[8,9] LEIPAD is the specific tool for the assessment of the QOL in the elderly and was used first in Italy (Padua and Brescia), the Netherlands (Leiden), and Finland (Helsinki).[8] Up to now, several studies were conducted to investigate the QOL among the elderly population in Iran.[10-15] However, the results of them were inconsistent. We designed this meta-analysis to estimate the overall mean score of QOL and its subscales (i.e., physical function, self-care, depression and anxiety, cognitive

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functioning, sexual functioning, and life satisfaction) based on the LEIPAD questionnaire among the elderly population of Iran.

## Methods

Measurement of outcome: LEIPAD is a term of subjective and international appraisal questionnaire, especially designed (in 1998) to assess QOL in the elderly people. It is the abbreviated term of an acronym deriving from two first of three involved universities; LEIDen (in the Netherlands), and PADua (in Italy). This questionnaire was designed and constructed by the European office of WHO. It encompass 49 self-assessment items and seven subscales (included; physical function, self-care, depression and anxiety, cognitive functioning, sexual functioning, life satisfaction, and social desirability). This questionnaire was validated in various settings. The range of score for each scale in LEIPAD questionnaire in between 0 and 21, 0 indicating lower score and 21 highest score of QOL.[8]

## Searching

The major international and national databases were searched with the following key words, "Quality of life," "aging," "aged," "elderly," and "Iran." The international databases such as Medline (up to August 2016), Scopus (up to August 2016), and Science Direct (up to August 2016) were used. Furthermore, the Iranian databases, including Science Information Database (up to August 2016), MagIran (up to August 2016), IranMedex (up to August 2016), and Irandoc (up to August 2016), were searched. As well as, for obtaining the additional articles, we checked the reference lists of all included studies and the corresponding authors of selected studies were contacted. We searched the related websites and meetings, too.

These websites included as follows as; Elderly Health Research Center (http://emri.tums.ac.ir/pages/mainpage.asp?I=S57M5P2C1), secretariat national council of the elderly (http://snce.ir/) and state welfare organization of Iran (http://www.behzisti.ir/) and the congress aging issues in Iran and the world (http://www.ensani.ir/fa/1233/magazine.aspx).

## Criteria for including studies

All cross sectional studies, which addressed the QOL among the healthy elderly population in Iran using the LEIPAD questionnaire, were included regardless time and language of study. Elderly population in Iran was considered as study population regardless of gender and age. The main outcome of this study was the mean score of QOL.

Two authors (PCh and ADI) searched the title and abstract of retrieved studies independently, then the full text of included studies to elicit the studies that met the eligibility criteria (that mentioned earlier) for this meta-analysis were reviewed. Any disagreement between authors in selection

of studies was resolved by discussion and adjudication of third author. The overall agreement between the authors was 86.76%, and the kappa statistic was 72.44%. In the cases of face to missing data, we contact with the corresponding authors of included studies. We made contacts with all corresponding authors, and requested them for newer related paper if they had. We extracted the variables from included studies for the analysis as follows: Publication year, location of study (cities), mean age, sex, residence of participants, sample size, mean score of QOL in the seven scales (physical function, self-care, depression and anxiety, cognitive functioning, sexual functioning, and life satisfaction), and their standard deviations and standard errors.

### Validity assessment

Seven selected items from STROBE[16] checklist were used for assessing the risk of bias and quality of reporting. These items address the following issues: (a) present the key elements of study design; (b) explain the inclusion and exclusion criteria; (c) define the outcome, that is, QOL; (d) explain how arrived at the sample size; (e) describe the setting of studies (location and dates); (f) report the precision of estimates, that is, standard deviation or confidence interval (CI); and (g) explain the statistical methods for data analysis. Studies that satisfied all mentioned criteria were classified as low risk of bias. Studies that did not meet one item were classified as moderated risk of bias, and studies that did not meet more than one item were classified as high risk of bias.

