

Original Article

Geographic Distribution of Health-Related Quality of Life in Iran

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Abstract

Introduction: This study aimed to evaluate the HRQoL of the general Iranian population across all provinces using the European QoL 5-Dimension (EQ-5D) questionnaire.**Methods:** Data were collected from a nationwide survey conducted in 2021 across all 31 provinces of Iran, involving 27,704 adults. The intended data included responses to EQ-5D-3L health states, EuroQol Visual Analogue Scale scores, and participants' socioeconomic characteristics. Finally, descriptive analyses were conducted using Stata 14 and Microsoft Excel 2019.**Results:** Pain/discomfort and anxiety/depression were the most prevalent problems across all provinces. In addition, the mean EQ-5D utility score was 0.87 (± 0.15), ranging from 0.80 in North Khorasan to 0.91 in Alborz, Kermanshah, and Zanjan. For women, the mean score was 0.84 (± 0.20), with a range of 0.77–0.90, indicating notable variation. In contrast, men demonstrated a higher mean score with less variation, at 0.90 (± 0.14), ranging from 0.84 to 0.93.**Conclusion:** This study provided HRQoL scores for the general population across the provinces of Iran, revealing significant variations. These values can inform healthcare research and policymaking by identifying disparities in health status across regions. Given the relatively low HRQoL scores observed in certain provinces, it is imperative to plan and implement strategies to enhance health outcomes, particularly in vulnerable groups within those regions.**Keywords:** Health-related quality of life, EQ-5D-3L, Population norm, Iran

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Introduction

Health-related quality of life (HRQoL) is a multifaceted concept that is used to assess the impact of health status on the overall QoL (1). In addition, it serves as a practical measure in research, clinical practices, and health policies to evaluate health status and outcomes (2). HRQoL is defined as “how well a person functions in life and their perceived well-being in the physical, mental, and social domains of health” (3).

Over the past few decades, an array of instruments has been utilized to evaluate HRQoL. These instruments are typically categorized as either generic or disease-specific, and health profiles or preference-based measures (4). The European QoL 5-Dimension (EQ-5D) questionnaire is a widely used generic instrument for measuring health-related HRQoL (5, 6). It serves as a standardized tool for documenting an individual's current self-reported health status. Moreover, the EQ-5D questionnaire relies on a descriptive system for respondents to indicate their health state and the EuroQol Visual Analogue Scale (EQ-VAS). This descriptive system assesses HRQoL across five dimensions, including mobility (1), self-care (2), usual activities (3), pain and discomfort (4), and anxiety and

depression (5). This questionnaire is available in versions with 3 levels (EQ-5D-3L) and 5 levels (EQ-5D-5L), in which each domain presents three severity levels and five severity levels, respectively (7).

Disparities in population health are present not only internationally, but also within a country. Some factors, such as natural conditions, socioeconomic development, and the allocation of health resources, contribute to these regional variations (8). Given the socioeconomic disparities and regional variations in mortality and morbidity distribution across the country, establishing regional population norms for HRQoL is useful for public health research and health economic evaluations, ultimately improving overall population health. In Iran, research has focused on investigating the level and determinants of HRQoL for population norms and in specific population groups (9-15). This study aims to examine HRQoL across all provinces of the country using the EQ-5D questionnaire.

Methods

Study Setting

Iran, located in the Middle East, comprises 31 provinces.



According to the Statistics Center of Iran, it had a population of approximately 84 million people in 2021. Ilam, and Tehran, with populations of around 0.6 million and 14 million, represent the least and most populated provinces, respectively (16).

Study Sample and Data Collection

Data (N=27,704), including responses to EQ-5D-3L states, EQ-VAS scores, and participants' socioeconomic factors, were collected from the nationwide Stepwise Approach to Surveillance (STEPS) survey on non-communicable disease risk factors. The survey is designed to be representative of the adult Iranian population residing in both urban and rural areas. It should be noted that the data in the 2021 STEPS survey were collected through face-to-face interviews with individuals aged 18 and above across all 31 provinces. Djalalinia et al have reported details of the STEPS surveys (17).

