



# Well-Being, Mental Health, General Health and Quality of Life Improvement Through Mindfulness-Based Interventions: A Systematic Review and Meta-Analysis

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## Abstract

**Context:** Mindfulness-based interventions have shown promising therapeutic outcomes in improving well-being, mental health, general health, and quality of life; however, findings in this regard are inconsistent. The present study aimed at clarifying this inconsistency in the literature focusing on the Iranian studies through a systematic review and meta-analysis study.

**Evidence Acquisition:** The databases of Pubmed, Scopus, Doaj, EBSCO, Iranmedex, MagIran, SID, and Comprehensive Human Sciences Portal, and additional resources were searched using the set terms of “mindfulness” OR “mindfulness-based cognitive therapy” OR “MBCT” OR “mindfulness-based stress reduction” OR “MBSR” AND “intervention” AND “well-being” OR “health” OR “quality of life” and the time limit of the records was set between March 2008 and May 2017. The language of the search was restricted to English and Farsi. The studies that conducted on Iranian populations were selected in this review, only. Thirty-five studies conducted on 3013 subjects were assessed. Cochrane Q-test and I-squared index were used to detect the heterogeneity among results, and fixed effect model with a 95% Confidence Interval (CI) was applied. The effect size of mindfulness-based interventions on well-being, mental health, general health, and quality of life improvement, measured by Hedge’s g ratios, were respectively 1.54, 1.08, 0.89, and 1.87. Results: The findings showed that the effect size of mindfulness-based interventions on well-being, mental health, general health, and quality of life improvement were of high magnitude, according to the Cohen’s table.

**Conclusion:** Mindfulness-based interventions effectively improved well-being, health, and quality of life.

**Keywords:** Mental Health, Meta-Analysis, Mindfulness, Quality of Life

## 1. Introduction

During the last decades, psychologists have largely ignored well-being and quality of life, and instead their main focus has been on mental disorders and issues, such as depression and anxiety (1). In 1998, Seligman et al. introduced positive psychology, as a new domain in psychology. This approach expanded the focus of clinical psychology beyond merely manifestation and treatment of unpleasant symptoms of a disorder. Under this approach, psychotherapy not only aims at improving the symptoms of a disorder, but also tries to improve the well-being of individuals (2, 3).

Mindfulness is one of the treatments of positive psychology proposed by Kabat-Zinn (4). Mindfulness-based interventions have shown promising therapeutic outcomes

for several psychological and physical disorders, such as chronic pain, depression, postpartum depression, anxiety, and addictions (5-20). This intervention aims at alleviating pathogenic agents, while also emphasizing on the capacities of mindfulness-based interventions to optimize psychological and behavioral functioning. This treatment is conceptualized as improving well-being and has become popular among scientists during the past decade (21). Apparently, as mindfulness components are improved, well-being is promoted (22, 23). However, results of previous researches are contradictory. The findings of a meta-analysis conducted by Sin et al. (24), Khoury et al. (25) and Chiesa et al. (26) presented a moderate effect size for MBCT and MBSR. In a systematic review and meta-analysis by Goyal et al. (27) weak evidence was indicated regarding the effects of mindfulness meditation approaches on positive

mood and quality of life-related mental health. The results of another meta-analysis conducted by Spijkerman et al. (28) demonstrated that online mindfulness-based interventions had a slight influence on well-being ( $g = 0.23$ ). Also, Eberth and Sedlmeier (19) performed a meta-analysis on 38 studies that had evaluated the effects of mindfulness meditation on psychological well-being. They concluded that MBSR had the greatest effect on attaining higher psychological well-being.

In addition, several studies have been conducted on the effects of mindfulness on well-being, mental health, general health, and quality of life improvement in Iran. However, there is no comprehensive systematic review conducted on the findings of existing studies from Iran. Therefore, the present study aimed at performing a systematic review of studies conducted on the effects of mindfulness-based interventions on well-being, mental health, general health, and quality of life improvement through a systematic review and meta-analysis study. The main focus of this study was reviewing researches conducted on Iranian samples.