### Heterogeneity and publication bias

The statistical heterogeneity was explored using the Chi-squared test at the 10% significance level. Furthermore, the heterogeneity across the included studies were quantified using $I^2$ statistic.[17] The variance of between studies was estimated using tau-squared statistics.[18] According Higgins criteria the value of under 30% is considered as the heterogeneity might not be important.[17]

### Statistical analysis

The random effect model[19] was used for data analysis, and results was reported with 95% CI. Inverse variance (IV) methods were used for calculating of 95% CI of estimations.

In addition, the subgroup analysis was accomplished according to quality of included studies. The comparison of means in the subgroups have been conducted via Z-test with 95% CI.[20]

Meta-analysis was performed to obtain a pooled mean score of QOL with 95% CI.

We performed the sensitivity analysis for the determine the influence of individual studies on the pooled mean score of QOL.[21] Both Review Manager 5[22] and Stata 11 (StataCorp, College Station, TX, USA) were employed for data analysis.

## Results

We retrieved 2155 records, 470 studies were excluded because of repetition, 1000 references were excluded because not related to the objective of review, and 681 references excluded were not eligible to include the meta-analysis after checking full text. Finally, four articles[11,13,15,22] reminded for the meta-analysis [Figure 1 and Table 1].

It is noteworthy that we did not capture any related study via websites in the method section.

One study[22] reported QOL based on residence of people (personal home, private sanatorium and governmental sanatorium) so considered as three independent studies. In addition, another study[15] reported QOL based on gender separately so considered as two independent studies. Ultimately, two studies[11,13] reported the QOL totally without stratification, therefore we had seven independent estimates of QOL that included in this meta-analysis, which involved 628 Iranian elderly participants with a mean age of 71.73 ± 4.28 years.

The one study[11] did not report the mean score of QOL in the seven scales and just report the QOL totally.

In the quality assessment, these findings obtained as follows: 75% of the studies (three studies) classified in the low risk of bias category. The other (one study, 25%) was classified in the moderate risk of bias. No studies were classified in high risk bias group.

The heterogeneity between results was assessed using the Chi-square test and the $I^2$ statistics. The results of Chi-square test indicated that findings for all seven main subscales were significantly heterogeneous (physical function: $I^2 = 95\%$, $P < 0.001$), (cognitive functioning: $I^2 = 97\%$, $P < 0.001$), (depression and anxiety, $I^2 = 99\%$, $P < 0.001$), (life satisfaction: $I^2 = 100\%$, $P < 0.001$), (social desirability: $I^2 = 99\%$,
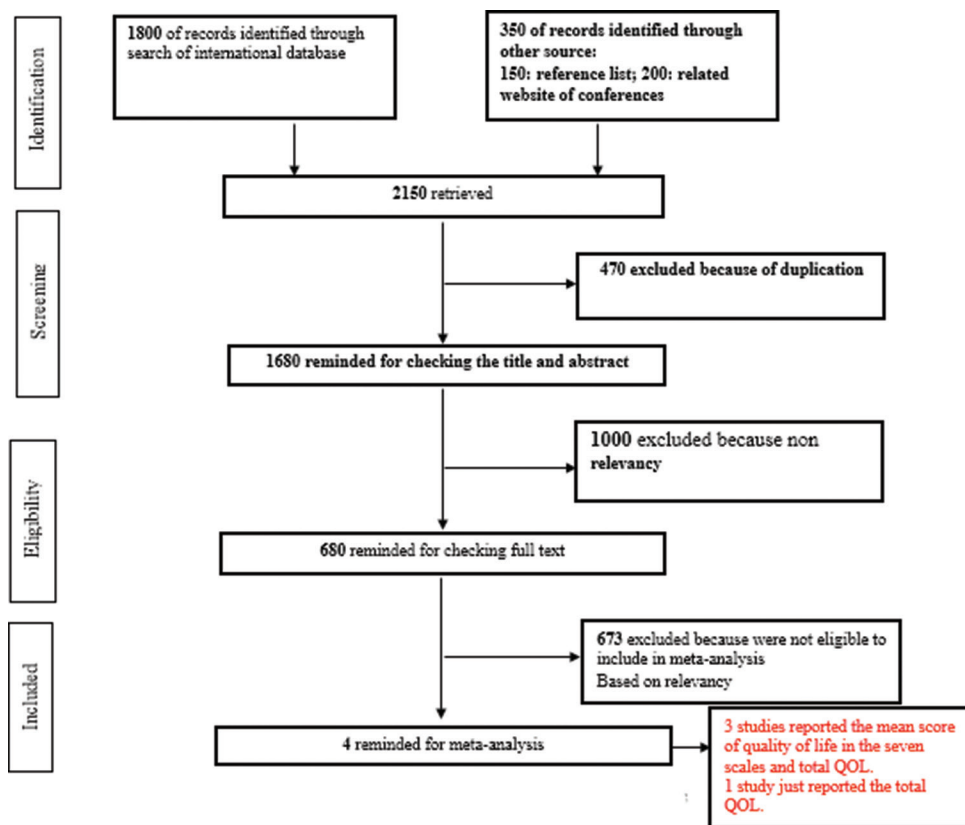