Instruments

In this study, the data from the EQ-5D-3L questionnaire were utilized to measure the HRQoL of the participants. The EQ-5D-3L is based on a descriptive system that defines health in terms of 5 dimensions, with each dimension comprising 3 response categories. Additionally, this instrument includes a visual analogue scale (EQ-VAS), on which respondents rate their overall health on the day of the interview using a 0–100 hash-marked scale (6). Moreover, the EQ-5D-3L health status is converted into HRQoL scores by a value set. An EQ-5D value set is a scoring algorithm that is used to assign a numerical value to each EQ-5D profile, with values determined on a scale anchored at 1 and 0 for full health and death, respectively (7). In this study, the Iranian general population value set was employed to convert EQ-5D-3L health status into HRQoL scores (18).

Statistical Analysis

Descriptive statistics were used to analyze sociodemographic characteristics, item responses in the EQ-5D-3L dimensions, and EQ-VAS scores of participants. Furthermore, maps were produced to visualize the distribution of HRQoL by gender in the provinces. Ultimately, the analyses were conducted using STATA (version 14) and Microsoft Excel 2019, in addition to GIS software.

Results

Participants

In total, data from 27,704 participants across 31 provinces were included in this study. The average age of the respondents was 45.50 years, with 55.2% being female. Among the participants, 72.7% resided in urban areas, 76.6% were married, and 84.5% were educated. In addition, nearly half of them had unpaid work. More details of the sociodemographic characteristics of the respondents are reported in Table 1.

Three-Level European Quality of Life 5-Dimension Questionnaire

The frequencies of “No problems” responses in each EQ-5D-3L dimension across provinces are presented in Figure 1, highlighting regional variations in the prevalence of problems across different dimensions. Pain/discomfort and anxiety/depression were the most prevalent issues across all provinces. In this study, 38.3% of individuals reported serious problems with pain/discomfort, with regional variations ranging from 24.3% in Zanjan to 54.6% in North Khorasan. Additionally, 35.2% of individuals indicated serious problems with anxiety/depression, with regional variations ranging from 20.1% in Alborz to 50.5% in North Khorasan. Overall, Zanjan, Kermanshah, Alborz, and Tehran had the lowest reported item of serious problems across all EQ-5D-3L dimensions. In contrast, North Khorasan, Isfahan, and South Khorasan had the highest reported instances of serious problems across all dimensions.

Health-Related Quality of Life

The mean EQ-5D utility score was 0.87 (± 0.15), ranging from 0.80 in North Khorasan to 0.91 in Alborz, Kermanshah, and Zanjan. Moreover, the mean EQ-VAS score was 72.9 (± 20.4), ranging from 68 in Mazandaran to 76.1 in Kermanshah (Supplementary Table S1).

Figures 2 and 3 display the mean EQ-5D utility scores by gender and age (years) across all provinces, with detailed data provided in Supplementary Table S1. The mean EQ-5D utility score for women was 0.84 (± 0.20), ranging from 0.77 in North Khorasan to 0.90 in Alborz, Kermanshah, and Zanjan. The corresponding value was 0.90 (± 0.14) for men, ranging from 0.84 in North Khorasan to 0.93 in West Azerbaijan, Kermanshah, and Zanjan. Based on the data (Figure 3), the HRQoL scores of the Iranian population in all provinces decreased with increasing age.

Discussion

The present study investigated HRQoL scores among the adult population residing in different provinces of Iran. The mean EQ-5D utility score was 0.87 (± 0.15), ranging from 0.80 to 0.91, which highlights significant variations among provinces. Furthermore, the mean EQ-VAS score was 72.9 (± 20.4), with a range of 68–76.1. The difference between EQ-VAS scores and utility scores may be attributed to the presence of other aspects of health, beyond the five EQ-5D dimensions, which are important to individuals and are captured by the EQ-VAS (19).

