

# Health-Related Quality of Life and Socioeconomic Status: Inequalities among Adults in West of Iran

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## Abstract

**Background:** Socioeconomic status (SES) is one of the main determinants of health-related quality of life (HRQoL), where people with lower SES experience more health problems, have a lower quality of life, and are exposed to have a greater number of health-related risk factors.

**Objectives:** This study aimed to examine the relationships between HRQoL, SES, and several demographic factors among the residents of the city of Ilam (located at the West of Iran).

**Methods:** This cross sectional study was conducted on 400 households from 3 districts of the city of Ilam in 2015. The participants were selected on the basis of the multistage sampling method. The second version of the 12-item Short-Form Health Survey (SF-12v2) questionnaire and the Wealth Index were used to measure HRQoL and SES, respectively.

**Results:** The mean scores of the physical component summary (PCS) and the mental component summary (MCS) were  $46.32 \pm 9.69$  and  $42.12 \pm 9.11$ , respectively. The findings indicated that PCS ( $P = 0.01$ ) and MCS ( $P = 0.01$ ) were significantly related to SES (wealth index). The demographic variables of age, gender, education level, marital status, job status, and home ownership ( $P < 0.05$ ) were also significantly related to both PCS and MCS.

**Conclusions:** HRQoL is directly related to SES, in that HRQoL is higher in families with higher SES. Similarly, HRQoL is higher in younger people, men, and those with a university degree. A decrease in socio-economic inequalities and the gap between the rich and the poor can enhance the individuals' health status and HRQoL within a community.

**Keywords:** Quality of Life, Socioeconomic Status, Health Inequalities, Iran

## 1. Background

It is widely known and acknowledged that 'health' is a multidimensional construct that differs from the absence of disease or infirmity and includes physical functioning, mental and bio psychological domain, and socio-emotional aspects of well being (1). Quality of life, though difficult to define and measure, is also a broad multidimensional concept that includes subjective evaluations of both negative and positive aspects of life (2).

Though health by itself constitutes an important domain of overall quality of life, other domains, for instance social determinants like education and employment, add to the complexity of its measurement (2, 3). Health-related quality of life (HRQoL) has been developed as a useful tech-

nique to conceptualize and measure the multiple aspects of the overall quality of life that can affect one's health and relate to each other (3, 4).

The concept of HRQoL has the same meaning as the quality of life, which is defined by the World Health Organization (WHO) as peoples' understanding of their position in life in terms of culture, goals, expectations, standards, and priorities (3-5). HRQoL is regarded as a feature of health outcomes and used to map development, welfare, and well being in a society (either on the individual or community levels) (4, 5). It is a subjective, multi-dimensional element in peoples' lives, and is affected by their physical health, emotional and social relationships, economic status, surrounding environment, and life satisfaction. Previous research has identified the physical, psychological,

and social factors as the key predictors of change in quality of life (6, 7).

In clinical and epidemiological studies, researchers have found it important to track HRQoL as it has implications for both policy and practice (7, 8). Measuring HRQoL not only helps healthcare providers and policy-makers determine the burden of preventable diseases, injuries, and disabilities but will also help them monitor the progress in achieving public health goals. Measuring HRQoL provides a baseline health assessment and valuable new insights into the associations between HRQoL and risk factors (8-10).

HRQoL has been the subject of much attention in recent years, which is mainly due to an increased rate of life expectancy at birth (6, 10). Two widely accepted health status instruments used for assessing HRQoL include the short form (SF)-36 questionnaire and its substantially shorter version the SF-12 questionnaire. Both questionnaires contain physical and mental domain health entitled the physical component summary (PCS) and the mental component summary (MCS) (11). Some countries have modified and adapted a new version of these tools to their own context (12).

Socioeconomic status (SES) has been repeatedly reported to correlate with individual and/or community health outcomes including HRQoL (13). SES is a combined measure of an individual or family's economic and social position relative to others, based on 3 main predictors of educational level, income, and occupation. It is commonly conceptualized as an individual or group's relative social standing or class on a hierarchy, based on various dimensions of sociology and economics (7, 13). There is a list of key attributes of socio-economic status that contribute to the socio-economic differences between individuals and communities (13, 14). This includes job status, education level, home ownership, income level, and access to health care and insurance. Usually, a combination of these attributes is used to determine SES (13) meaning that no one can be the representative of the SES by itself. While income level e.g. is an important indicator of SES, it cannot be used in isolation, largely because people usually don't report their actual income (14, 15).

