Published online 2016 August 24.

Research Article

Self-Rated Health and Life Satisfaction in Iranian Children and Adolescents at the National and Provincial Level: The CASPIAN-IV Study

Roya Kelishadi,¹ Shirin Djalalinia,² Mostafa Qorbani,^{3,4,*} Morteza Mansourian,⁵ Mohammad Esmaeil

Motlagh,⁶ Gelayol Ardalan,¹ Hamid Asayesh,⁷ Hossein Ansari,⁸ and Ramin Heshmat^{4,*}

¹Department of Pediatrics, Child Growth and Development Research Center, Research Institute for Primordial Prevention of Non-communicable Disease, Isfahan University of Medical Sciences, Isfahan, IR Iran

²Development of Research and Technology Center, Deputy of Research and Technology, Ministry of Health and Medical Education, Tehran, IR Iran

³Department of Community Medicine, Alborz University of Medical Sciences, Karaj, IR Iran

⁴Chronic Diseases Research Center, Endocrinology and Metabolism Population Sciences Institute, Tehran University of Medical Sciences, <u>Tehran</u>, IR Iran

⁵Department of Health Education, School of Public Health, Iran University of Medical Sciences, Tehran, IR Iran

⁶Department of Pediatrics, Ahvaz University of Medical Sciences, Ahvaz, IR Iran
⁷Department of Medical Emergency, Qom University of Medical Sciences, Qom, IR Iran

⁸Health Promotion Research Center, Department of Epidemiology and Biostatistics, Zahedan University of Medical Sciences, Zahedan, IR Iran

Corresponding authors: Mostafa Qorbani, Department of Community Medicine, Alborz University of Medical Sciences, Karaj, IR Iran, E-mail: moorbani1379@yahoo.com; Ramin Heshmat, Chronic Diseases Research Center, Endocrinology and Metabolism Population Sciences Institute, Tehran University of Medical Sciences, Tehran, IR, Iran. E-mail: Rheshmat@tums.ac.ir

Received 2015 April 05; Revised 2015 June 05; Accepted 2015 July 11.

Abstract

Background: Self-rated health (SRH) and life satisfaction (LS) are of increasing interest to medical researchers, because of their close relationship with different aspects of health.

Objectives: This paper describes the patterns of LS and SRH among Iranian children and adolescents, analyzed by sex and residence area, at the national and provincial levels.

Methods: In this nationwide study 14880 students, aged 6-18 years, were selected by multistage random cluster sampling from urban and rural areas of 30 provinces in Iran, as part of the fourth survey of a national surveillance program conducted in 2011-2012. LS and SRH were assessed through a questionnaire following the World Health Organization-Global School-based Student Health Survey (WHO-GSHS) protocols.

Results: 13486 out of 14880 invited students completed the study (participation rate: 90.6%). Their average age was 12.47 ± 3.36 years. The prevalence of good SRH at national level was 80.13 (95% CI: 79.25, 80.99); the prevalence of LS among Iranian students at the national level was 80.17 (95% CI: 79.18, 81.13). At the provincial level, the highest and the lowest LS scores were 85.42 (80.01, 89.55) and 74.78 (68.74, 79.99), respectively. Likewise, the highest and the lowest prevalence of good SRH was 88.36 (83.99, 91.66) and 74.22 (69.06, 78.78), respectively.

Conclusions: Our findings show that, at provincial levels, a complex set of known/unknown influencing factors affect individuals' assessments of their own health quality. Understanding these patterns of SRH and LS could be useful for better health policy and more targeted studies in this field.

Keywords: Life Satisfaction, Health-Related Quality of Life, Children, Adolescents, Iran

1. Background

Self-rated health (SRH) and life satisfaction (LS), because of their close relationship with different aspects of health, have attracted increasing interest among researches in several fields (1). SRH, also called selfreported health, assesses different dimensions of individuals' own health and can show the effects of some nonbiomedical factors, including lifestyle, psychosocial, and socio-demographic conditions (2). LS is an evaluation of general well-being that includes one's subjective feeling of health. The relationship of SRH and LS was documented in several studies (3-6).