Age, gender, levels of education, marital status, employment status, and chronic diseases are considered the primary factors contributing to differences in Iranian HRQoL (12). The mean EQ-5D-3L score in the Iranian adult population was 0.74 in previous studies (10, 11). A more recent survey conducted in the capital of Iran reported mean EQ-5D-5L utility scores of 0.79, 0.83, and 0.76 for the entire population, males, and female, respectively (9). Using the EQ-5D-5L led to a decrease

Table 1. Sociodemographic Characteristics of the Study Participants

Providences	N	Age		Gender	Area	Marital Status			Education Level			Employment Status			
		Mean	SD	Female (%)	Urban (%)	Single (%)	Married (%)	widow/ Divorce (%)	Without Education (%)	Low Education (%)	Middle and High Education (%)	Employed and Freelance Job (%)	Retired (%)	Unpaid Work (%)	Unemployed (%)
Alborz	666	48.0	15.5	55.0	92.0	14.6	75.8	9.6	9.7	24.6	65.7	34.7	12.1	46.4	6.7
Ardabil	576	46.0	15.2	56.4	68.4	13.2	78.6	8.2	15.2	32.2	52.6	35.0	8.0	53.0	4.0
Bushar	1087	44.1	15.2	55.7	72.6	15.0	79.2	5.8	11.0	22.7	66.4	39.7	8.3	46.7	5.3
Chaharmahal and Bakhtiari	871	46.8	16.3	56.1	65.8	15.0	78.9	6.1	21.3	24.2	54.5	32.8	8.5	50.8	7.9
East Azerbaijan	923	46.4	15.8	53.4	72.9	13.7	78.8	7.6	16.0	28.5	55.5	36.0	11.1	48.7	4.2
Fars	1131	46.4	16.4	54.4	71.0	18.0	72.9	9.1	11.5	25.4	63.0	39.6	9.3	45.6	5.4
Gilan	606	49.4	15.7	60.2	63.7	13.5	78.4	8.1	16.3	20.8	62.9	30.6	13.8	49.6	6.0
Golestan	853	43.0	15.0	53.9	55.1	13.5	78.4	8.1	14.0	25.4	60.5	42.0	5.4	46.1	6.5
Hamadan	797	46.8	16.0	57.8	65.2	13.9	77.3	8.8	20.6	28.4	51.1	33.2	8.7	53.2	4.9
Hormozgan	537	38.8	14.4	57.7	39.7	20.3	73.4	6.3	9.8	22.1	68.1	38.5	4.3	50.8	6.4
Ilam	553	44.8	16.3	50.6	68.7	22.4	71.2	6.3	16.1	20.8	63.1	39.1	6.6	45.7	8.6
Isfahan	1276	47.5	16.1	56.1	88.3	14.8	75.3	9.9	8.7	27.2	64.2	32.8	12.0	51.3	3.9
Kerman	708	43.8	16.4	52.7	59.7	15.8	75.3	8.9	15.3	17.9	66.8	41.2	6.1	45.0	7.7
Kermanshah	924	46.5	16.6	56.6	76.3	19.8	68.7	11.5	20.6	18.6	60.8	31.4	6.7	52.7	9.2
Khuzestan	984	43.7	16.0	55.1	77.2	18.3	73.1	8.6	16.1	23.4	60.6	35.3	6.4	49.0	9.3
Kohgiluyeh and Boyer-Ahmad	643	41.6	15.1	53.2	56.8	24.0	70.9	5.1	14.8	19.1	66.1	33.9	6.8	47.4	11.8
Kurdistan	742	44.2	16.2	55.3	71.4	13.1	79.1	7.8	22.0	26.8	51.2	37.7	6.0	50.9	5.4
Lorestan	803	46.1	15.8	59.5	65.8	17.7	72.1	10.2	23.8	20.9	55.2	31.2	6.7	53.9	8.2
Markazi	679	48.6	16.6	53.2	76.3	16.6	75.0	8.4	15.5	29.3	55.2	35.8	12.8	48.6	2.8
Mazandaran	807	48.7	16.7	55.1	58.7	14.1	77.3	8.6	14.8	23.2	62.0	39.5	9.9	46.0	4.6
North Khorasan	753	42.8	15.7	54.2	57.5	13.0	78.5	8.5	16.9	25.3	57.8	41.2	5.9	47.3	5.6
Qazvin	601	44.9	15.4	54.2	74.7	14.3	77.9	7.8	13.7	27.5	58.8	36.5	11.9	48.6	3.0
Qom	590	45.9	16.8	53.4	93.9	15.4	75.9	8.6	12.5	23.8	63.7	36.0	8.9	49.0	6.2
Razavi Khorasan	1412	44.4	15.4	53.6	74.4	11.6	79.0	9.3	10.6	26.5	62.9	40.3	7.6	48.6	3.5
Semnan	684	48.5	16.7	53.7	79.4	11.8	78.9	9.2	14.9	24.2	61.0	32.8	16.1	48.3	2.8
Sistan and Baluchestan	964	40.2	15.6	57.0	50.8	17.9	73.1	8.9	24.9	26.3	48.8	32.7	3.5	53.2	10.5
South Khorasan	664	44.2	15.5	58.0	59.0	13.7	81.2	5.1	13.3	32.4	54.4	31.9	10.1	51.7	6.3
Tehran	3173	46.3	15.0	55.8	94.4	13.6	79.3	7.1	6.8	18.8	74.3	40.9	11.1	45.3	2.7
West Azerbaijan	744	44.2	16.6	56.9	66.7	16.3	74.7	9.0	19.9	22.5	57.6	34.7	6.9	51.6	6.8
Yazd	972	48.6	18.0	50.1	84.8	13.3	78.7	8.0	12.3	27.8	59.9	34.1	17.7	46.1	2.1
Zanjan	981	46.3	15.4	55.7	68.2	12.8	80.2	6.9	18.2	31.1	50.7	34.2	8.7	51.0	6.1
Total	27704	45.5	15.9	55.2	72.7	15.2	76.7	8.1	14.5	24.4	61.1	36.4	9.2	48.8	5.6

