



Investigating Subjective and Objective Quality of Life in Rural Areas: the Case of Tehran Province in Iran

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Abstract

Given the importance of measuring QOL and the need for sound and efficient planning to improve and enhance the well-being of citizens, the objective of this study was to investigate QOL in rural areas of Tehran province, Iran. To this end, the relevant literature and secondary sources were used to develop a questionnaire whose validity was determined by a panel of experts. To the best knowledge of the authors, no similar study has assessed QOL in rural areas of Tehran province and none of them has compared objective and subjective QOL in rural areas. The findings showed that in terms of objective QOL, which indicates the minimum living standards, the villagers in Tehran province were in a moderate to high status, but in the subjective QOL, about 20% of the villagers were rated as poor. According to the findings, there was a significant difference between the residents of different rural areas of Tehran in terms of objective and subjective QOL at the 99% level, but the differences were not the same. This calls for policymakers' attention. In this regard, policies should be put on the planning agenda to reduce rural migration by adopting a coordinated approach to rural and urban development and improving the physical and environmental conditions of rural communities to provide welfare services and reduce the disparity between urban and rural areas.

Keywords Objective indicators · Subjective indicators · Villagers quality of life · Rural and urban development

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Introduction

Quality of life (QOL) is a complex and multidimensional aspect of human societies (Mittal et al. 2019), that is related to population conditions and status on a specific geographic scale. QOL is defined as the interaction of human needs and the perception of their fulfillment (Talmage and Frederick 2019). It relies both on subjective or qualitative indicators and on objective or quantitative indicators (Gholizadeh et al. 2017; Kokabi 2002). The most common distinction in examining QOL is the distinction between subjective and objective QOL (Noghani-Dokht Bahmani et al. 2008), but this has not been addressed yet. In the objective dimension, indicators such as the total monthly income of households and total annual savings of households are measured without the subjective assessment of individuals. In other words, objective indicators are related to visible facts. However, the subjective aspect of QOL is based on survey and interviewing tools to obtain respondents' assessment of their life experiences in the form of satisfaction, happiness, well-being, or the like (Qasemi et al. 2013; Boelhouwer and Noll 2014). In general, the concept of QOL has expanded beyond the economic and monetary dimensions to consider also environmental and social characteristics.

"Quality of life" is a normative conceptualization of the good life and society which—depending on its different notions—covers objective and/or subjective components (Bishop-Fitzpatrick et al. 2016; Dzokoto et al. 2019; Figueroa 2018). The objective QOL is confined to the objective elements or measurements and also calculated by objective metrics. These are data on individual or social facts, unfiltered hypotheses, and independence of personal judgments (Boelhouwer 2010). The correlation between objective indicators and relevant life satisfaction domains is supported by empirical research. In a review study on QOL by Evans and Huxley (2002), the authors conclude that objective conditions do not have a significant impact on subjective QOL (e.g., Bowling and Windsor 2001; McCrea et al. 2006) and that life domain satisfactions are better predictors of overall life satisfaction (e.g., McCrea et al. 2006). However, objective circumstances are linked to satisfaction with particular areas of life, indicating that satisfaction in areas of life can mediate the relationship between objective conditions and overall satisfaction with life (Evans and Huxley 2002). Demographic and socio-economic features of the "human factor" rather than non-human factors have often been the objective measures used in studies. For areas such as income satisfaction and health, this is suitable. However, in the context of rural QOL, it is important to investigate the links between the objective characteristics of rural areas and subjective assessments. The main objective of the research is to investigate objective and subjective QOL in rural areas of Tehran province, taking into account the need to improve sustainable rural development. A number of direct or indirect parameters that can be used to assess the quality of life of farmers have often been investigated in previous similar studies, but to the best of our knowledge, they have not resulted in an objective and subjective QOL in rural areas. The relationships between objective and subjective QOL in rural areas (economic situation, living conditions, and mental comfort) are therefore attempted to be identified in this study as a crucial added value that appears to be an important and still poorly recognized issue in the context of the sustainability paradigm. Like in other countries, QOL is a significant topic in Iran too; however, the lack of QOL is more evident in rural areas of Iran. Rural areas are limited in terms of livelihoods (housing, employment,

infrastructure, and transportation options, etc.) and this creates poor QOL and living conditions in these areas compared to urban ones, so they are losing a large part of their population (Bernard 2018).

The quality of life in rural areas of Tehran as a capital city is expected to be better than in other villages in Iran, but unfortunately, rural people in this metropolitan area are struggling with inferior QOL, and this is growingly aggravated. The last three censuses (Iran's Population and Housing Census from 1996 to 2016) revealed that the population growth rate in rural areas has declined from 3.2% during 1996–2006 to –1.5% during 2006–2011, followed by a dramatic slump to –7.3% between 2011 and 2016. These figures have been 3.7%, 1.9%, and 2.6% in urban areas, respectively (Department of Statistics and Information of Tehran Province 2016; Ghodsi et al. 2020; Roudi et al. 2017). The decline in the rural population often begins with poor economic conditions, but then becomes part of a complex circle, leading to a downward spiral in the local economy, a decline in tax revenues, a decrease in the provision of services and social infrastructure, and increasingly abandoned homes and factories (Elshof et al. 2014). These changes make the people left behind even less attracted to a rural area and also increase their likelihood of leaving. The decline in the rural population, however, will have consequences for plans for initiatives aimed at sustainable rural development (Liu et al. 2017). For developing countries, rural population shifts are crucial because they can affect food security, poverty trends, and the success of rural development interventions (Jiang et al. 2014).

A decisive criterion which affects the population and the flow of goods between them, as well as their socio-cultural structures, is the distance between the city and the village. Although traditionally the town and the village are perceived as two separate and opposite districts, these two entities rely entirely on each other to exchange products, knowledge, expertise, techniques, and lifestyles (Shafiei and Leardini 2018). In Iran, the city and village have historically been described as spatially confined entities, separated by physical distances that impede their connectivity. The government's Land Reform Act of 1962 had the greatest impact on relations between villages and cities in the Tehran region. The redistribution of rural land has changed the system of land ownership and caused serious changes in Iran's rural and urban structure. However, many villagers have missed the opportunity to work on agricultural land due to the way in which land reform has been implemented and have therefore migrated to urban centers, in particular to Tehran (Mashayekhi 2016). In the early 1960s, large landlords and various institutions still owned more than 80% of Iran's arable land, all of which frequently used extra-economic forms of coercion to compel peasant labor. Following a series of land reform measures conducted between 1962 and 1972, the traditional tenure system changed radically. The reforms reshaped the structure of land ownership in Iran and contributed to the development of capitalist relations in the villages, along with other agricultural policies. The dominant form of agriculture became peasant ownership, and tenancy arrangements were marginalized. Therefore, having no land was a push-factor of migration for one-third of villagers (Shafiei and Leardini 2018). Over the period 1976–2011, the rate of urban-urban migration has increased significantly, while rural-rural migration is the opposite.