**Figure 1: Flow chart of study identification process**

**Table 1: Characteristic of included studies in meta-analysis**

| Author | Year | City | Sex | Resident | Sample Size | Habitat | Mean age |
|---|---|---|---|---|---|---|---|
| Bazrafshan | 2009 | Shiraz | Female | Nursing Home | 232 | City | 65.68 |
| Hesamzadeh | 2010 | Tehran | Male/Female | Nursing Home/Home | 96 | City | 74.77 |
| Nabavi | 2014 | Bojnurd | Male/Female | Nursing Home/Home | 200 | City | 68.91 |
| Saber | 2015 | Kerman | Male/Female | Nursing Home | 100 | City/Rural | 70.01 |

$P < 0.001$), (self-care: $I^2 = 100\%$, $P < 0.001$), (sexual function: $I^2 = 100\%$, $P < 0.001$), and (life satisfaction: $I^2 = 100\%$, $P < 0.001$).

The pooled mean scores of QOL for each scales were as follow: 10.80 (95% CI: 9.30–12.31) for physical health, 13.51 (95% CI: 6.81–20.21) for self-care scale, 8.60 (95% CI: 5.07–12.14) for depression and anxiety, 12.48 (95% CI: 10.39–14.58) for cognitive functioning scale, 2.19 (95% CI: 0.67–3.72) for sexual functioning scale, 10.98 (95% CI: 5.87–16.09) for life satisfaction scale, and 5.90 (95% CI: 3.64–8.16) for social desirability scale. The maximum and minimum pooled mean scores were obtained from self-care scale and sexual functioning, respectively [Figures 2 and 3]. Also, the pooled mean scores of the total QOL was 65.61 (95% CI: 51.75–79.46) [Figure 4].

We developed a subgroup analysis by the quality of reporting the studies. The studies with low risk of bias had a higher mean score in all scales of QOL including physical function (12.35 vs. 9.22), self-care (14.89 vs. 12.29), depression and anxiety (9.20 vs. 8.22), cognitive functioning (13.79 vs. 11.37), sexual functioning (3.37 vs. 1.02), life satisfaction (7.45 vs. 4.34), social desirability (7.45 vs. 4.34), and also in total QOL (72.76 vs. 56.20).

Although in the sexual scale, the difference was not considerable, and both males and females had equal status. These differences were significant only in two subgroups (physical health and sexual functioning; $P = 0.02$ and 0.04, respectively), and not significant in five other subgroups [Table 2].

Since there were not enough studies in age and residence group, the subgroup analysis by these variables not conducted. Also for the same limitations (insufficient observation), the assessment of publication bias in these subgroups was not executable.

The result of sensitivity analysis revealed the studies of Nabavi 2014, *et al*. and Hesamzadeh 2010 *et al*. had most influence on the mean score of QOL, respectively. Also, the study of Saber 2014, *et al*. had the lowest effect.