There is a great body of evidence showing SES as one of the main determinants of HRQoL (7, 16); in that individuals and communities lower down the SES ladder experience more health complications and lower quality of life with increased exposure to more health-related risk factors (13, 17). Even in more sustainable nations, lower SES predicts more negative or less favorable health outcomes in terms of a social gradient (18).

Existing research shows that lower HRQoL occurs as a result of social, economic, and stressful situations posed

on individuals and communities (15, 16). A study done on the German adult population, Mielck (2014) argued that people with low SES are exposed to health-related risks in 2 ways: through health impairments and via a reduction of HRQoL (19). While the low HRQoL can be explained by the direct influence of low SES, there might be a role for SES as an intermediate or a confounding variable through other demographic characteristics such as age and gender (15, 19).

To date, there has been ongoing debate regarding the underlying causes that contribute to socioeconomic inequalities in HRQoL and thus health outcomes among research scholars and care providers (15, 20). These debates are generally separated into 3 different groups of studies (19) including those looking at disease-related factors e.g. biological characteristics, those focusing on patient-related factors e.g. health attitudes and behavior, and studies investigating healthcare-related factors e.g. workforce expertise and service availability. The differences found in HRQoL by SES are commonly based on the studies conducted on a (specific) sample of the population or those focused on controllable risk factors for the diseases under investigation (18-20).

## 2. Objectives

Yet, creating reliable indicators to accurately measure SES and assess its impact on HRQoL remain a major challenge that warrants further investigation (13). This study aimed to ascertain the association between SES and HRQoL among diverse groups of people living in different geographical areas of the city of Ilam (West Iran). Several demographic factors (age, gender, marital status, education level, job status, and house ownership) were analyzed to examine their impact on socioeconomic differences in HRQoL. The study also aimed at investigating SES (wealth index) with a focus on combined economic and social indicators obtained from the exploratory factor analysis (EFA).

## 3. Methods

### 3.1. Study Design and Setting

This cross sectional study was conducted to examine the differences in health status and well-being between the rich and the poor population of the city of Ilam with a goal to inform policy-makers and health professionals about social and economic inequalities in health. The study population comprised all residents of Ilam who were aged 20 years or over. The study employed single population average sample size determination formula with the mean  $\pm$  SD ( $43.64 \pm 9.71$ ) of MSC (4) with  $\alpha = 5\%$ , and marginal error

=1, ( $z=1.96$ ,  $SD=9.74$ ,  $d=1$ ). For increasing the study power, 400 samples were included in the study. Using a multi-stage sampling method, 400 families living in 3 districts of Ilam were selected to participate in this study. First, the city of Ilam was categorized into 3 different parts of including high, middle, and low regions based on the city map. Several suburbs were randomly selected from each of these regions, of which a few streets and alleys were chosen randomly. A systematic random sampling was then applied to select some of the households. Using an age-gender table 1 person was selected from each family, resulting in a sample size of 400 individuals.

The SF-12 version of HRQoL questionnaire (adapted form of the SF-36) was employed to collect data from the respondents. The SF-12 questionnaire consists of 2 summary parts of PCS and MCS with 8 subscales of role physical (RF), physical function (PF), role emotional (RE), social function (SF), vitality (VT), general health (GH), bodily pain (BP), and mental health (MH), all together score from 0 to 100 (12). We categorize different MSC and PCS groups based on quantiles of the questionnaire scores and obtained lowest, low, mediate, good, and excellent categories (12). The validity and reliability of the measurement instrument has already been confirmed for the Iranian context. The CVI (Content validity index and CVR (Content validity ratio) for the SF-12 instrument's items were reported 85.6% and 0.80, respectively. Furthermore, The PCS and MCS explained 59.30% and 64.0% of the total variance of HRQoL, respectively. In addition, the Cronbach alpha and intra class correlation coefficient (ICC) for SF-12 were reported 0.70 and 0.60, respectively (12, 13). The Wealth Index was used to measure SES. Exploratory factor analysis (EFA) with the principals component analysis (PCA) method was used to determine wealth index. The variables such the possession (1) or lack (0) of a car, motorcycle, bathroom, telephone, kitchen, mobile phone, freezer, dishwasher, computer, and a microwave oven were analyzed through EFA for determination of SES. Moreover, to determine different SES classes, quantiles of Z scores calculated via EFA were used.