Tehran has grown dramatically to the west to accommodate these migrants, through which the city's border has come closer to the region's remote villages. At the same time, during its growth, Karaj, a small city in the 1960s, received the surplus population

of Tehran; it grew significantly and became Iran's fourth largest city by population. In densely populated cities, most environmental and peri-urban concerns are prevalent. It can be argued that the root cause of most pollution issues is the population's overwhelming concentration. In conjunction with the shift in land use for residential, industrial, and commercial purposes and the expansion of factories and industrial occupations, the conversion of Tehran villages to cities is the key factor leading to environmental pollution and low QOL (Mansourian et al. 2016). Rural areas of Iran and Tehran province, in particular, are constantly exploding with population, despite the need of cities and villages for green spaces, especially around the country's metropolises (Mansourian et al. 2016). Factors such as the lack of agricultural land in rural areas and their conversion to residential land, insufficient sources of income, and lack of educational and health facilities eventually lead to reduced economic growth and QOL in these areas (Mansourian et al. 2016).

After the Islamic Revolution, rural development plans were implemented under the supervision of the Ministry of Agricultural Jihad. Providing insurance for rural people, optimizing and renovating rural housing, as well as providing facilities and loans, are examples of the latest rural development plans. The consequence of this development was to direct migrants from other cities to rural areas of Tehran. Population growth in rural areas has led to a myriad of changes in rural people's thinking, lifestyle, behavior, and psyche, which, in turn, have resulted in unfavorable social repercussions and QOL (Shafiei and Leardini 2018). The process of evacuation of rural areas in Tehran province is noticeable (Fig. 1).

As shown in Fig. 1, urbanization has grown so rapidly in this era so that it has severely restricted many opportunities to improve villagers' QOL. In 1960, the urban population was 34% of the total country; however, by 2014, the population accounted for 54% of the total and continues to grow. By 2050, the proportion living in urban areas is expected to reach 66% (Department of Statistics and Information of Tehran Province 2016). Figure 2 shows the change in the global rural and urban populations from 1950 through to projected figures up to the year 2050. Various policies and strategies have been adopted to mitigate the negative effects of these problems, yet,

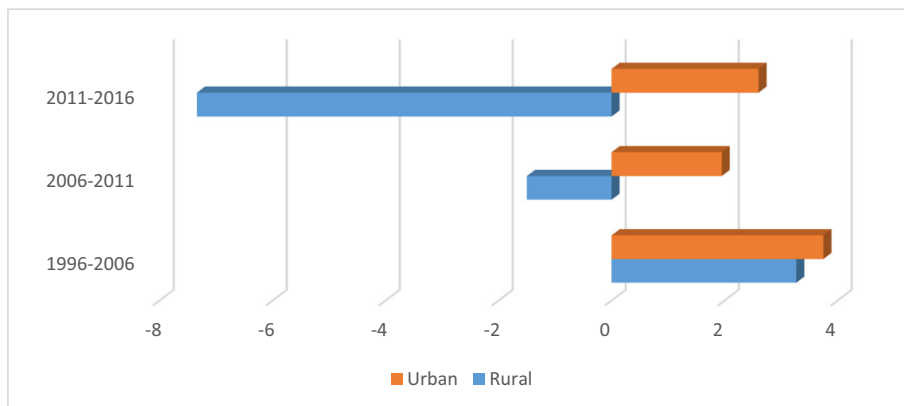


Fig. 1 Population growth rate (%) in urban and rural areas of Tehran (Department of Statistics and Information of Tehran Province 2016)

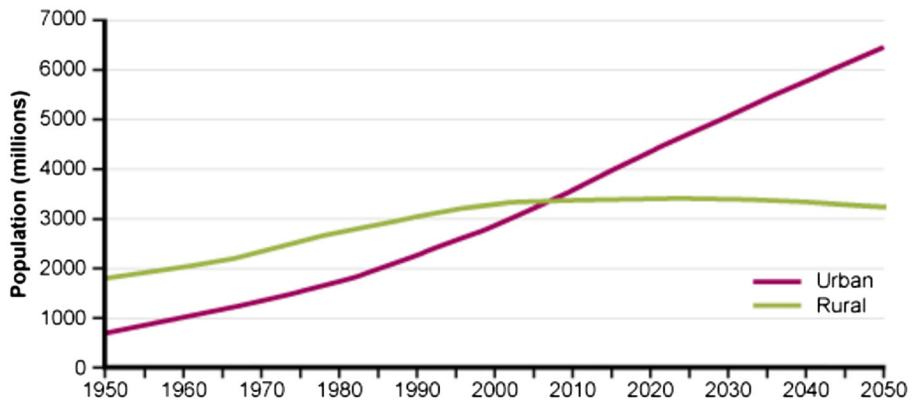


Fig. 2 Global urban and rural population from 1950 to 2050 (UNDESA 2014)

despite these solutions, in many rural areas of the country, QOL is far from favorable today, and this is much more visible in the rural areas of Tehran, the capital of Iran.

Along with the urbanization of Iranian society and its negative consequences in rural communities, it is presently imperative to analyze these consequences and this requires assessing and identifying QOL among the villagers. The low standard of living in rural areas and the migration of rural people to large cities such as Tehran have posed numerous social, economic, and environmental problems in both urban and rural areas (Shahrokhi Sardo et al. 2015). Tehran is at the top of the list of urbanization and migration of rural households. Meanwhile, villages play an evident role in economic, social, and political development processes at different regional scales. Ignoring QOL in rural areas may result in widespread poverty, delinquency, increasing inequality, rapid growth of urban population, unemployment, migration, etc. This shows the necessity of considering rural development and even its priority over urban development, especially in Tehran province. The results of this research can serve as basic information and statistical evidence for policymaking and planning. Linked to the main objective of the study, the following research questions will be addressed:

1. How much is QOL among the rural residents of Tehran province in objective and subjective aspects?
2. Is there a significant difference between the residents of different areas of Tehran province in QOL?
3. Does objective QOL or subjective QOL perform better in distinguishing rural residents?

Literature Review

Various terminologies have been used in different disciplines for different dimensions and nature of the term. For example, economists use the concept of desirability rather than QOL or psychologists use the term satisfaction or happiness, but planners refer to it as a criterion for measuring the degree to which a community enjoys all the blessings of life. QOL consists of better living conditions in which health, safety, comfort, peace,

vitality, creativity, and beauty emerge (Pourtahari et al., 2011). QOL means how well a person can live and whether he or she has a certain standard of living that makes his or her life easier. People define QOL in terms of access to education, communications, safety, health, and transportation. Many people around the world have come to believe that life is better for average people to live comfortably and reduce social disruption and untimely deaths (Aghayari-heir et al. 2018). The ultimate goal of rural development programs and projects is to improve QOL in rural communities, but the main precondition to achieve this is to provide the right living conditions that can pave the way for improving QOL in rural communities. Identifying living conditions that can provide good QOL for any individual or community is a challenge that many planners face today (Stanica et al. 2019). There are several conceptual models to measure QOL, the most common of which are discussed in Table 1.