Note. N: Number; SD: Standard deviation.

in ceiling effects. The ceiling effect refers to a high proportion of participants selecting ‘no problems’ in their responses (20). In addition to these effects, the variation in values can be attributed to the use of different value sets and the sociodemographic characteristics of the surveyed populations.

Consistent with the findings of other countries (21-24), our results revealed that female gender was associated with a lower EQ-5D utility score (0.84 ± 0.20 compared to 0.90 ± 0.14 for men). Regarding the dimension of EQ-

5D, a considerable proportion of participants indicated no issues in mobility (92.3%), self-care (97.1%), and usual activities (93.8%). However, 38.3% reported experiencing serious problems with pain/discomfort, while 35.2% mentioned serious issues with anxiety/depression. Similar patterns were found in previous studies performed in Iran (11, 18) and other countries (19, 23-25).

In line with other population norms (10, 21-24, 26), the HRQoL scores of the Iranian population in all provinces decreased with increasing age. Furthermore, some

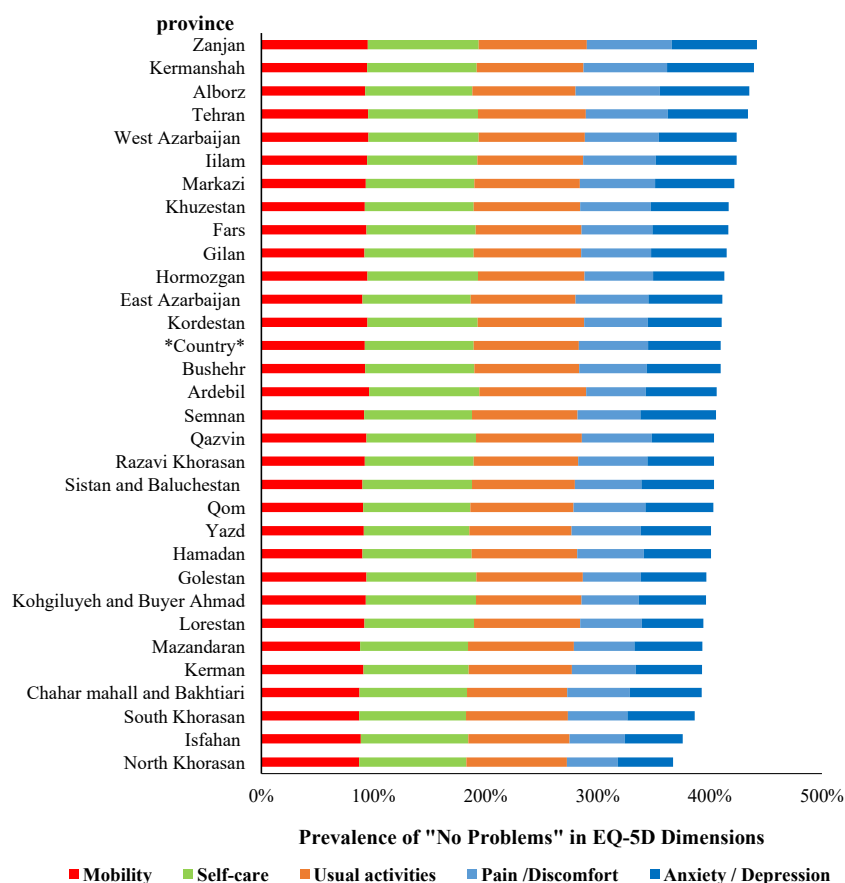


Figure 1. Prevalence of "No Problems" Responses in the EQ-5D-3L Dimension
 Note. EQ-5D-3L: Three-Level European Quality of Life 5-Dimension Questionnaire

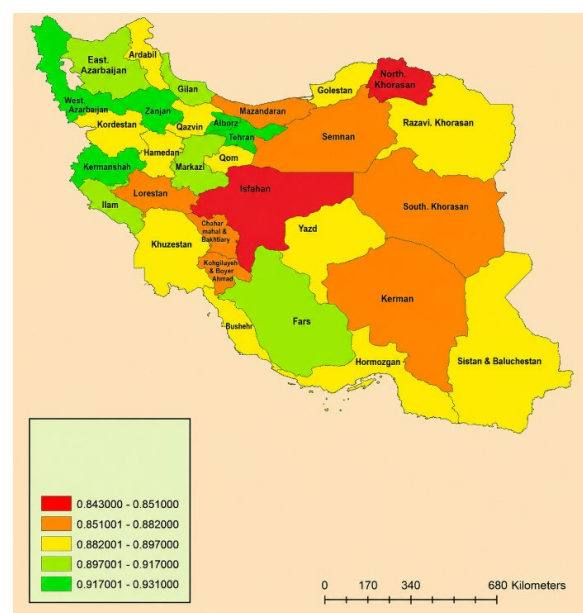
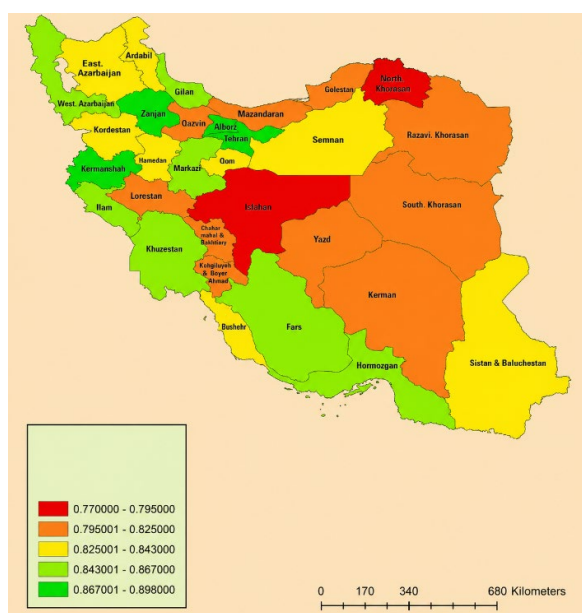


Figure 2. Health-Related Quality of Life by Gender Among Provinces of Iran

meta-analysis studies indicated that the HRQoL of the Iranian elderly is lower than that of elderly populations in developed countries (27, 28). Given the growing trend of population aging in the country (29), it is crucial to address this issue. More precisely, the HRQoL of the elderly must be

considered a priority by health policymakers. It is essential that comprehensive programs that include effective training (28) and social, economic, and psychological support and increase the participation of the elderly in community life be implemented in the future(27).