## Discussion

Our results indicated the maximum and minimum-pooled mean score were related to the self-care ($13.51 \pm 3.41$) and sexual functioning ($2.2 \pm 0.77$) scales. The lower mean score of sexual functioning QOL may be due to aging problems. Sexual function adversely affected by aging. On the other hand, menopause affect sexual function in aged females.[23] In aged men reducing the androgen levels, affected sexual activity, and decreased sexual interest in men.[24] Other reason of lower sexual functioning QOL may be due to lower physical activity and exercise. Exercise has positive effect on sexual functioning and other scales of QOL.[25] On the other hand, the highest mean score of self-care QOL may be due to receive the health care services and attention to their physician orders. In the recent meta-analysis that conducted by Kuhi *et al*. in 2015,[26] it was revealed that the overall mean score of QOL in the general population was 76.9. In their study, WHO-QOL-BRIEF tools was used to measure the QOL, whereas we used the LEIPAD questionnaire.

Our study showed that the pooled mean score of physical function QOL was 10.80. According LEIPAD scoring of QOL physical function QOL in Iranian elderly people is intermediate. Many factors affecting physical functioning in the elderly people such as lower physical activity, aging, socioeconomic status.[25,27] The pooled mean score of

### Table 2: Subgroup analysis of mean score of quality of life and seven scale by quality of studies

| Domains | Variables | Categories | Pooled Mean | 95% CI | I² | P* | P** |
|---|---|---|---|---|---|---|---|
| Physical Health | Risk of Bias | Low | 12.35 | [10.09,14.60] | 0.97 | <0.001 | 0.03 |
| | | Moderate | 9.22 | [7.60, 10.84] | 0.84 | <0.001 | |
| Cognitive Functioning | Risk of Bias | Low | 13.79 | [9.51, 18.07] | 0.99 | <0.001 | 0.27 |
| | | Moderate | 11.37 | [10.80, 1.94] | 0.00 | 0.39 | |
| Satisfaction of Life | Risk of Bias | Low | 7.45 | [3.44, 11.47] | 0.100 | <0.001 | 0.16 |
| | | Moderate | 4.34 | [2.69, 6.00] | 0.92 | <0.001 | |
| Self-care | Risk of Bias | Low | 14.89 | [3.17, 26.60] | 0.100 | <0.001 | 0.68 |
| | | Moderate | 12.29 | [8.34, 16.24] | 0.94 | <0.001 | |
| Depression and Anxiety | Risk of Bias | Low | 9.20 | [2.74, 15.65] | 0.100 | <0.001 | 0.77 |
| | | Moderate | 8.22 | [7.59, 8.85] | 0.03 | <0.001 | |
| Sexual Functioning | Risk of Bias | Low | 3.37 | [1.18, 5.56] | 0.100 | <0.001 | 0.04 |
| | | Moderate | 1.02 | [0.46, 1.59] | 0.67 | 0.05 | |
| Social Desirability | Risk of Bias | Low | 7.45 | [3.44, 11.47] | 0.100 | <0.001 | 0.16 |
| | | Moderate | 4.34 | [2.69, 6.00] | 0.92 | <0.001 | |
| Total Quality of Life | Risk of Bias | Low | 72.76 | [51.80, 3.72] | 0.100 | <0.001 | 0.17 |
| | | Moderate | 56.20 | [44.98,67.41] | 0.92 | <0.001 | |