The topic of QOL is very much studied and new information is continuously generated in the research field. Storie et al. (2020), Rebelo et al. (2020), and Beel and Wallace (2018) highlighted that social well-being, where social capital or social cohesion is built and people experience a good QOL, is a fundamental aspect of place-shaping. Communication development is an integral part of building social cohesion and is an essential component of the role leaders play in creating a sustainable place and improving QOL. For many of the rural inhabitants, the peace and quiet of rural landscapes is an important feature of QOL, but this is not enough to create a sustainable livelihood (Storie et al. 2020). Egoz et al. (2018) argue that all their needs must be served by the landscape in which people live, foster local dependence, and help individuals anchor and strengthen their sense of community, but studies show that individuals remain in areas where needs are not met. Xie et al. (2019) described QOL as being subject to individuals' perceptions of their positions in life where they live with specific relevance to the culture and value systems. Socio-demographic characteristics, social stigma, and discrimination, and lack of family support, have generated negative feelings and caused lower QOL (Xie et al. 2019). Ward et al. (2020) indicated that social cohesion was linked to urban participants' QOL, while social decay was important to both urban and rural participants' QOL. Furthermore, functional limitations, depressive symptoms, and loneliness were associated with poorer QOL. QOL, independent of other variables, is impacted by social capital and the socio-economic environment. They show that the relationship between the social environment and QOL differs between rural and urban populations. While social inequalities were significant in both settings, social cohesion was only associated with QOL among urban residents, and lower QOL was associated with higher levels of area deprivation.

The review of the theoretical research, researchers' opinions, and field studies reveal that most models are incomplete in terms of performance and integrity in assessing QOL. Therefore, according to the main indicators and variables derived from the literature and based on previous research, the theoretical framework of this research (Fig. 3) can be categorized into and analyzed based on four general factors (socio-cultural, physical-spatial, economic, and environmental factors). The model focuses on the subjective dimension of QOL, and the objective dimensions associated with each factor were identified and measured. To the best knowledge of the authors, no similar study has ever measured QOL in rural areas of Tehran province, and none of them has compared objective and subjective QOL in rural areas simultaneously.

Table 1 Theoretical models to measure the quality of life (QOL)

Title	Researcher	Variables
Structural Model of Quality of Life	(Pacione 2003)	According to the simplest structural model of QOL, overall QOL is a weighted set of satisfaction levels across different domains and aspects of life.
Modeling the Essential Elements of Quality of Life	(Kemp et al. 2003)	In this model, health and vitality are considered the two main dimensions of QOL. The model examines a combination of measurable, spatial, physical, and social dimensions of the environment and the correct understanding of them.
Model of Quality of Life Components	(Khaje shahkoochi and Minaee, 2014)	In this model, five components are considered: quality of the living environment, quality of health, quality of income and employment, quality of social participation, and quality of leisure for QOL.
“How can we apply the models of the quality of life and the quality of life management in an economy based on knowledge?”	(Amelia 2017)	Social and human aspects of QOL
“The Nature of Quality of Life: A Conceptual Model to Inform Assessment: The Nature of QOL”	(Alborz 2017)	“Foundational well-being: safety and survival, psychosocial well-being: love and belonging, status: esteem, autonomy: self-actualization.” It is based on Maslow’s hierarchy.
“Lifestyle Modification toward Improving Quality of Life and Effects on Caregivers’ Burden: Development of New Nursing Theory”	(Bayoumi 2018)	The relationship between lifestyle and QOL
“The SOLA Model: A Theory-Based Approach to Social Quality and Social Sustainability”	(Pieper et al. 2019)	Attention is paid to the social aspect of QOL
Modeling Regional Disparities for a Balanced Quality of Life and Apportioning Public Funding: A Graph Theoretical Approach	(Gupta 2015)	Analyze regional disparities by studying and modeling the data of an Indian state in terms of district development digraph, highlighting the methodology for allocating development funds to minimize regional imbalances.
Predicting Health-Related Quality of Life: Testing the Contextual Model Using Structural Equation Modeling	(Ashing-Giwa and Lim 2008)	In this model, health, general health status, emotional well-being, health care satisfaction, and socio-ecological factor vitality are considered the main dimensions of QOL.
Factor Structure and Internal Consistency of a Spanish Version of the Family Quality of Life (FaQoL)	(García-Grau et al. 2018)	The relationship of demographic character, family relationships, access to information and services, child functioning, and overall life situation with QOL.

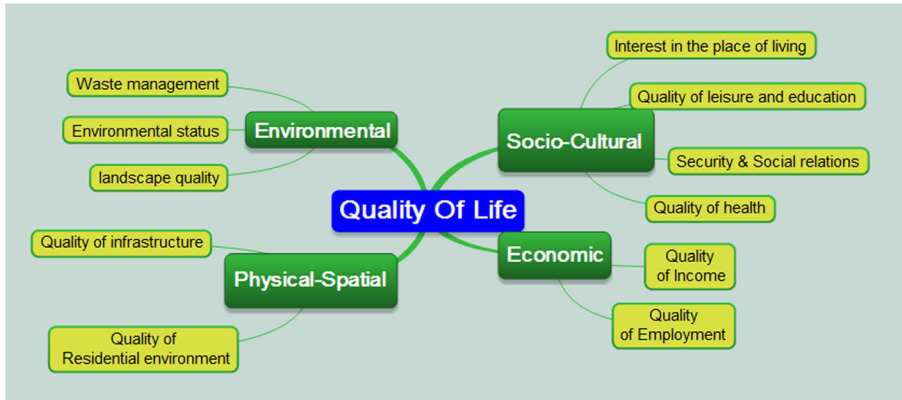


Fig. 3 Mind mapping for measuring QOL

Research Method

Items

The research was a survey using a questionnaire for data collection in 2019, in which factors related to the subjective dimension of QOL included economic, environmental, physical-spatial, and socio-cultural factors. They were measured by 56 items on a 5-point Likert scale (ranging from 1 = very low to 5 = very high, Table 2). Furthermore, the factors related to the objective dimension of QOL were assessed by 51 items (Table 3). To avoid scaling in the objective dimension of QOL, the method of division by the mean was used and the composite index was calculated. The indicators of objective dimension of QOL have also been categorized based on economic, social, environmental, and physical dimensions. However, the possibility of comparing the dimensions does not seem theoretically correct due to differences in their measurement scale. The scale of measurement in any statistical assessment shows the type of data derived from the answers to the questions of our questionnaire. Each of the four measurement scales (e.g., nominal, ordinal, interval, and ratio) presents a different type of information. The measurement assigns specific figures in a meaningful way. Hence, understanding the scales is vital for explaining the statistics linked to persons, objects, or events (Talmage and Frederick 2019). In the objective dimension of QOL, different measurement scales were applied to different variables (e.g., in the economic dimension, variables included monthly income (USD), total annual savings (USD), and number of trips per year) whereas in the physical-spatial dimension, variables included time to get to town (minutes), house area (square meter), building age, and access to facilities (that consists of 26 items (Yes/No)). In addition, in the environmental dimension, items included green space inside the village and weekly disposal of waste from the village by the municipality. In the social dimension, variables included the migration rate of family members and the number of conflicts with residents. Obviously, when the measurement scales are not the same, the variables cannot be summed up together. That is why the subjective dimension of QOL is measured by the Likert scale through which the variables are compatible with each other. However, by displaying the subjective dimension of QOL, different economic, social, physical, and environmental variables are comparable.