## 2. Evidence Acquisition

### 2.1. Data Source and Search Strategy

Scientific records were retrieved by a systematic search of several bibliographic databases and the last search was updated on October 30th, 2017. The databases of PubMed, Scopus, DOAJ, EBSCO, Iranmedex, MagIran, Scientific Information Database SID, Comprehensive Human Sciences Portal, and additional resources were searched using set terms of (“mindfulness” OR “mindfulness training” OR “mindfulness-based cognitive therapy” OR “MBCT” OR “mindfulness-based stress reduction” OR “MBSR” OR “mindfulness-based relapse prevention” OR “MBRP”) AND “intervention” AND (“well-being” OR “general health” OR “mental health” OR “quality of life”). The time limit of the records was set as March 2008 to May 2017. The language of search was restricted to English and Farsi. Only studies conducted on Iranian populations were selected in this study. The titles and abstracts of all the retrieved records, identified by the search strategy, were carefully reviewed by 2 authors and the relevant records with full texts available were selected for further assessments. The reference lists of the selected records were also checked manually to identify additional eligible studies to be included in the full analysis. Furthermore, to find existing grey literature, an extra search was performed on Google. After finding related titles, the references of all of the included studies were explored to identify additional studies.

### 2.2. Study Selection

According to the inclusion criteria, 3013 articles were selected. Overall, 2854 articles were excluded due to duplication and no access to full-texts, and 159 remained in the next step, 96 of which were then excluded due to lack of relevance (non-Iranian population, abstract available only, presented at conferences and seminars, letter to editors and case report) and 63 remained. Furthermore, 30 articles were excluded due to quality assessment through the full text. Two papers were added from references. Finally, according to the exclusion criteria, 35 papers remained in the study.

### 2.3. Inclusion and Exclusion Criteria

According to the PRISMA guidelines for reporting a systematic review, the selection and screening of studies for inclusion or exclusion were performed independently by two authors, at the end of each level of screening and disagreements between the authors were resolved by mutual discussions. The Kappa coefficient was 75%.

In this study, only original articles were eligible if they evaluated the effectiveness of any type of mindfulness-based interventions (MBCT, MBSR, etc.) regarding the improvement of well-being, general health, mental health, and quality of life in clinical or non-clinical populations (Table 1)