These personal assessments broadly affect both physical and mental health. They involve a wide range of personality development in the mental health domains, religious behaviors in spiritual health, and even physical disorders and life expectancy (3, 7-10). Moreover, SRH is a powerful predictor of mortality (11). Scientific evidence emphasizes that these considerations, especially in the early stages of development, should be addressed more closely (1, 10, 12). Despite the importance and priority of these fields, there is only a little scattered information on SRH and LS for

Copyright © 2016, Iranian Red Crescent Medical Journal. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/) which permits copy and redistribute the material just in noncommercial usages, provided the SID in original work is properly cited. some population sub-groups, and no information at the national or provincial levels (9, 13). Many studies concentrated on adult populations, and there are few studies on children or adolescents (14). In 2010, a nationwide study of Iranian adolescents showed that 75% of them reported good SRH. Moreover, physical activity and high risk behaviors seem to shape the adolescents' perceptions of health (13). Based on other scientific evidence, socioeconomic factors may be related to SRH and LS (2, 4). Recently, scholars have emphasized that geographical and environmental factors could also affect SRH and LS (15, 16).

2. Objectives

This is the first study to document SRH and LS in Iranian children and adolescents, and to compare the results among different provinces with different sociodemographic factors.

3. Methods

The present cross-sectional study is a part of the fourth survey of a national surveillance program, entitled childhood and adolescence surveillance and prevention of adult non-communicable diseases (CASPIAN-IV), which was conducted in 2011-2012 in 30 provinces in Iran. The details of the survey's processes and methodology have been published before (17). Children and adolescents aged 6 -18 years were selected by multistage random cluster sampling from urban and rural areas of 30 provinces of Iran. The sample size was calculated according to the cluster sampling method. The maximum sample size that could give an optimal estimate of all risk factors of interest was selected. Thus, the sample size was calculated as 480 subjects in each province. A total of 48 clusters of 10 subjects in each of the provinces, and a total of 14,880 students and an equal number of their parents, were selected from 30 provinces. Eligible schools for the study were stratified according to information from the Ministry of Education, and then they were selected randomly. In the selected schools, students were also selected randomly. Stratification was performed according to school grade (elementary, middle-, and high school) and habitation area (urban vs. rural).

We prepared Persian versions of standardized questionnaires, which were designed based on world health organization models. The validity and reliability of the questionnaires were confirmed through previous studies (18). In order to assess the highest quality of data, a critical criterion of multi-center data gathering, multiple levels of quality assurance were exactly controlled by the project's data and safety monitoring board (DSMB) (17). SRH was assessed through a single item: "How would you describe your general state of health?" The categories of response were "Perfect," "Good," "Moderate," and "Bad." LS was assessed through a single item as well; subjects were asked to indicate their degree of life satisfaction by using a tenpoint scale from 1 = very dissatisfied to 10 = very satisfied. Scores under 6 were defined as "dissatisfied," and those above 6 were defined as "satisfied." According to these categories, the LS score was calculated.

3.1. Statistical Analyses

We reported the prevalence of LS and good SRH with a 95% confidence interval (CI). The LS score (range: 1-10) was also considered a continuous variable, and was reported as mean and 95% CI. Associations of categorical variables with LS and SRH were assessed using Chi-square tests. The means of LS scores across living areas (urban/rural) and sex were assessed using T-tests. All analyses were performed at the national, regional, and provincial levels by using the survey analysis method in STATA Corp. 2011 (Stata Statistical Software: Release 12. College Station, TX: StataCorp LP. Package). were were plotted using R software, version 2.15.1.

3.2. Ethical Consideration

Required approvals have been documented from the ethical committees of Isfahan University of Medical Sciences (IUMS), Tehran University of Medical Sciences (TUMS), and other relevant regulatory organizations at the national and provincial levels. Participation of students in the present study was voluntary. During the beginning phase, the objectives and methods of study were described to all the participants. After this complete introduction, written informed consent and oral assent, respectively, were obtained from all the parents and students who agreed to participate. All procedures of gathering and managing were conducted carefully and anonymously, with careful security considerations.