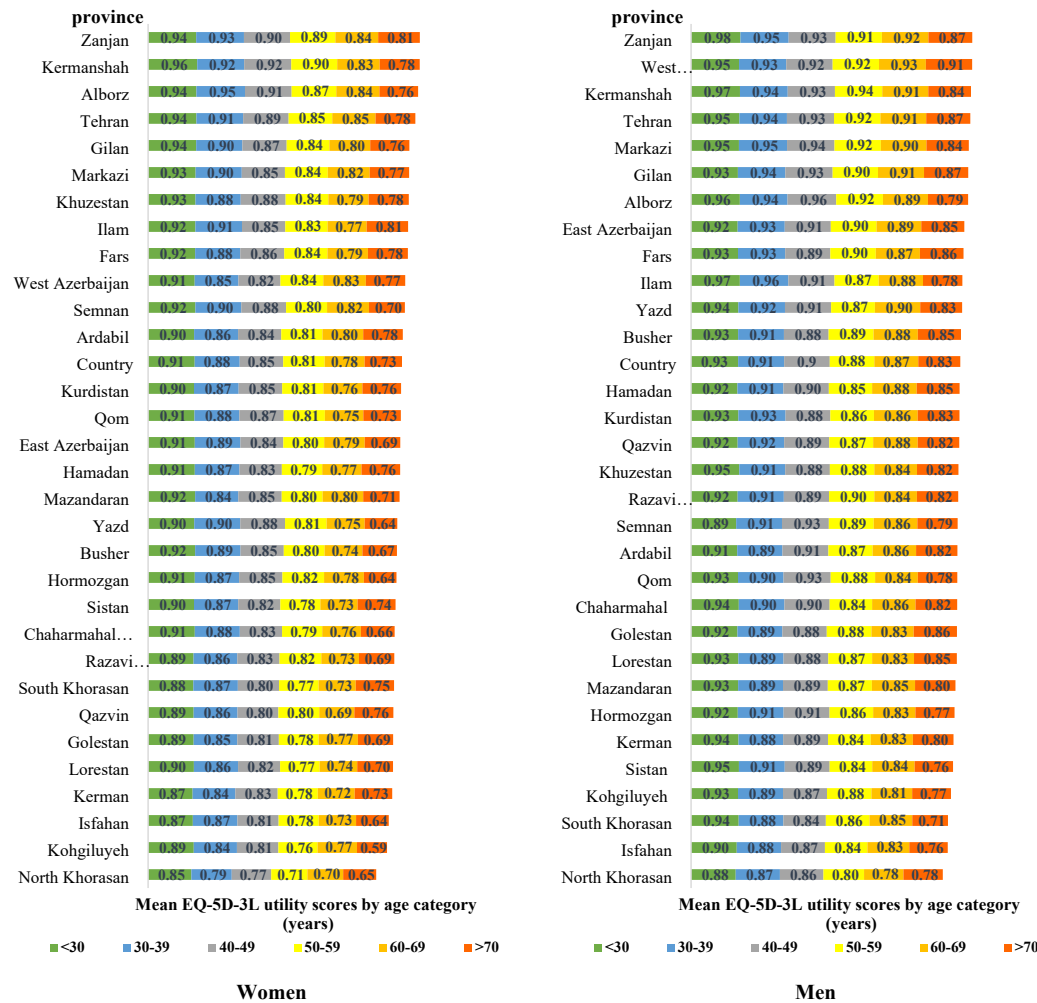


Figure 3. Health-Related Quality of Life by Gender and Age (Years) Among Provinces of Iran

Strengths and Limitations

The primary strength of this study lies in its robust sample size and the utilization of national-level sampling, allowing for a comprehensive investigation of HRQoL across all provinces of the country. However, as outlined in the methodology section, the EQ-5D-3L questionnaire was employed to measure HRQoL. Nonetheless, it is worth noting that using the EQ-5D-5L, which incorporates additional levels, would enhance the accuracy of assessing population health.

Conclusion

The present study provided HRQoL scores for the adult population across Iranian provinces, demonstrating significant variations among these provinces. These differences should be considered in the design and implementation of policies aimed at improving HRQoL. The results of this study can inform healthcare research and policymaking by identifying disparities in health status across regions. Considering the comparatively low HRQoL scores found in certain provinces, it is crucial to plan and use strategies to improve health outcomes, especially for vulnerable groups who live in those regions.