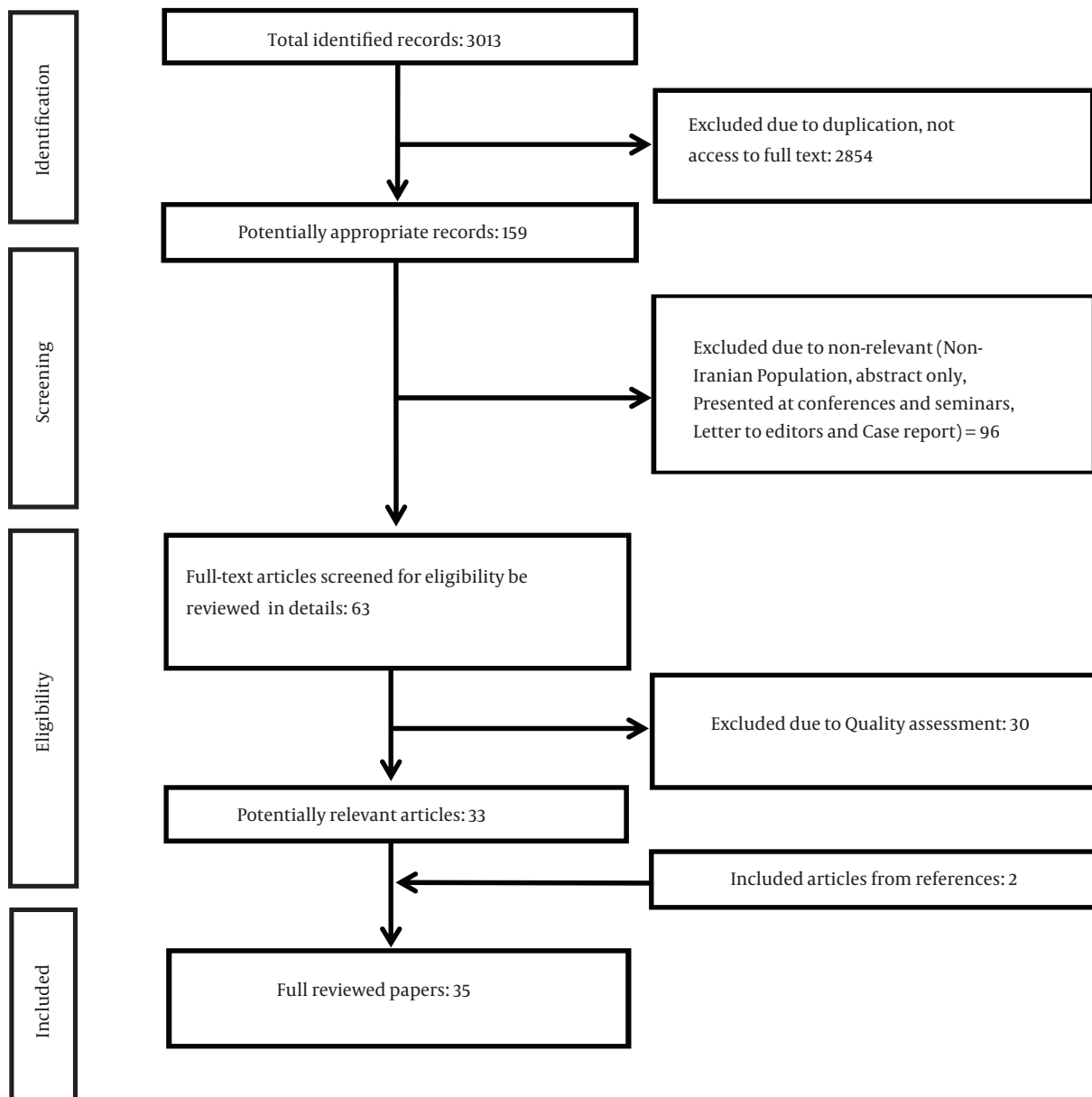
Exclusion criteria: 1) duplicated studies, 2) non-original studies, 3) studies with non-Iranian samples, 4) studies that did not report a specific sample size, and 5) studies without an experimental research group.

### 2.4. Data Extraction

In this study, researchers independently evaluated all studies derived from the above databases and then compared their results. The required data (author's last name, study title, publication year, study settings, dependent variable, tools, treatments, and sample size) with corresponding 95% confidence intervals were extracted from all documents.

### 2.5. Quality Assessment

Cochran's risk of bias assessment tool was used for quality assessment of each included paper (29) and the following bias risks were evaluated: Random sequence generation (selection bias), allocation concealment (selection bias), accurate measurement independent variable (performance bias), incomplete outcome data, missing data or loss during the intervention (attrition bias), selective reporting (reporting bias), timing of outcome assessments, and other biases. Each bias risk for each paper was rated as high, moderate, and low. High and moderate risks were



**Figure 1.** The PRISMA Flowchart of the Study Design Process

scored as zero and low risk as one. Articles with a score of more than 6 were categorized as low risk studies.

### 2.6. Statistical Analysis

Data analysis was performed using the Comprehensive Meta-Analysis Software (CMA version 2.0). The heterogeneity test was performed using Cochran's Q test and I-Squared (ranges from 0% to 100%). According to the result of the heterogeneity test (Table 1), the fixed-effect model was used

for determining Hedge's g in the studies.

Sensitivity analysis was conducted to assess the sensitivity of each study by sequential omission of each study. Publication bias was checked by funnel plots (Figure 3).