4. Results

A total of 13486 out of the 14880 invited students completed the study (participation rate: 90.6%). The average age of the participants was 12.47 \pm 3.36 years, without a significant difference between girls and boys. 6640 (49.2%) girls and 6846 (50.8%) boys participated; 75.6% were from urban areas and 24.4% were from rural areas. The mean of LS scores at national levels, according to sex and living area, are presented in Figure 1. The mean LS score was 8.14 (95% CI: 8.08, 8.20) at the national level. The mean LS scores in urban and rural areas were not statistically different (8.11, 95% CI: 8.05, 8.17 and 8.23, 95% CI: 8.11, 8.35, respectively). Likewise, the mean LS scores between boys and girls had no significant difference (8.0 (CI 95%: 8.01, 8.17) vs. 8.18 (95% CI: 8.11, 8.26), respectively, P > 0.05).



Figure 1. Life Satisfaction Scores in Iranian Children and Adolescents, by Sex and Living Area, at the National Level: the CASPIAN IV Study

The prevalence of "satisfied" LS among Iranian students at the national level was 80.17% (79.18%, 81.13%); it did not differ significantly between boys and girls (79.58% vs. 80.25%). The prevalence of LS in urban vs. rural areas also showed no significant difference (79.72% (95% CI: 78.62, 80.78) vs. 80.51% (95% CI: 78.44, 82.42), respectively, P > 0.05) (Figure 2). The prevalence of good SRH at the national level was 80.13% (95% CI: 79.25, 80.99), and is presented in Figure 3. The prevalence was 80.51% (95% CI: 79.33, 81.64) and 79.4% (95% CI: 78.13, 80.61) for boys and girls, respectively (P > 0.05), and was 79.59% and 81.12% for urban and rural areas, respectively (P > 0.05).



and Living Area, at the National Level: the CASPIAN IV Study

The mean of LS scores, prevalence of high LS, and good SRH at the provincial levels are presented in Appendix 1. At the provincial level, the highest and the lowest prevalence of LS, respectively, were 85.42% (80.01, 89.55) and 74.78% (68.74, 79.99)]. Similarly, the highest and the lowest preva-





lence of good SRH were 88.36% (83.99, 91.66) and 74.22% (69.06, 78.78). Figure 4 shows the prevalence of good SRH at the provincial level. Bushehr (0.88 \pm 0.01) and Lorestan (0.88 \pm 0.02) show the highest prevalence of good SRH, while Isfahan (0.74 \pm 0.02) and Qazvin (0.75 \pm 0.02) have the lowest prevalence of good SRH. For LS prevalence, the highest values belonged to Golestan (0.85 \pm 0.02) and Semnan (0.85 \pm 0.02), whereas the lowest values were seen in Keraman (0.75 \pm 0.02), Hormozgan (0.75 \pm 0.03), Ilam (0.75 \pm 0.02), and East Azarbaijan (0.75 \pm 0.02). See Figure

Figure 4. The Prevalence of Good SRH at the Provincial Level: the CASPIAN-IV Study



Data are presented as prevalence \pm SE.

Figure 5. The Prevalence of LS at the Provincial Level: the CASPIAN-IV Study



Data are presented as prevalence \pm SE.

5. Discussion

This paper describes patterns of LS and SRH among Iranian children and adolescents, by sex and residence area, at the national and provincial levels. To the best of our knowledge, this is the first study of its kind in the Middle East and North Africa (MENA) that presents LS scores, the frequency of LS, and good SRH scores in a large sample of children and adolescents at the national and provincial levels.

Our results show that most of the southern provinces, those with lower SES compared with other provinces, have lower LS scores. This might be attributed to a complex set of different geographical, environmental, socioeconomical, and even personal factors. In this regard, the role of hot temperature and socio-economic conditions have been most discussed in previous studies (1, 7, 19, 20). On the other hand, despite the highest SES levels being found in the central provinces, children and adolescents of these provinces did not report the highest LS and good SRH scores. Instead, the highest LS and good SRH scores were reported from the northern and northeastern provinces. As these regions of Iran have a humid climate with the highest levels of rain per year, climate and geographical conditions might play an important role compared to SES. Some other related findings reveal that in some countries, ethnic differences and cultural behaviors have a considerable effect on individuals' self-assessment of quality of life (19,

21-24).

In this study, the children and adolescents living in rural areas had better LS and SRH scores. An industrialized type of living and a higher rate of air pollution in urban areas might be associated with these differences. Related studies emphasized that LS has an interactive relationship with adolescent health behaviors (1, 25). In accordance with other studies, our findings show a negative relationship between local environmental problems and life satisfaction (24, 26). Air quality and environmental conditions might affect different aspects of physical and mental health (24, 27).