Statistical Population, Sample Size, and Sampling Method

The data collection method in this study was based on a researcher-made questionnaire which consisted of three parts. The first part included 56 items on a 5-point Likert scale (ranging from 1 = very low to 5 = very high) (Table 2) which measured the subjective dimension of QOL; the second part consisted of 51 items (Table 3) measuring the objective dimension of QOL, and the third part comprised some general questions (Table 5). In the present study, the statistical population consisted of 61,402 households living in the rural areas of Tehran province in 2019–2020. Krejcie and Morgan's (1970) table was used to determine the sample size, based on which 382 individuals were selected using the stratified proportional random sampling method. Given that the data collection was done by the lead author by visiting the households personally, the response rate was 100%. To select the samples, the stratified random sampling method with proportional assignment was used, which the strata consisted of different geographical areas. The result of the pre-test showed a high variance between the geographical areas in terms of QOL and income of rural households. Thus, samples were selected from four regions of north (Shemiranat), south (Varamin), east (Damavand), and west (Shahryar) of Tehran province as shown in Table 4.

To determine the validity of the questionnaire, its content validity was checked and verified by a panel of experts, and a sample of experts was determined by the snowball sampling method. Cronbach's alpha coefficient was used to measure the reliability of the questionnaire. The total alpha's coefficient for all the study constructs was estimated above 0.70.3.3. *ISDM*.

After calculating the subjective QOL index, which was the sum of 56 indicators, the mean and standard deviation (SD) of the combined index was calculated. The variables were combined with the Likert spectrum and formed the subjective QOL; then, for this combined index, mean, and SD have been calculated. The overall QOL was the sum of the objective and subjective QOL. By using the SD formula, the following four categories of subjective QOL have been created:

$$A = \text{Weak} \quad A \leq \text{Mean} - \text{SD}$$

$$B = \text{Moderate} \quad \text{Mean} - \text{SD} < B \leq \text{Mean}$$

$$C = \text{Good} \quad \text{Mean} < C \leq \text{Mean} + \text{SD}$$

$$D = \text{Excellent} \quad > \text{Mean} + \text{SD}$$

It is time- and resource-intensive and not always feasible to examine the entire population. Studies are therefore often carried out on the sample; data are summarized using descriptive statistics. These results are further generalized to the larger, non-

Table 2 Survey items and Cronbach's alpha coefficients for the subjective dimension of quality of life (QOL)

Variables	Items	Source
Economic $\alpha = 0.86$	<p>Satisfaction with income</p> <p>Having proper savings</p> <p>Having enough money to meet your needs</p>	<p>(Badri et al. 2013)</p> <p>(Barimani and Baluchi 2013)</p> <p>(Barimani et al. 2013)</p> <p>(Mirzaian et al. 2016)</p> <p>(Pourtaheri et al. 2011)</p> <p>(Ebrahimzadeh and Karbakhsh 2017)</p>
	<p>Job opportunity and diversity</p> <p>Job safety</p> <p>Job satisfaction</p>	<p>(Aghayari-heir et al. 2018)</p> <p>(Badri et al. 2013)</p> <p>(Darban-astaneh and Mahmoodi 2016)</p>
Socio-cultural $\alpha = 0.87$	<p>Quality of employment</p> <p>Interest in the place of living</p> <p>Unwilling to migrate</p> <p>Increased sense of belonging to village life</p> <p>Willingness to continue living</p> <p>The amount of enjoyment of life</p> <p>The importance of life for you</p>	<p>(WHO 2006), (Darban-astaneh and Mahmoodi 2016), (Chen et al. 2017), (Greco et al. 2015), (Safaeepour and Ahmadi 2015)</p>
	<p>Quality of leisure and education</p> <p>Appropriate sports and leisure facilities in the village</p> <p>Appropriate cultural and artistic facilities (libraries) in the village</p> <p>Ability to travel annually with family</p> <p>Easy access to schools</p> <p>Having good and experienced teachers</p>	<p>(Barimani and Baluchi 2013)</p> <p>(Sarai et al. 2013)</p> <p>(Badri et al. 2013)</p> <p>(Rezvani and Mansouryan 2008)</p> <p>(Pourtaheri et al. 2011)</p> <p>(Ebrahimzadeh and Karbakhsh 2017)</p>
	<p>Security and social relations</p> <p>Satisfaction with your personal relationships</p> <p>Satisfaction with your sex</p> <p>How much support your friends have</p> <p>Having a sense of security and freedom</p> <p>Friendly behavior of indigenous people with non-natives</p> <p>Access to the police station in times of emergency</p>	<p>(WHO 2006), (Rezvani and Mansouryan 2008)</p> <p>(Pourtaheri et al. 2011)</p> <p>(Ebrahimzadeh and Karbakhsh 2017)</p> <p>(Rezvani and Mansouryan 2008)</p>

Table 2 (continued)

Variables	Items	Source
Quality of health	There is unity, cohesion, and no-conflict between residents	(WHO 2006), (Rezvani and Mansouryan 2008)
	Weekly consumption of protein in the diet	(Pourtaheri et al. 2011)
	Weekly intake of fruits and vegetables in the diet	(Ebrahimzadeh and Karbakhsh 2017)
	Feeling physical pain	
	Use of medical treatments	
	Having enough energy for daily living	
	Mobility and agility	
	Satisfaction with your sleep status	
	Satisfaction with their ability to perform daily activities	
	Satisfaction with your work capacity	
	The amount of power of your focus	
	Satisfaction with the appearance of your body	
	The level of feeling depressed, hopeless, and anxious	
	Overall satisfaction of your health quality	
Physical-spatial $\alpha = 0.87$	The level of satisfaction with commuting	(Lee 2008)
	The amount of access to appropriate transportation	(Fetsch-Robert et al. 2017)
	Travel within a limited time to reach the city	(Badri et al. 2013)
	Quality of drinking water	(Saraei et al. 2013)
	Benefit from health services	(Barimani and Baluchi 2013)
	Access to financial and credit services (banks, loans, etc.)	(Pourtaheri et al. 2011)
	Availability of information needed every day	(Jamnati and Khadem-Hosseini 2016)
	Satisfaction with your living conditions	(Darban-astaneh and Mahmoodi 2016)
	Quantity of your residence (in terms of area)	
	The quality of your residence	
Quality of residential environment		