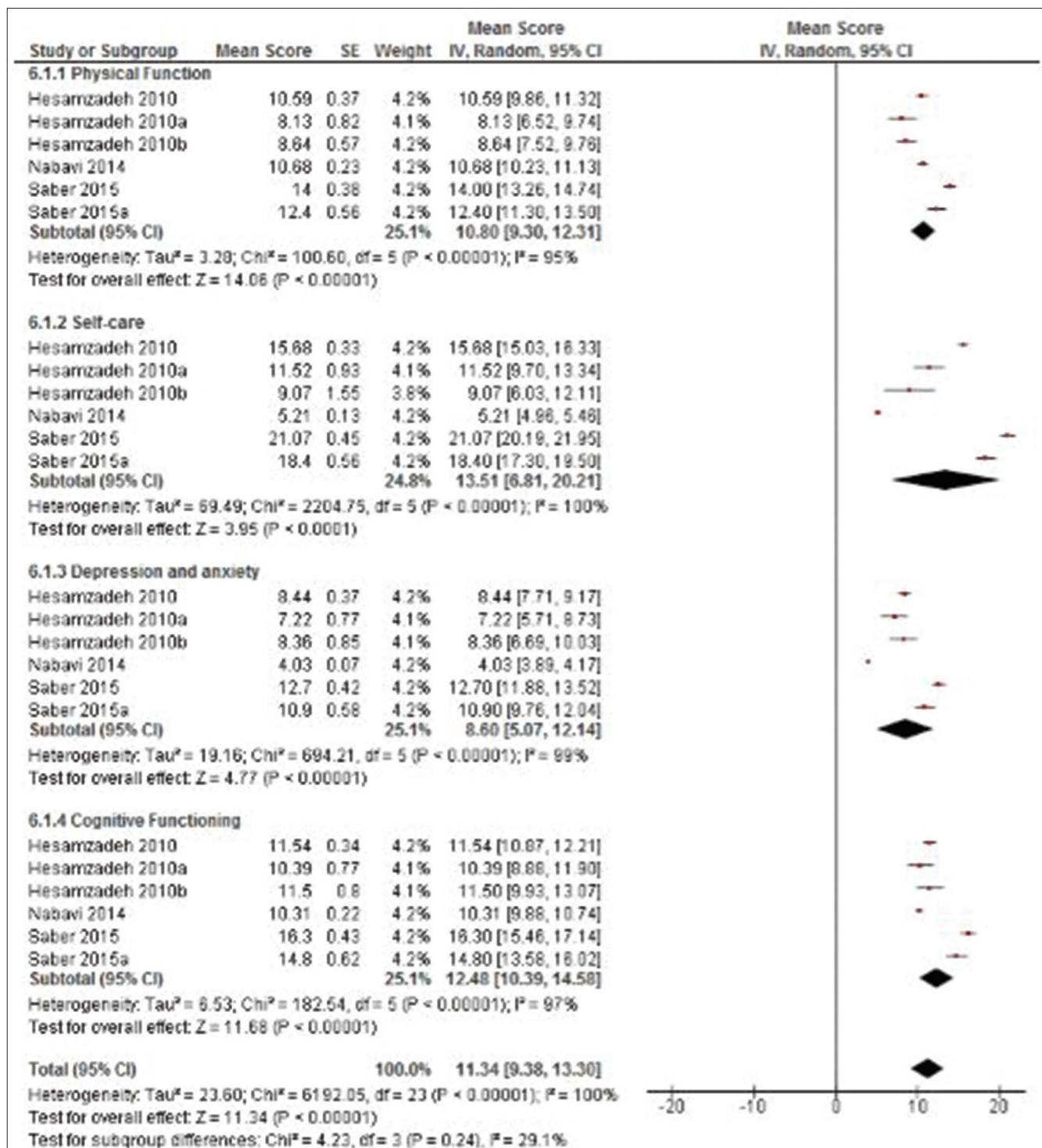*P Value of Cochran Test. **P value for subgroup differences

**Figure 2:** Forest plot of pooled mean score of quality of life in physical function, self-care, depression and anxiety, and cognitive functioning scales of quality of life and in total quality of life