Different elements of quality of life, encompassing sociological, economic, psychological, philosophical, and ethical aspects, make for complex relationships that intensely affect individuals' assessment of LS and SRH (1, 11, 20). This complexity has been emphasized throughout the CASPIAN IV survey. The findings revealed that LS and SRH were not related with BMI, but had negative associations with body weight perception (13). Attempts to address different exploratory domains have helped illuminate a broad range of possible factors which influence life satisfaction: gender, age, marital status, religious/cultural beliefs, individual capacities, environmental conditions, social factors, economical situation, and even generic history of generation (5, 24, 25, 28, 29).

As one of its main noteworthy strengths, he present study benefited from a large, nationally representative sample of Iranian children and adolescents. Moreover, it precisely followed the world health organization's Global School-based Student Health Survey (WHO-GSHS) protocol. The main limitation of this study was its cross-sectional design, along with some limitations with the participants' recall bias for some information. Our findings show that, at provincial levels, a complex set of known/unknown influencing factors affect individuals' assessments of their health quality. These identified patterns of SRH and LS could be useful for better health policy and more targeted studies in this field.

Supplementary Material

Supplementary material(s) is available here.

Acknowledgments

This nationwide survey was conducted as a national surveillance program. The authors forward their sincere thanks to the large team working with this project in different provinces.

Footnote

Authors' Contribution: Mostafa Qorbani and Ramin Heshmat equally contributed as corresponding authors.

References

- Zullig KJ, Valois RF, Huebner ES, Drane JW. Adolescent health-related quality of life and perceived satisfaction with life. *Qual Life Res.* 2005;14(6):1573-84. [PubMed: 16110937].
- Eriksson I, Unden AL, Elofsson S. Self-rated health. Comparisons between three different measures. Results from a population study. Int J Epidemiol. 2001;30(2):326–33. [PubMed: 11369738].
- 3. Palgi Y, Shmotkin D. The predicament of time near the end of life: Time perspective trajectories of life satisfaction among the old-old. *Aging Ment Health*. 2010;**14**(5):577-86. doi: 10.1080/13607860903483086. [PubMed: 20480422].
- Koivumaa-Honkanen H, Honkanen R, Viinamaki H, Heikkila K, Kaprio J, Koskenvuo M. Self-reported life satisfaction and 20-year mortality in healthy Finnish adults. *Am J Epidemiol.* 2000;**152**(10):983–91. [PubMed: 11092440].
- Diener E, Inglehart R, Tay L. Theory and validity of life satisfaction scales. Social Indicators Rese. 2012;112(3):497–527. doi: 10.1007/s11205-012-0076-y.
- Keyes CLM. Happiness, flourishing, and life satisfaction. 2014 :747–51. doi: 10.1002/9781118410868.wbehibs454.
- Strine TW, Chapman DP, Balluz LS, Moriarty DG, Mokdad AH. The associations between life satisfaction and health-related quality of life, chronic illness, and health behaviors among U.S. community-dwelling adults. J Community Health. 2008;33(1):40–50. doi: 10.1007/s10900-007-9066-4. [PubMed: 18080207].
- Grant N, Wardle J, Steptoe A. The relationship between life satisfaction and health behavior: a cross-cultural analysis of young adults. *Int J Behav Med.* 2009;16(3):259–68. doi: 10.1007/s12529-009-9032-x. [PubMed: 19319695].
- Locker D, Clarke M, Payne B. Self-perceived oral health status, psychological well-being, and life satisfaction in an older adult population. J Dent Res. 2000;79(4):970–5. [PubMed: 10831100].
- Gilman R, Huebner S. A review of life satisfaction research with children and adolescents. Sch Psychol Q. 2003;18(2):192.
- Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav.* 1997;38(1):21-37. [PubMed: 9097506].
- 12. Huebner ES, Hills KJ, Siddall J, Gilman R. Life satisfaction and schooling. Handbook of positive psychology in the schools. New York: Routledge; 2014.
- Heshmat R, Kelishadi R, Motamed-Gorji N, Motlagh ME, Ardalan G, Arifirad T, et al. Association between body mass index and perceived weight status with self-rated health and life satisfaction in Iranian children and adolescents: the CASPIAN-III study. Qual Life Res. 2015;24(1):263-72. doi: 10.1007/s11136-014-0757-x. [PubMed: 25038635].