Table 2 (continued)

Variables	Items	Source
Environmental $\alpha = 0.84$	Appropriate facilities in residential units	(Chen et al. 2017), (Pacione 2003), (Lee 2008), (Fetsch-Robert et al. 2017), (Badri et al. 2013), (Sarai et al. 2013), (Barimani and Baluchi 2013) (Heydari 2011)
	Having a proper sewage collection system	
	Having a sanitary wastewater drainage system	
Landscape quality	Environmental pollution (reversed coded)	(Kalandari et al. 2010), (Rezvani and Mansouryan 2008), (Badri et al. 2013), (Sarai et al. 2013), (Barimani and Baluchi 2013), (WHO 2006)
	The amount of noise pollution (reversed coded)	
	The amount of traffic (reversed coded)	
	How healthy the environment around you is	
Waste management	Green environment	(Rezvani and Mansouryan 2008), (Badri et al. 2013), (Sarai et al. 2013), (Barimani and Baluchi 2013), (WHO 2006)
	Natural landscapes	
	Quality of environmental health/landscape	
	Having a proper sewage collection system	(Kalandari et al. 2010), (Chen et al. 2017)
	Having a sanitary sewer system	

Table 3 Survey items and Cronbach's alpha coefficients for the subjective dimension of quality of life (QOL)

Variable		Code	Items	Source
Objective dimension of QOL	Economic	1	Monthly income \$	(Badri et al. 2013), (Rezvani and Mansouryan 2008), (Pourtaheri et al. 2011), (WHO 2006), (Anabestani et al. 2016)
		2	Total annual savings \$	
		3	Credit facilities and bank loans \$	
		4	Having a stable job (Yes/No)	
		5	Having insurance (Yes/No)	
		6	Number of trips per year	
	Physical- Spatial	7	Time to get to town (minutes) (reversed coded)	
		8	Time to get to school (minutes) (reversed coded)	
		9	House area (meter)	
		10	Building age (reversed coded)	
		11	Access to the library inside the village (Yes/No)	
		12	Access to the restaurant and cafe inside the village (Yes/No)	
		13	Access to kindergarten within the village (Yes/No)	
		14	Access to primary school within the village (Yes/No)	
		15	Access to the first high school in the village (Yes/No)	
		16	Access to the second high school in the village (Yes/No)	
		17	Access to radio coverage within the village (Yes/No)	
		18	Access to TV coverage within the village (Yes/No)	
		19	Access to the outpost inside the village (Yes/No)	
		20	Access to suitable roads (Yes/No)	
		21	Access to electricity within the village (Yes/No)	
		22	Access to gas within the village (Yes/No)	
		23	Access to tap water within the village (Yes/No)	

Table 3 (continued)

Variable	Code	Items	Source
	24	Phone access inside the village (Yes/No)	
	25	Access to the post office inside the village (Yes/No)	
	26	Access to the mailbox inside the village (Yes/No)	
	27	Access to health centers within the village (Yes/No)	
	28	Access to the newspaper and magazine inside the village (Yes/No)	
	29	Access to public vehicles within the village (Yes/No)	
	30	Access to the bank inside the village (Yes/No)	
	31	Access to telecommunications inside the village (Yes/No)	
	32	Access to service centers within the village (Yes/No)	
	33	Access to the health house inside the village (Yes/No)	
	34	Access to pharmacy inside the village (Yes/No)	
	35	Access to a GP within the village (Yes/No)	
	36	Access to specialist physicians within the village (Yes/No)	
	37	Home is equipped with a cooling system (Yes/No)	
	38	Home is equipped with a heating system (Yes/No)	
	39	Furnished bathroom (Yes/No)	
	40	Access to the vet within the village (Yes/No)	
	41	Access to green space inside the village (Yes/No)	
	42	Weekly disposal of waste from the village by the municipality (Yes/No)	
	43	Immigration rate of family members	
	44	Number of conflicts with residents (reversed coded)	
	45	Being sick (Yes/No) (reversed coded)	
	46	Weekly exercise rate	
	47	Having a stable job (Yes/No)	

Table 3 (continued)

Variable	Code	Items	Source
	48	Having insurance (Yes/No)	
	49	Willingness to continue the job by children (Yes/No)	
	50	The amount of fruits and vegetables consumed (per week)	
	51	The amount of protein consumed (per week)	

Table 4 Statistical population and sample size

Code	Areas	Counties	Statistical population	Sample size
1	North	Shemiranat	6692	42
2	South	Varamin	23,318	145
2	East	Damavand	7906	49
4	West	Shahryar	23,486	146
	Total		61,402	382

observed population using inferential statistics. For example, the subjective and objective dimensions of the study sample taken from the same population are measured to understand QOL in rural areas. Two parameters best describe the results of this sample, i.e., mean and SD. It is the center (central tendency) of observational distribution. Among other parameters, SD indicates the dispersion of individual observations about the mean. In other words, it characterizes the typical distance from the distribution center or middle value of an observation. If the findings are more diverse, more variability will accumulate. Thus, a low SD signifies less variability while a high SD indicates more spread out of data. Mathematically, the SD is calculated as follows:

$$s = \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}}$$

where s is sample SD; X is individual value; \bar{x} is sample mean, and n is sample size. SD is the measure of variability. It should be used as an estimate of the variability of the population from which the sample was drawn when calculating the SD of the sample. Contrary to the popular misconception, irrespective of distribution, the SD is a valid measure of variability. When data has a skewed distribution, we should choose a different summary statistic (Altman and Bland 2005).

When calculating the sample mean, the average of this particular sample is usually ignored, but the mean for individuals is statistically different from the population from which the sample originates. The data are usually collected to use the mean sample as an estimate for the entire population. Now, the mean of the sample can differ from a sample to another. The way this variance happens is explained by the means of sampling distribution. It can be calculated by how much sample means will differ from the SD of this distribution of measurements, which is called the standard error (SE) of the mean estimation (Altman and Bland 2005). Therefore, the Interval of Standard Deviation from the Mean (ISDM) Formula was used to describe the status of QOL in the subjective and objective dimensions (Sadighi and Kakhak 2005). In this study, ISDM is used to analyze and evaluate the objective and subjective indicators of QOL, and accordingly, the scores are converted into four levels as described above (A, B, C, and D) (Ranjbar et al. 2011; Mosavi 2016). Based on ISDM, each of the independent and dependent variables is classified into four levels (as mentioned above) according to its percentage and frequency.