### 3. Results

A total of 3013 papers were identified in the databases. After removing duplications and irrelevant articles, 159 pa-

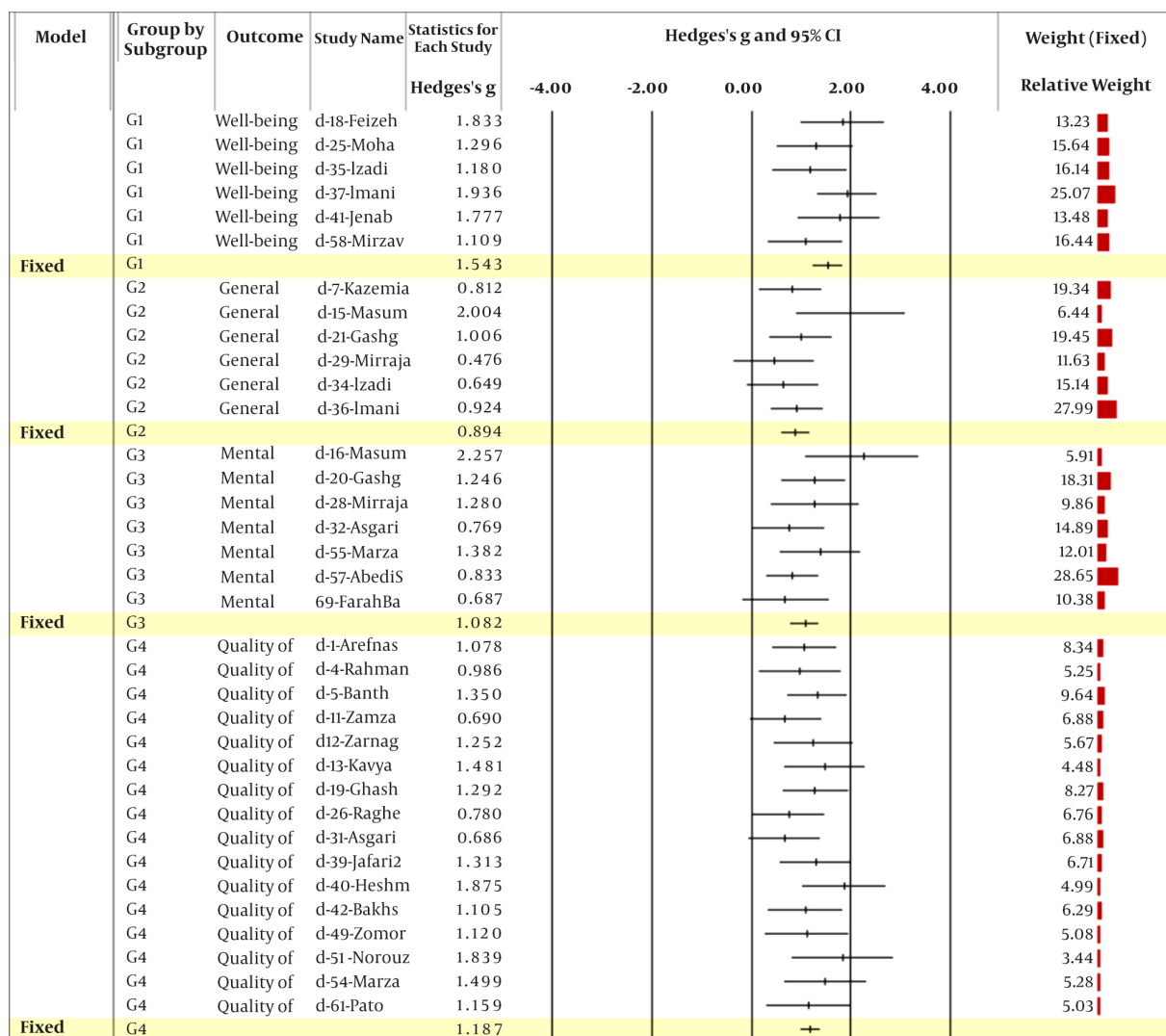


Figure 2. Effects of Mindfulness-Based Interventions on Well-Being, Mental Health, General Health and Quality of Life