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Authors' Contribution

Data Curation: Fakhraddin Daastari, Abdoreza Mousavi, Hedieh Sadat Zekri
Formal Analysis: Fakhraddin Daastari, Abdoreza Mousavi, Hedieh Sadat Zekri
Writing-Original Draft: Alireza Darrudi, Ali Akbari Sari, Rajabali Daroudi

Competing Interests

The authors declared that they have no competing interests.

Consent for Publication

Not applicable.

Data Availability Statement

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

Ethical Approval

The project was in accordance with the ethical principles and the national norms and standards for conducting medical research. Moreover, the study protocol was approved by the Ethics Committee of Tehran University of Medical Sciences (IR.TUMS.SPH.REC.1401.237).

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Supplementary Files

Supplementary file 1 contains Table S1.

References

- Yin S, Njai R, Barker L, Siegel PZ, Liao Y. Summarizing health-related quality of life (HRQOL): development and testing of a one-factor model. *Popul Health Metr* 2016;14:22. doi:10.1186/s12963-016-0091-3
- Scalone L, Cortesi PA, Ciampichini R, Cesana G, Mantovani LG. Health related quality of life norm data of the Italian general population: results using the EQ-5D-3L and EQ-5D-5L instruments. *Epidemiol Biostat Public Health* 2015;12(3):1-15. doi:10.2427/11457
- Stenman U, Hakama M, Knekt P, Aromaa A, Teppo L, Leinonen J, et al. Measurement and modeling of health-related quality of life. In: *Epidemiology and Demography in Public Health*. Academic Press; 2010. p. 130-5.
- Hickey A, Barker M, McGee H, O'Boyle C. Measuring health-related quality of life in older patient populations: a review of current approaches. *Pharmacoeconomics* 2005;23(10):971-93. doi:10.2165/00019053-200523100-00002
- Gusi N, Olivares PR, Rajendram R. The EQ-5D health-related quality of life questionnaire. In: Preedy VR, Watson RR, eds. *Handbook of Disease Burdens and Quality of Life Measures*. New York, NY: Springer; 2010. p. 87-99. doi:10.1007/978-0-387-78665-0_5
- Herdman M, Gudex C, Lloyd A, Janssen M, Kind P, Parkin D, et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res* 2011;20(10):1727-36. doi:10.1007/s11136-011-9903-x
- Devlin N, Parkin D, Janssen B. *Methods for Analysing and Reporting EQ-5D Data*. Springer Nature; 2020.
- Sun S, Chen J, Johannesson M, Kind P, Xu L, Zhang Y, et al. Regional differences in health status in China: population health-related quality of life results from the National Health Services Survey 2008. *Health Place* 2011;17(2):671-80. doi:10.1016/j.healthplace.2011.01.007
- Emrani Z, Akbari Sari A, Zeraati H, Olyaeemanesh A, Daroudi R. Health-related quality of life measured using the EQ-5D-5L: population norms for the capital of Iran. *Health Qual Life Outcomes* 2020;18(1):108. doi:10.1186/s12955-020-01365-5
- Rezaei S, Hajizadeh M, Kazemi A, Khosravipour M, Khosravi F, Rezaeian S. Determinants of health-related quality of life in Iranian adults: evidence from a cross-sectional study. *Epidemiol Health* 2017;39:e2017038. doi:10.4178/epih.e2017038
- Kazemi Karyani A, Rashidian A, Emamgholipour Sefiddashti S, Akbari Sari A. Self-reported health-related quality of life (HRQoL) and factors affecting HRQoL among individuals with health insurance in Iran. *Epidemiol Health* 2016;38:e2016046. doi:10.4178/epih.e2016046
- Mousavi A, Akbari Sari A, Daastari F, Daroudi R. Health-related quality of life measured using the EQ-5D-3L: Iranian population norms. *Expert Rev Pharmacoecon Outcomes Res* 2024;24(5):643-51. doi:10.1080/14737167.2024.2328061