Results

In most industrialized and developing societies, a theme called QOL represents a new perspective on developmental attitudes. In this regard, the OECD Regional Well-Being Index tries to capture a similar phenomenon though the data availability, and quality may be diverse and different in different regions. For example, Omel et al. (2011) developed a rural development index for Estonia. They used 22 parish-level variables available in public statistics divided into five categories: location, population, economic well-being, entrepreneurship, and land use. The development of rural areas has been aligned with the development and improvement of QOL among rural people. As Table 5 shows, the number of respondents was 382, out of which 353 (92.4%) were men and 29 (7.6%) were women. Thirteen (3.4%) respondents were single, and 369 (96.6%) were married. The mean age of the participants was 54 years. The youngest was 29 years old and the oldest was 80 years old. Age range of 46–63 years had highest share of respondents in the sample. In terms of level of education, 311 (81.4%) of the respondents were under diploma, 57 (14.9%) had a diploma, and 14 (3.7%) had a bachelor's degree. In terms of health status, five were in very good health status, 236 (61.8%) were in good health status, 123 (32.2%) were in moderate health status, and 18 (4.7%) were in bad health status. The results also showed that the family size was more than three for most participants (45%), and it was more than one for 72.5% of the participants.

Based on Table 6, with regard to “access to infrastructure services”, the highest frequency was related to access to plumbing, electricity, gas, telephone, elementary school, radio coverage, and television networks with a population of 382 (100%), and the lowest was related to access to newspapers and magazines and specialist physicians with zero frequency (0%) within the village. Therefore, according to the respondents, the most important infrastructure services that affect their QOL include plumbing, electricity, gas, telephone, primary school, radio coverage, and television networks. In other words, utilities (water, electricity, and gas) are essential services that play a vital role in economic and social development and QOL. Furthermore, with the development of the internet and other forms of information and communication technologies, the use of television is declining in most parts of the world. Nevertheless, using television still remains a major leisure activity taking up a considerable amount of time. Therefore, mass media such as radio and television have both positive and negative impacts on people's well-being and their QOL.

Objective QOL Among Rural Residents Using ISDM Index

To determine the objective QOL of rural residents of Tehran province after the elimination of scale bias through dividing by mean and calculating the composite index, the ISDM formula was used to describe and analyze the objective QOL among the residents. As shown in Table 7, 269 inhabitants of rural areas stated moderate, 79 expressed good, and 34 had excellent QOL. According to the table, the objective dimension of QOL is moderate and less than the mean for most of the respondents. Therefore, the level of objective QOL is moderate. This shows that objective QOL is not created by the use of tangible and visible facts in life alone. In other words, these indicators provide secondary data such as density, population, crime rate, level of education, and household characteristics. However, these indicators alone cannot

Table 5 Descriptive statistics of the respondents

Variable	Level	Frequency	Percent	Cumulative percent	Min	Max	Mode	Mean
Gender	Female	29	7.6				Male	
	Male	353	92.4					
Marital status	Single	13	3.4				Married	
	Married	369	96.6					
Level of education	Under diploma	311	81.4				Under diploma	
	Diploma	57	14.9					
	Bachelor's degree	14	3.7					
Health status	Bad	18	4.7				Good	
	Medium	123	32.2					
	Good	236	61.8					
	Very good	5	3.1					
Being sick	Yes	36	9.4				No	
	No	346	90.6					
Type of disease	Diabetes	9	25				Blood pressure	
	Heart	7	19.6					
	Fat	5	13.8					
	Blood pressure	14	38.8					
	Parkinson's	1	2.8					
Age (years)	$46 \geq xi$	104	27.2	76.2	29	84	$46 < xi \leq 63$	53
	$46 < xi \leq 63$	187	49	100				
	$63 < xi$	91	23.8					
Monthly income \$	$160 \geq xi$	279	73	73	32	400	$160 \geq xi$	138
	$160 < xi \leq 260$	62	16.3	89.3				
	$260 < xi$	41	10.7	100				
Saving \$ (per year)	$266 \geq xi$	353	92.4	92.4	0	800	$266 \geq xi$	323
	$266 < xi \leq 535$	18	4.7	97.1				
	$535 < xi$	11	2.9	100				
Family size (persons)	$2 \geq xi$	63	16.5	16.5	0	5	$3 < xi$	
	$2 < xi \leq 3$	147	38.5	55				
	$3 < xi$	172	45	100				
Number of employed people in the household	0	6	1.6	1.6	0	2	1	
	1	277	72.5	74.1				
	2	99	25.9	100				
Credit facilities and bank loans \$	$258 \geq xi$	340	89	89	0	1000	$258 \geq xi$	
	$258 < xi \leq 570$	27	7.1	96.1				
	$570 < xi$	15	3.9	100				
The amount of fruits and vegetables	$4 \geq xi$	121	31.7	31.7	3	7	$4 < xi \leq 5$	
	$4 < xi \leq 5$	131	34.3	66				

Table 5 (continued)

Variable	Level	Frequency	Percent	Cumulative percent	Min	Max	Mode	Mean
consumed (per week)	$5 < x_i$	130	34	100				
The amount of protein intake (per week)	$2 \geq x_i$	307	80.4	80.4	1	4	$2 \geq x_i$	2
	$2 < x_i \leq 3$	74	19.4	99.7				
	$3 < x_i$	1	0.3	100				
The time required to get to town (minutes)	$13 \geq x_i$	183	47.9	47.9	5	30	$13 \geq x_i$	15
	$13 < x_i \leq 21$	121	31.7	79.6				
	$21 < x_i$	78	20.4	100				
The time required to get to school (minutes)	$6 \geq x_i$	219	57.3	57.3	2	15	$6 \geq x_i$	7
	$6 < x_i \leq 10$	142	37.2	94.5				
	$10 < x_i$	21	5.5	100				
House area (m)	$233 \geq x_i$	320	83.3	83.8	100	500	$233 \geq x_i$	173
	$233 < x_i \leq 36$	58	15.2	99				
	$366 < x_i$	4	1	100				
Age of house (years)	$19 \geq x_i$	299	78.3	78.3	4	50	$19 \geq x_i$	15
	$19 < x_i \leq 34$	63	16.5	94.8				
	$34 < x_i$	20	5.2	100				
Number of trips per year	$1 \geq x_i$	327	85.6	85.6	0	4	$1 \geq x_i$	1
	$1 < x_i \leq 2$	50	13.1	98.7				
	$2 < x_i$	5	1.3	100				
Weekly exercise rate	$1 \geq x_i$	358	93.7	93.7	0	3	$1 \geq x_i$	
	$1 < x_i \leq 2$	21	5.5	99.2				
	$2 < x_i$	3	0.8	100				
Immigration rate of family members	$2 \geq x_i$	331	86.6	86.6	0	7	$2 \geq x_i$	
	$1 < x_i \leq 4$	49	12.8	99.5				
	$4 < x_i$	2	0.5	100				
Level of communicating with neighbors (per month)	$6 \geq x_i$	279	99.2	99.2	0	20	$6 \geq x_i$	
	$6 < x_i \leq 12$	2	0.5	99.7				
	$12 < x_i$	1	0.3	100				
The amount of assistance to the construction of the village (\$)	$100 \geq x_i$	375	98.2	98.2	0	3	$100 \geq x_i$	
	$100 < x_i \leq 200$	6	1.6	99.7				
	$200 < x_i$	1	0.2	100				
Weekly disposal of waste from the village by the municipality	$x_i = 3$	57	14.9	14.9	3	7	$x_i = 7$	5
	$x_i = 4$	153	40.1	55				
	$x_i = 7$	172	45	100				
Number of conflicts with residents	$x_i = 0$	377	98.7	98.7	0	1	$x_i = 0$	
	$x_i = 1$	5	1.3	100				