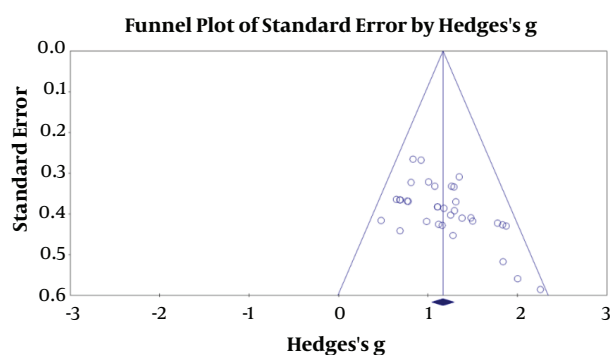
pers remained for screening. The characteristics of studies are presented in Table 1. At each level of screening, 35 full-text articles remained for the meta-analysis (Figure 1). Based on the heterogeneity indices for well-being (I-Squared = 0%, Q = 4.94, and P value = 0.4) and the low observed heterogeneity, the effectiveness of mindfulness-based intervention on well-being, by using a fixed model, was estimated as 1.54 (95% CI: 1.24 to 1.85). Based on the heterogeneity indices for general health (I-Squared = 10.59%, Q = 5.59 and P value = 0.3) and the low observed heterogeneity, the effectiveness of mindfulness-based intervention for general health by using fixed model was estimated as 0.89 (95% CI: 0.62 to 1.17).

Based on the heterogeneity indices for mental health

(I-Squared = 19.38%, Q = 7.44, and P value = 0.2) and the low observed heterogeneity, the effectiveness of mindfulness-based intervention for mental health by using a fixed model was estimated as 1.082 (95% CI: 0.80 to 1.36).

Based on the heterogeneity indices for quality of life (I-Squared = 0%, Q = 11.07, and P value = 0.7) and the low observed heterogeneity, the effectiveness of mindfulness-based intervention on general health by using a fixed model was estimated as 1.187 (95% CI: 0.999 to 1.37).

To assess publication biases, a funnel plot was used (Figure 3).



**Figure 3.** Funnel Plot of the Effects of Mindfulness-Based Interventions on Well-Being, Mental Health, General Health and Quality of Life

#### 4. Discussion

A meta-analysis performed by integrating the results of different studies gives a more comprehensive view of variables effect size. One of the best characteristics of a meta-analysis is that it allows comparison between efficiency of different treatment patterns in various cultural contexts.

In this meta-analysis, 35 studies investigating the effects of mindfulness-based interventions on well-being, mental health, general health, and quality of life were examined. The results showed that mindfulness-based interventions significantly influenced well-being, general health, mental health, and quality of life.

Findings of the current study support the findings of the meta-analysis conducted by Sedlmeier and Eberth (19), which reported large effect size, whereas the current findings are inconsistent with the findings of Goyal et al. (27) and Spitkermant and Bohlmeijer (28), who reported a small effect size and with that of Khoury et al. (25), Sin and Lybumrsky (24), Chiesa et al. (26), which reported a moderate effect size.

It should be noted that different populations were studied in the researches included in this meta-analysis. Therefore, it is recommended for studies with similar topics to be replicated so that a better view can be captured by combining and comparing similar samples. These results indicate that mindfulness-based interventions are useful for improving well-being, health, and quality of life in the Iranian population.

Mindfulness interventions are reportedly associated with reduced attention bias, especially in response to negative stimuli (57, 58). However, instability on negative events is not enough to promote well-being. In scientific models of mindfulness, descriptions of factors that lead to positive change and promotion of well-being are limited (59).

Therefore, conducting further studies is necessary to shed more light on the mechanisms of action of mindfulness-based interventions in promotion of well-being.

#### 4.1. Conclusion

These results suggest that clinicians can recommend mindfulness programs to their patients and non-patients as a means to improve well-being, mental health, general health, and quality of life.