- Pilar Matud M, Bethencourt JM, Ibanez I. Relevance of gender roles in life satisfaction in adult people. *Pers. Individ. Dif.* 2014;70:206–11. doi: 10.1016/j.paid.2014.06.046.
- 15. Silva J, De Keulenaer F, Johnstone N. Environmental quality and life satisfaction. 2012
- Knoll B, Pitlik H, Rode M. A note on the impact of economic regulation on life satisfaction. *Appl Econ Lett.* 2013;20(9):916–20.
- Kelishadi R, Ardalan G, Qorbani M, Ataie-Jafari A, Bahreynian M, Taslimi M, et al. Methodology and Early Findings of the Fourth Survey of Childhood and Adolescence Surveillance and Prevention of Adult Non-Communicable Disease in Iran: The CASPIAN-IV Study. Int J Prev Med. 2013;4(12):1451–60. [PubMed: 24498502].
- Zakeri M, Sedaghat M, Motlagh ME, Tayari Ashtiani R, Ardalan G. BMI correlation with psychiatric problems among 10-18 years Iranian students. *Acta Med Iran*. 2012;50(3):177-84. [PubMed: 22418986].
- Spein AR, Pedersen CP, Silviken AC, Melhus M, Kvernmo SE, Bjerregaard P. Self-rated health among Greenlandic Inuit and Norwegian Sami adolescents: associated risk and protective correlates. *Int J Circumpolar Health.* 2013;72 doi: 10.3402/ijch.v72i0.19793. [PubMed: 23396865].
- Taylor RM, Gibson F, Franck LS. A concept analysis of health-related quality of life in young people with chronic illness. *J Clin Nurs.* 2008;17(14):1823–33. doi: 10.1111/j.1365-2702.2008.02379.x. [PubMed: 18578756].
- Ostrove JM, Adler NE, Kuppermann M, Washington AE. Objective and subjective assessments of socioeconomic status and their relationship to self-rated health in an ethnically diverse sample of pregnant women. *Health Psychol.* 2000;19(6):613–8. [PubMed: 11129365].
- Chandola T, Jenkinson C. Validating self-rated health in different ethnic groups. *Ethn Health.* 2000;5(2):151–9. doi: 10.1080/713667451. [PubMed:10984833].
- Jylha M, Guralnik JM, Ferrucci L, Jokela J, Heikkinen E. Is self-rated health comparable across cultures and genders?. *J Gerontol B Psychol Sci Soc Sci.* 1998;**53**(3):S144–52. [PubMed: 9602839].
- Tella RD, MacCulloch RJ, Oswald AJ. The Macroeconomics of Happiness. *Rev Econ Stat.* 2003;85(4):809–27. doi: 10.1162/003465303772815745.
- Schafer MH, Mustillo SA, Ferraro KF. Age and the tenses of life satisfaction. J Gerontol B Psychol Sci Soc Sci. 2013;68(4):571–9. doi: 10.1093/geronb/gbt038. [PubMed: 23704205].
- Ferrer-i-Carbonell A, Gowdy JM. Environmental degradation and happiness. *Ecol Econ.* 2007;60(3):509–16. doi: 10.1016/j.ecolecon.2005.12.005.
- Haseli-Mashhadi N, Pan A, Ye X, Wang J, Qi Q, Liu Y, et al. Self-Rated Health in middle-aged and elderly Chinese: distribution, determinants and associations with cardio-metabolic risk factors. *BMC Public Health.* 2009;9:368. doi: 10.1186/1471-2458-9-368. [PubMed: 19788754].
- Johnson W, Krueger RF. How money buys happiness: genetic and environmental processes linking finances and life satisfaction. J Pers Soc Psychol. 2006;90(4):680–91. doi: 10.1037/0022-3514.90.4.680. [PubMed: 16649863].
- 29. Inglehart R, Klingemann HD. Genes, culture, democracy, and happiness. *Culture and subjective well-being*. 2000:165–83.

www.SID ir