depression and anxiety was 8.60, that this score was low in Iranian elderly people. A reason for low mean score for depression and anxiety may be living alone without the presence of children and other family members. More of elderly people in the included studies lived in nursing home, so living in nursing home may affected this scale of QOL among Iranian elderly people. Results of a cross-sectional study in the north of Iran showed that the proportion of loneliness was 18.6% and social loneliness was 29.4%, the prevalence of old people among participants was 39.9%.[28] Another study in nursing home in Tehran showed that prevalence of moderate and severe depression among elderly people were 29.5% and 10.7%, respectively.[29] In the other hand, the mean score of life satisfaction and
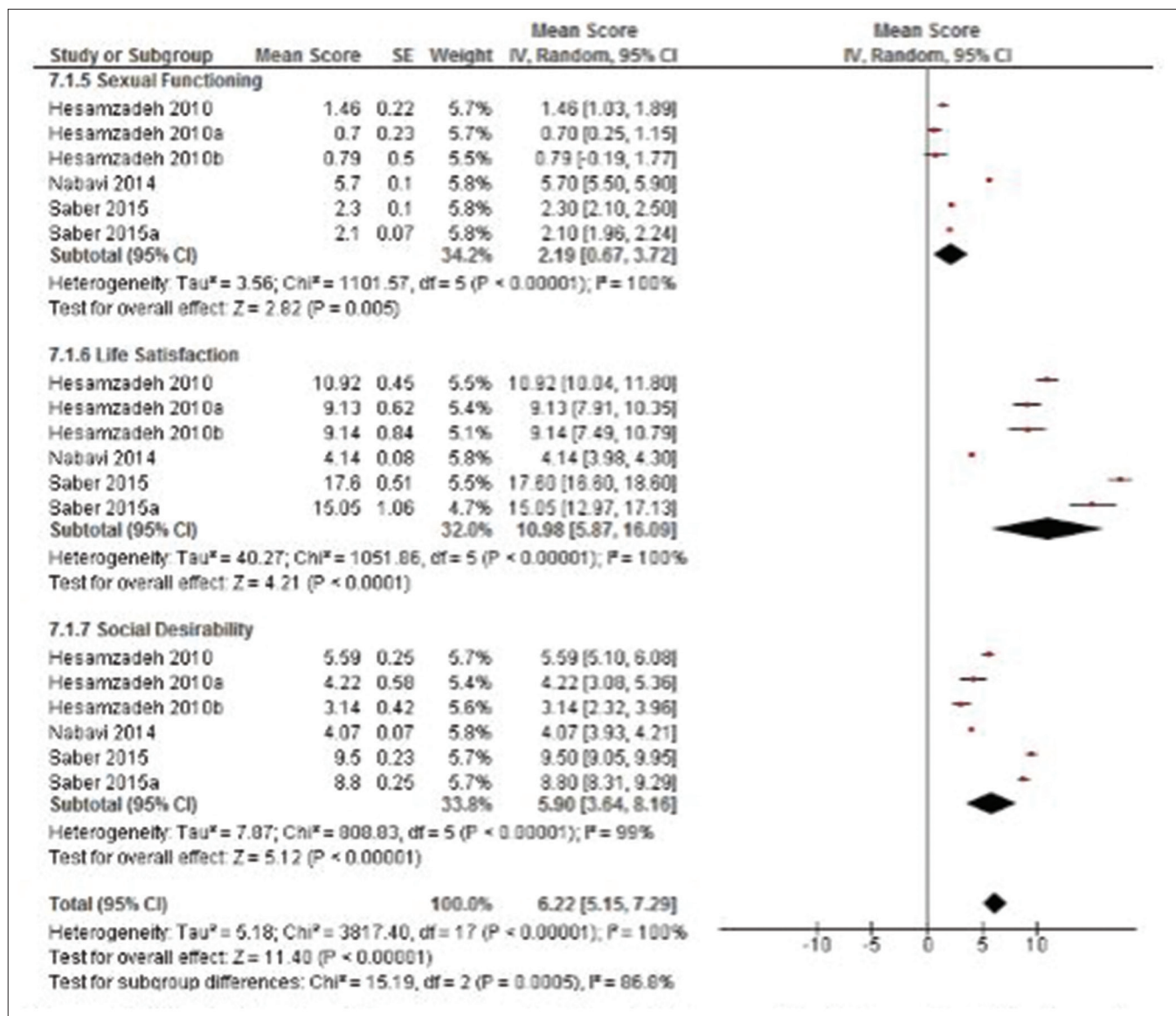
**Figure 3:** Forest plot of pooled mean score of quality of life in sexual functioning, life satisfaction and social desirability scales of quality of life and in total quality of life

social desirability scales were 10.98 and 5.90, respectively. Therefore, the low mean scores of depression and anxiety, life satisfaction, and social desirability scales of QOL among Iranian elderly people may associate with the high prevalence of depression and loneliness in elderly population.