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**Table 1.** Characteristics of Studies for Efficacy of Mindfulness-Based Interventions on Well-Being

Subjects	Gender	Age, year	Number of Session	Treatment	Tool	Samples	Dependent Variable	Study
Thirty diabetic patients	Male	42 - 59	8	MBSR	SF - 36	N = 40	Quality of life	Arefnasab, Z (30)
Patients with breast cancer	Female	30 - 55	8	MBSR	QLQ - 30	N = 24	Quality of life	Rahmani (31)
Patients with chronic low back pain	Female	30 - 45	8	MBSR	SF - 12	N = 88	Quality of life	Banth (32)
Volunteer addicts	Female	-	10	MBCT	GHQ	N = 40	General health	Kazemian, S (33)
Female students	Female	20 - 37	12	Mindfulness behavior therapy	WHO - QOL - 26	N = 30	Quality of life	Zamzami, A (34)
Amputee veteran wives	Male & Female	23 - 64	8	MBSR	Quality of life (SF - 36)	N = 28	Quality of life	Zarnaghash, M (35)
Students living in a dormitory	Female	-	8	MBCT	WHO - QOL - bref	N = 29	Quality of life	Kavyani, H (36)
Patients with chronic low Back Pain	Male & Female	30 - 50	8	MBCR	Quality of life (SF - 36)	N = 18	General health	Masumian, S (37)
Patients with chronic low back pain	Male & Female	30 - 50	8	MBCR	Quality of life (SF - 36)	N = 18	Mental health	Masumian, S (37)
Military personnel	Male	30 - 50	8	MBCR	Psychological well - being (SPWB)	N = 30	Psychological health	Feizah. A (38)
Patients with type 2 diabetes	Male & Female	35 - 65	8	MBCT	Quality of life (SF - 36)	N = 42	Quality of life	Ghashghaee, S (39)
Patients with type 2 diabetes	Male & Female	35 - 65	8	MBCT	Quality of life (SF - 36)	N = 42	Emotional health	Ghashghaee, S (39)
Patients with type 2 diabetes	Male & Female	35 - 65	8	MBCT	Quality of life (SF - 36)	N = 42	General health	Ghashghaee, S (39)
Patients with epilepsy	Male & Female	18 - 45	8	MBCT	Psychological well - being (PWB - 18)	N = 30	Psychological well - being	Mohamadpur, S (40)
Thirty diabetic patients	Male & Female	-	8	MBSR	Diabetes quality of life questionnaire	N = 30	Quality of life	Raghebian (41)
Nurse	Male/Female	20 - 60	8	MBSR	SF - 36	N = 22	Mental health	Mirrajaie (42)
Nurse	Male/Female	20 - 60	8	MBSR	SF - 36	N = 22	General health	Mirrajaie (42)
Master of Science	Male/Female	30 - 60	8	MBCT	QLQ (Quality of Life Questionnaire)	N = 30	Quality of life	Askari (43)
Master of Science	Male/Female	30 - 60	8	MBCT	QLQ	N = 30	Mental health	Askari (43)
Master of Science	Male/Female	20 - 40	8	MBCT	SF - 36	N = 30	General health	Izadi (44)
Master of Science	Male/Female	20 - 40	8	MBCT	SF - 36	N = 30	Well - being	Izadi (44)
Opium abusers	Male	-	8	MBSR	SF - 36	N = 60	General health	Imani (45)
Opium abusers	Male	-	8	MBSR	SF - 36	N = 60	Well - being	Imani (45)
Students	Male/Female	-	8	MBCT	WHO - QOL - BREF	N = 34	Quality of life	Jafari (46)
People with coronary artery disease	Male/Female	35	8	MBSR	SF - 36	N = 30	Quality of life	Heshmati (47)
Teachers	Female	-	8	Mindfulness training	Ryff - Bref form	N = 36	Well - being	Jonbadi (48)
Master of Science	Female	20 - 40	8	MBCT	SF - 36	N = 30	Quality of life	Bakhshipur (49)
Irritable bowel syndrome	Male/Female	18 - 40	8	mindfulness - based therapy	IBS - QOL34 scales	N = 24	Quality of life	Zomorodi (50)



**Table 2.** Heterogeneity Indicators in Effect Size

	<b>Group</b>	<b>Q-Value</b>	<b>df</b>	<b>P</b>	<b>I<sup>2</sup></b>
<b>G1</b>	Well-being	4.94	5	0.4	0.000
<b>G2</b>	General health	5.59	5	0.3	10.59
<b>G3</b>	Mental health	7.44	6	0.2	19.38
<b>G4</b>	Quality of life	11.07	15	0.7	0.000