3.2. Ethical Consideration

The study protocol was approved by the ethics committee of Ilam University of Medical Sciences (ethical code: EC/94/H/104, 2015). The aims and scope of the study were explained to all participants. Informed consent form was obtained from all participants. Privacy and confidential issues were considered throughout the study. The study excluded those respondents who were not interested in being involved in the survey. In addition, participants were guaranteed that the findings of study would be reported and published anonymously.

3.3. Statistical Analysis

Exploratory factor analysis was conducted to determine the wealth index. The Kaiser-Mayer-Olkin (KMO) index and Bartlett's test were used to evaluate the appropriateness of the data for EFA. Also, quintiles of 'z' scores were applied to determine different SES classes. Using the Stata-SE11 software program, data analysis was conducted through descriptive statistics, t-test, and one-way ANOVA. The continuous variables were checked by Kolmogorov-Smirnov and Shapiro-Wilk tests, which all had  $P > 0.05$ . The level of significance was considered as 0.05.

4. Results

In total, 400 individuals participated in this study. The mean age of the participants and the average number of family members were  $37.33 \pm 10.26$  years (min.20 and max.86) and  $3.65 \pm 1.45$  individuals, respectively. Just over 48% of the participants were male. Of the entire number of participants, from the 3 districts of Ilam city, the majority lived in district 1 ( $N=154$ ; 38.50%). The mean scores for the mental and physical dimensions of the HRQoL scale were  $42.12 \pm 9.11$  and  $46.32 \pm 9.69$ , respectively. In addition, almost 35% of the participants were experiencing a low quality of life, both mentally and physically.

Table 1 shows some other demographic characteristics of the participants and the relationships between these demographic characteristics and the dimensions of HRQoL. According to this table, less than one-third of the participants (27.27%) were between the ages of 20 and 30 years, and almost 31.82% had high school diplomas. The scores of quality of life dimensions were significantly higher for men. Moreover, the relationships between the residents' demographic variables (age, gender, education status, marital status, occupational status, and house ownership) and both PCS and MCS were statistically significant ( $P < 0.05$ ).

Table 2 indicates the HRQoL of the participants, based on the quantiles of PCS and MCS scores.

According to the quantiles of PCS scores, the physical dimension of quality of life was either good or very good in almost 41% of the participants. The mean of PCS scores in the categories was statistically significant ( $P = 0.01$ ). The mental health of almost 37% of the participants was good, and also, the mean MCS score based on the quantiles was statistically significant ( $P = 0.01$ ).

4.1. Association of HRQoL and SES

Exploratory factor analysis was used to determine SES based on the Wealth Index. In the correlation matrix between the variables studied, most of the correlations were

Table 1. Frequency Distribution of Demographic Variables and Their Association with Components of HRQoL in the Residents of Ilam City

Variables	Classification	No. (%)	Mean of PCS (± SD)	P Value	Mean of MCS (± SD)	P Value
Age	20 - 30	108 (27.27)	49.25 (7.62)	0.01	45.83 (7.03)	0.04
	30 - 40	93 (23.48)	47.61 (8.73)		42.33 (7.20)	
	40 - 50	86 (21.72)	45.12 (7.88)		41.01 (7.78)	
	50 - 60	71 (17.93)	43.49 (7.51)		41.13 (7.96)	
	> 60	38 (9.60)	40.08 (9.13)		41.25 (8.39)	
Gender	Male	186 (46.50)	48.06 (7.81)	0.01	44.41 (7.26)	0.03
	Female	214 (53.50)	44.83 (8.12)		40.13 (6.39)	
Education status	Illiterate and Primary school	83 (20.96)	42.83 (8.25)	0.01	42.67 (8.96)	0.23
	Middle school	89 (22.47)	44.65 (7.54)		43.12 (9.78)	
	High school and diploma	126 (31.82)	47.31 (7.13)		42.11 (8.23)	
	Academic	98 (24.75)	48.32 (7.96)		41.94 (7.10)	
Marital status	Married	185(46.84)	45.56 (7.43)	0.02	46.81 (8.98)	0.01
	Single	164 (41.52)	48.56 (7.95)		41.88 (7.13)	
	Widow or divorced	46 (11.65)	40.35 (8.29)		38.12 (7.34)	
Occupational status	Unemployed	73 (18.34)	44.86 (7.22)	0.02	41.50 (8.09)	0.03
	Student	61 (15.33)	48.09 (8.65)		42.38 (8.35)	
	Housewife	114 (28.64)	43.55 (7.50)		43.93 (9.05)	
	Retired	44 (11.06)	41.19 (9.92)		42.74 (8.05)	
	Employment	106 (26.63)	46.01 (8.76)		45.01 (8.03)	
House ownership	Rental	140 (35.09)	46.12 (7.07)	0.23	42.13 (9.29)	0.38
	Personal	213 (53.38)	46.52 (9.92)		42.81 (8.02)	
	Other	46 (11.53)	46.24 (8.45)		42.63 (8.34)	