- Shirvani Shiri M, Karami H, Ameri H, Akbari Sari A, Tatari M, Emamgholipour S, et al. The influencing factors of health-related quality of life of the general population of Iran during the COVID-19 pandemic. *Front Med (Lausanne)* 2023;10:1049642. doi:10.3389/fmed.2023.1049642
- Rezaei S. Population norms of health-related quality of life in Iran: findings from a national EQ-5D-5L study. *Health Qual Life Outcomes* 2025;23(1):48. doi:10.1186/s12955-025-02378-8
- Mousavi A, Daroudi R, Alipour S, Akbari Sari A, Daastari F. Quality-adjusted life expectancy norms for the Iranian population. *Popul Health Metr* 2025;23(1):5. doi:10.1186/s12963-025-00366-0
- Statistics Center of Iran. Available from: <https://www.amar.org.ir/statistical-information>. Accessed January 15, 2024.
- Djalalinia S, Azadnajafabad S, Ghasemi E, Yoosefi M, Rezaei N, Farzi Y, et al. Protocol design for surveillance of risk factors of non-communicable diseases during the COVID-19 pandemic: an experience from Iran STEPS Survey 2021. *Arch Iran Med* 2022;25(9):634-46. doi:10.34172/aim.2022.99
- Goudarzi R, Akbari Sari A, Zeraati H, Rashidian A, Mohammad K, Amini S. Valuation of quality weights for EuroQol 5-dimensional health states with the time trade-off method in the capital of Iran. *Value Health Reg Issues* 2019;18:170-5. doi:10.1016/j.vhri.2019.01.007
- Sullivan T, Turner RM, Derrett S, Hansen P. New Zealand population norms for the EQ-5D-5L constructed from the personal value sets of participants in a national survey. *Value Health* 2021;24(9):1308-18. doi:10.1016/j.jval.2021.04.1280
- Buchholz I, Janssen MF, Kohlmann T, Feng YS. A systematic review of studies comparing the measurement properties of the three-level and five-level versions of the EQ-5D. *Pharmacoeconomics* 2018;36(6):645-61. doi:10.1007/s40273-018-0642-5
- Grochtdreis T, Dams J, König HH, Konnopka A. Health-related quality of life measured with the EQ-5D-5L: estimation of normative index values based on a representative German population sample and value set. *Eur J Health Econ* 2019;20(6):933-44. doi:10.1007/s10198-019-01054-1
- Santos M, Monteiro AL, Santos B. EQ-5D Brazilian population norms. *Health Qual Life Outcomes* 2021;19(1):162. doi:10.1186/s12955-021-01671-6
- Encheva M, Djambazov S, Vekov T, Golicki D. EQ-5D-5L Bulgarian population norms. *Eur J Health Econ* 2020;21(8):1169-78. doi:10.1007/s10198-020-01225-5
- Ferreira PL, Pereira LN, Antunes P, Ferreira LN. EQ-5D-5L Portuguese population norms. *Eur J Health Econ* 2023;24(9):1411-20. doi:10.1007/s10198-022-01552-9
- McCaffrey N, Kaambwa B, Currow DC, Ratcliffe J. Health-related quality of life measured using the EQ-5D-5L: South Australian population norms. *Health Qual Life Outcomes* 2016;14(1):133. doi:10.1186/s12955-016-0537-0
- Karimi M, Brazier J. Health, Health-related quality of life, and quality of life: what is the difference? *Pharmacoeconomics* 2016;34(7):645-9. doi:10.1007/s40273-016-0389-9
- Tourani S, Behzadifar M, Martini M, Aryankhesal A, Taheri Mirghaed M, Salemi M, et al. Health-related quality of life among healthy elderly Iranians: a systematic review and meta-analysis of the literature. *Health Qual Life Outcomes* 2018;16(1):18. doi:10.1186/s12955-018-0845-7
- Farajzadeh M, Ghanei Gheslagh R, Sayehmiri K. Health related quality of life in Iranian elderly citizens: a systematic review and meta-analysis. *Int J Community Based Nurs Midwifery* 2017;5(2):100-11.
- Mosadeghrad AM, Mousavi A. The futurology of aging population in Iran: letter to the editor. *Tehran Univ Med J* 2021;79(3):248-9.