Our result indicated that a very high considerable heterogeneity and between-study variance measures the extent of heterogeneity. These findings were not very unfamiliar in descriptive studies, because the studies were different in participants, setting, as well as location of studies.[30] However, we pooled the results of included studies using random effect model in order to estimate the overall QOL based on LEIPAD questionnaire. Because of public health importance of QOL for elderly population and health policy makers the results of meta-analysis may be a useful guide for health decision-making so it is

possible to pooling the results of heterogeneous studies.[31] On the other hand, the interpretation of a Chi-square test for heterogeneity tests in meta-analysis should be taken with more caution, because the Chi-square test has low power when the number of included studies (sample size in meta-analysis) is small. Also, the capability of this test is high in detecting a small heterogeneity that might be practically unimportant.[32]

In our meta-analysis, the studies with better quality had higher mean scores of QOL in all seven scales, although these differences were statistically significant only for physical health status. However, this does not mean that studies with lower quality underreported the mean score of QOL, because only just one study classified as a moderate quality, and all three other studies were the low risk of bias. Therefore, we did not justice precisely.
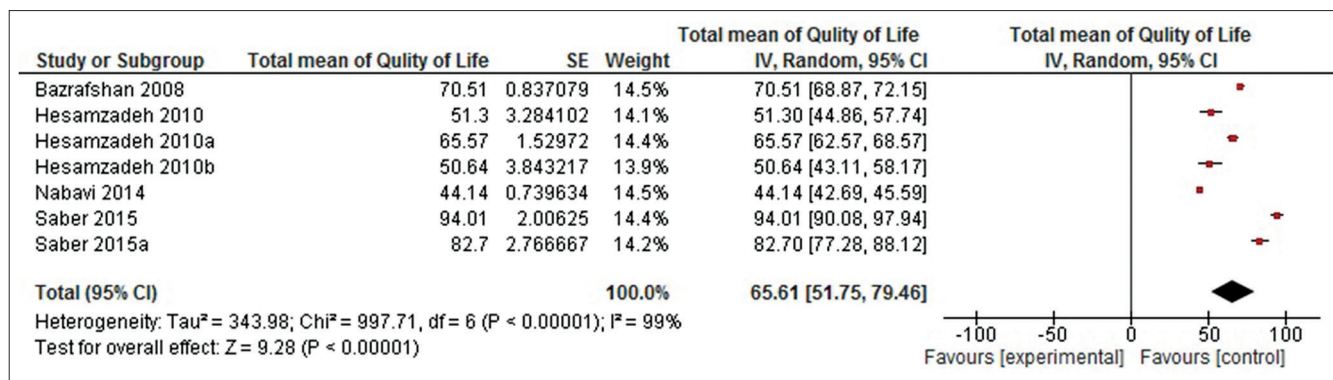
**Figure 4: Forest plot of pooled mean score of total quality of life**

We ignored the comparisons of results in women and men separately, because among the captured studies, only two studies (Saber 2014, Bazrafshan 2008) were estimated the means of QOL separately by sex, and our results restricted to these studies.

A limitation in meta-analysis was that some of variables such as gender, marital status, the level of education, the situation of the elderly employment, income, and living status (in personal home or in a nursing home) were not considered in the analysis, Because the primary studies that captured in this meta-analysis did not include these variables in their results. Therefore, we recommended that to reach a precise and fair conclusion, the researcher in the field of QOL improve their research considering the important demographic variables in the initial studies.

## Conclusions

This study revealed that the total QOL for the elderly population is relatively low in Iranian society in comparison with Iranian general health population. It appears to provide social support, and upgrade their QOL would be essential for the elderly population.

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### Conflicts of interest

There are no conflicts of interest.

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