demonstrate the real QOL of people, as Seik (2000) has pointed out there are high reliability and low validity in assessing people's well-being.

Table 6 Frequency distribution of the respondents based on their access to infrastructural services

Access to infrastructural services	Frequency	Percent
Tap water, electricity, gas, telephone, elementary school, and coverage of radio and television	382	100
Post office	140	36.6
Mailbox	213	55.8
Telecommunications	139	36.4
Newspaper and magazine	0	0
Public transportation	358	93.7
Bank	207	54.2
Health centers	285	74.6
Health house	322	84.3
Drugstore	135	35.3
General practitioner	285	74.6
Specialist	0	0
Veterinarian	188	49.2
Green space	284	74.3
Library	109	28.5
Café and restaurant	236	61.8
Kindergarten	248	64.9
Junior high school	3.9	80.9
Senior high school	212	55.5

Subjective QOL Among Rural Residents Using ISDM Index

However, our findings showed that in the subjective aspect of QOL, the environmental factor, with a mean of 3.39, was ranked first. Moreover, the socio-cultural factor, with a mean of 3.24, the physical-spatial factor, with a mean of 3.13, and the economic factor, with a mean of 2.76, were respectively ranked the second, third, and fourth (Table 8). The overall average of the subjective QOL was about 3.14. Therefore, environmental, social, cultural, and economic factors that directly affect the QOL are key factors in people's well-being. Social, economic, and cultural factors, such as income, education, employment, community security, and social support, can significantly influence the person's QOL and way of life. These factors affect the ability of a person to choose a healthy life, have medical care, manage his/her stress, etc. The social and economic opportunities that people enjoy, including good schools, sustainable jobs, and strong social networks, are essential to achieve a high-quality, long, and healthy life (Fig. 4).

The description of the subjective QOL in the rural areas of Tehran province using the ISDM formula is presented in Table 9. The results revealed that 74 of the respondents had a poor status in subjective QOL, 127 had a moderate status, 110 were in a good status, and 71 were in an excellent status in terms of subjective QOL status (Table 9). Therefore, it can be said that subjective QOL is a multidimensional concept. However, physical development, satisfaction with facilities, social capital, mental well-

Table 7 Level of objective quality of life (QOL)

Variable	Level	Frequency	Mode
Objective QOL	Weak	0	✓
	Moderate	269	
	Good	79	
	Excellent	34	
	Total	382	

being, and local environment are important dimensions in the well-being of individuals in rural communities. The subjective QOL can therefore reflect differences in residents' perceptions and their true state of life (i.e., the residents' attitude toward the objective material conditions in where they live). The subjective QOL of most rural residents is moderately ideal, based on the findings. The level of satisfaction of rural residents living close to the urban center and the provincial capital is therefore slightly higher than that of other rural areas. In order to improve the subjective QOL of rural residents, social security, the diversification of family income, the improvement of the regional environment, and the family economic foundation are important factors in improving the subjective QOL of rural residents, as well as social security and the subjective QOL of rural residents.

Total QOL of All Rural Residents Using ISDM Index

After elimination of scale bias through dividing by mean and calculating the overall (objective and subjective) composite index of QOL in rural areas of Tehran province using the ISDM formula, it was found that most of them (262 persons) had moderate QOL, 83 had good QOL, and 37 had excellent QOL (Table 10). Therefore, it can be said that most of the people in four rural areas in the north, south, east, and west of Tehran province have an average QOL. This means that most residents have moderate economic, social, cultural, and environmental conditions and are able to meet the average needs for achieving their individual well-being as well as their families. In other words, it can be said that the villages of Tehran province, due to the location of this province as the capital of Iran, have a relative level of prosperity. As a result, they will have a better chance of finding a suitable job, earning more money, using better infrastructure, and having more access to welfare, health, and educational services (Fig. 5).

Table 8 The average of the subjective factors of quality of life (QOL)

Factors	Average
Environmental	3.39
Socio-cultural	3.24
Physical-spatial	3.13
Economic	2.76
Overall	3.14

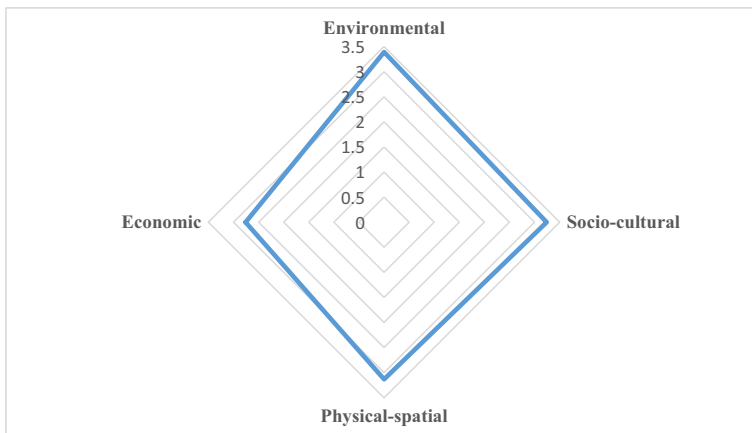


Fig. 4 Status of subjective factors of quality of life (QOL)

As shown by the overall composite index, none of the respondents had poor QOL. Yet, the comparison of the subjective and objective dimensions of QOL indicates that 74% of the residents were poor in the subjective dimension of QOL. As Table 11 shows, there was a significant difference at the 99% level between the residents of different areas in terms of the objective QOL. The North-Shemiranat region was in one class whereas the East-Damavand, West-Shahriar, and South-Varamin regions were in another class. These results show that there are significant differences between objective and subjective indicators of QOL in different regions. In other words, people in different parts of Tehran province have different expectations of achieving the desired QOL. This can be due to cultural, social, economic, and environmental differences among those who live in different parts of the province.