Table 2. The Status of HRQoL Based on Quantiles in the Residents of Ilam City

Quantiles	Range of PCS	No. (%)	Mean of PCS (± SD)	P Value	Range of MCS	No. (%)	Mean of MCS (± SD)	P Value
1 (Lowest)	7.48 - 35.49	59 (14.75)	29.23 (4.91)	0.01	2.21 - 37.10	68 (17.00)	30.02 (5.97)	0.01
2 (Low)	35.49 - 41.38	83 (20.75)	38.64 (1.64)		37.10 - 43.54	91 (22.75)	40.48 (1.84)	
3 (Mediate)	41.38 - 46.89	95 (23.75)	44.04 (1.54)		43.54 - 49.34	94 (23.50)	46.39 (1.67)	
4 (Good)	46.89 - 52.92	93 (23.95)	49.87 (01.71)		49.34 - 56.16	85 (21.25)	52.59 (1.96)	
5 (Excellent)	52.92 - 76.07	70 (17.50)	56.41 (2.81)		56.16 - 79.32	62 (15.50)	61.23 (3.55)	

greater than 0.03. Factor scores showed correlations between each of the variables and the latent variables of SES. The most important predictor variables of SES included the possession of a car, freezer, dishwasher, computer, and a microwave oven (Factor Score > 0.50); however, having a motorcycle was negatively correlated with SES. The adequacy of the sample size with KMO = 0.73 and the significance of the Bartlett's test results (P = 0.01), indicated the

suitability of the variables under study for determination of SES through EFA.

Table 3 illustrates the SES classification, based on the quantiles of z scores calculated in the EFA model, and their relationships with the dimensions of HRQL. According to this table, the z scores (wealth index) ranged from -3.80 to 3.02. The participants were separated into 5 SES classes on the basis of these scores. The results indicated that al-

most 38.75% of the participants were enjoying a good life in terms of SES. There were significant relationships between SES and HRQL dimensions ( $P < 0.05$ ).

## 5. Discussion

The main objective of the present study was to study the relationships between HRQoL, SES, and several demographic characteristics of the residents of the city of Ilam. The results showed that the mean scores for PCS and MCS were  $46.32 \pm 9.69$  and  $42.12 \pm 9.11$ , respectively, which were slightly lower than the average scores reported in a similar study conducted by Younesi and Chakroun (2014). Younesi and Chakroun (2014) reported that mean PCS and MCS scores in a population of Tunisians aged 18 and over were  $50.11 \pm 8.53$  and  $47.96 \pm 9.82$ , correspondingly (21). Similar findings were reported by Kassani et al. in 2011 in Tehran (4). The results of the present study showed that the mean score of PCS was slightly higher than the mean score of MCS. This is in line with the study conducted amongst the Tunisian's residents by Younesi and Chakroun (21), where their physical health was slightly better than their mental health. Our results also indicated that both the physical and mental health of approximately 57% of the participants were normal, indicating an acceptable level of HRQoL in Ilam.

Significant relationships were observed between the HRQoL-related demographic characteristics such as age, gender, education level, marital status, family size, job status, and home ownership, as well as PCS and MCS scores ( $P < 0.05$ ). The mean PCS scores in the 20 - 30 age group and in those aged over 60 years were  $49.25 \pm 7.62$  and  $40.08 \pm 9.13$ , respectively. The results showed that PCS is negatively correlated with age. A similar relationship was also observed between age and MCS average scores in different age groups. The reverse relationship between age and HRQoL in this study is primarily due to the higher prevalence of diseases such as hypertension, vascular and degenerative diseases, cancer, and diabetes in old age (3, 15). Several studies have shown that unhealthy lifestyle and behaviors are the main risk factors in physical and mental health (3, 21, 22). In the present study, significant relationships between gender and the dimensions of HRQoL were found. The mean scores of PCS and MCS were higher in men, which is consistent with the results obtained by Younesi and Chakroun (2014) in his study of a Tunisian population (21). These gender-based differences in HRQoL can be attributed to social and economic inequalities, especially in developing countries (23, 24).

Among the illiterate participants, the mean PCS and MCS scores were  $42.83 \pm 8.25$  and  $42.67 \pm 8.96$ , respectively, and were  $48.32 \pm 7.96$  and  $41.94 \pm 7.10$ , respectively, among

the participants with a university degree, indicating the positive relationship between HRQoL and education level. The mean PCS score of the 'single' participants was higher than those who were married or divorced, while the mean MCS score of the married participants was slightly higher than that of the unmarried or divorced participants. These findings were consistent with Robert's study (2009) in which the HRQoL scores were higher among people with a university education. For Robert (2009), educated people were more aware of their health as well as their physical and mental dimensions (25). The author argued that since educated people have a higher SES, this has influenced their HRQoL (15). Mielck et al. (2009) found that PCS scores were higher in single participants due to the fact that most of these individuals were younger than married people and less exposed to physical health-related risk factors (19). Conversely, MCS scores were higher in married participants, due to their family-based relationships and mental/emotional support received from their family members (19, 26). In the present study, the mean PCS score of university degree ( $48.32 \pm 7.96$ ) was the highest and the mean PCS score of retired participants was the lowest. Similar results were found in a previous study conducted by Baghbanian (2012) among Swedish people, where the author found significant relationships between HRQoL and age and HRQoL and gender (23). Likewise, in a study done on Colombian women, Gomez (2013) reported significant relationships between HRQoL and age, education level, marital status, SES, and physical activities. However, it is important to note that combined indices, such as the wealth index, were not used by Gomez, possibly an indicative of inaccurate measurement of SES (27).

The results obtained in the present study revealed that almost 35% of the participants were of low SES, 39% were of high SES, and 24% were of moderate SES. The PCS and MCS scores in the different SES classes were significantly different ( $P < 0.05$ ), and the scores of PCS and MCS were higher in higher SES. The highest PCS ( $50.12 \pm 7.09$ ) and MCS ( $48.72 \pm 8.79$ ) scores were obtained among the richest participants, which is in line with the findings of Burstorm et al. study (2001) on Swedish people (22). Similarly, other studies conducted by Dai et al. (2015), Younesi et al. (2014), Robert et al. (2009), and showed direct relationships between SES classes and HRQoL in all age groups (3, 21, 25). The relationship between SES and HRQoL can primarily be explained through the economic barriers and psychological problems faced by people with low SES, such as unhealthy diet or consumption of less food and limited access to health and medical services, or the higher prevalence of stress and depression (3, 15, 28).

It is important to note that both income and economic capital are directly related to HRQoL; however, this rela-



**Table 3.** The HRQoL Based on SES Quantiles (Wealth Index) in the Residents of Ilam City

Categories (Wealth Index)	z Score Range	No. (%)	Mean of PCS (± SD)	P Value	Mean of MCS (± SD)	P Value
Poorest	-3.80 to -0.80	69 (17.25)	40.23 ± 7.20	0.01	37.58 ± 8.17	0.01
Second	-0.80 to 0.22	77 (19.25)	40.55 ± 8.64		39.14 ± 8.24	
Middle	-0.22 to 0.38	99 (24.75)	44.23 ± 8.50		42.63 ± 7.04	
Fourth	0.38 to 1.02	84 (21.00)	47.66 ± 7.64		48.88 ± 8.32	
Richest	1.02 to 3.02	71 (17.75)	50.12 ± 7.09		48.72 ± 8.79	

tionship is weakened by reaching old age, which may be due to greater access to healthcare services by the elderly, compared to the younger ages (13, 22, 29).

The limitation of the present study was its cross-sectional design, through which both independent variables and HRQoL were measured simultaneously; thus, the issue of temporality was not considered in the examination of relationships. The study however was novel as it used combined social and economic indicators for the determination of SES classes.

HRQoL is directly related to SES; people with a high SES experience a higher HRQoL. Similarly, HRQoL is higher among younger groups, men, and people with university degrees. There is a likelihood of enhancing the HRQoL provided that are useful interventions/policies are considered to reduce the social and economic inequalities and the gap between rich and poor. While, health policy-makers should pay greater attention to the role of SES in the population planning. However, due to its cross-sectional design, the transposition of the relationships between variables was not specified. It is recommended that cohort studies are conducted in future investigations.

Footnote

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