However, according to Table 12, there was a significant difference between the residents of different rural areas of Tehran in terms of subjective QOL at the 99% level. The subjective QOL in the North-Shemiranat region was higher than that in the East-Damavand area. The East-Damavand area had higher subjective QOL than the West-Shahriar area, and the West-Shahriar area was in a better position than the South-Varamin area. These results can be due to cultural differences, economic level, access to better resources and infrastructure, being closer to developed urban areas, climatic conditions, and providing more and better job opportunities for residents of the north and east of Tehran province.

Table 9 The status of subjective quality of life (QOL)

Variable	Level	Frequency	Mode
Subjective QOL	Weak	74	✓
	Moderate	127	
	Good	110	
	Excellent	71	
	The total	382	

Table 10 Overall quality of life (QOL)

Variable	Level	Frequency	Mode
Overall QOL	Weak	0	✓
	Moderate	262	
	Good	83	
	Excellent	37	
	The total	382	

In the following, each dimension of the subjective quality of life has been compared in different regions. As shown in Table 13, in the economic dimension, the subjective quality of life in the rural area of south of Tehran had the worst situation and north of Tehran had the best one. As shown in Table 14, in terms of environmental dimension of the quality of life of the villages, west of Tehran had the worst and the east of Tehran had the best situation. In the socio-cultural dimension of subjective quality of life, rural areas of south of Tehran had the worst state while north of Tehran had the best situation (Tables 15 and 16).

However, in the physical-spatial dimension of subjective quality of life, the results of regions order had the same order of the socio-cultural dimension.

Yet, considering the composite index, only the North-Shemiranat region differed from the other regions. Moreover, in the subjective QOL, there was a significant difference between the four studied areas (Table 17). In fact, in the northern regions of Tehran province, especially in the Shemiranat region, from the past until now, people have enjoyed a higher level of economic, social welfare, and cultural level. In addition, due to favorable climatic conditions, proper opportunities have been provided for various agricultural activities in rural areas of the region. Therefore, it can be said that the rural residents of this region have a better quality of life.

Overall, the results reveal that although people have minimum subsistence and infrastructure in most rural areas of Tehran province, the subjective QOL is significantly different in different areas of Tehran province. These results indicate that cultural, social, economic, physical, and environmental differences of people in the

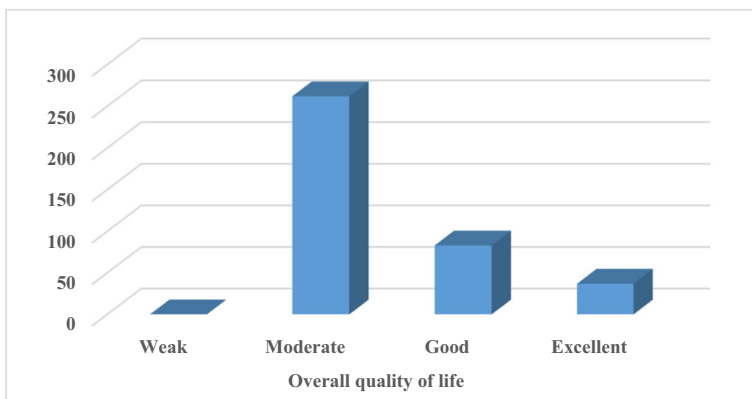
**Fig. 5** Overall quality of life (QOL) of rural residents in Tehran province

Table 11 The results of ANOVA for the objective quality of life (QOL)

Hypothesis	Independent variable	Different levels	Frequency	Dependent variable	Mean	<i>F</i>	Sig.
There is a significant difference between different regions in terms of objective QOL.	Regions	South-Varamin	145	Objective QOL	15.98	12.97	0.00
		West-Shahriar	146		17.05		
		East-Damavand	49		17.38		
		North-Shemiranat	42		28.3		
Test	Groups		Frequency	Means			
Duncan	South-Varamin		145	15.98			
	West-Shahriar		146	17.05			
	East-Damavand		49	17.38			
	North-Shemiranat		42		28.3		
	Sig.	-		0.501		1.00	

four regions of Tehran province are very different. Thus, sometimes, due to the antiquity of regions such as northern regions and Shemiranat, social discrimination in providing better living conditions and more facilities is quite palpable. Therefore, planners and policymakers should pay serious attention to these issues when designing future policies. Furthermore, the result of the relationship between descriptive statistics of the respondents and their QOL is depicted in Table 18. As shown in the table, the results of the correlation between the descriptive variables of the research and the QOL of all the respondents are considerable. There was an inverse correlation ($r = -0.186$) between age and QOL, which is significant at the level of 1%. In other words, younger

Table 12 The results of ANOVA for the subjective quality of life (QOL)

Hypothesis	Independent variable	Different levels	Frequency	Dependent variable	Mean	<i>F</i>	Sig.
There is a significant difference between different regions in terms of subjective QOL.	Regions	South-Varamin	145	Subjective QOL	11.4	287.48	0.00
		West-Shahriar	146		12.84		
		East-Damavand	49		13.60		
		North-Shemiranat	42		14.28		
Test	Groups	Frequency	Means				
Duncan	South-Varamin	145	11.40				
	West-Shahriar	146		12.84			
	East-Damavand	49			13.60		
	North-Shemiranat	42				14.28	
	Sig.	-	1.00	1.00	1.00	1.00	

Table 13 The results of ANOVA for the economic dimension of subjective quality of life (QOL)

Hypothesis	Independent variable	Different levels	Frequency	Dependent variable	Mean	<i>F</i>	Sig.
There is a significant difference between different regions in terms of subjective QOL.	Regions	South-Varamin	145	Subjective QOL	2.37	78.865	0.00
		East- Damavand	49		2.78		
		West-Shahriar	146		2.94		
		North-Shemiranat	42		3.48		
Test	Groups	Frequency	Means				
Duncan	South-Varamin	145	2.37				
	East- Damavand	49		2.78			
	West-Shahriar	146			2.94		
	North-Shemiranat	42				3.48	
Sig.	-		1.00	1.00	1.00	1.00	

residents experience better QOL compared to older ones. Moreover, there were positive correlations between monthly incomes of household ($r = 0.442$), the amount of household savings ($r = 0.562$), the amount of credits received ($r = 0.461$), and the number of employed people in the household ($r = 0.431$) and their QOL, that are significant at the level of 99%. In addition, there was a significant negative correlation ($r = -0.240$) between the migration rate of family members and their QOL at the level of 95%. However, there was no relationship between family size and their QOL.

Table 14 The results of ANOVA for the environmental dimension of subjective quality of life (QOL)

Hypothesis	Independent variable	Different levels	Frequency	Dependent variable	Mean	<i>F</i>	Sig.
There is a significant difference between different regions in terms of subjective QOL.	Regions	West-Shahriar	146	Subjective QOL	3.18	214.255	0.00
		South-Varamin	145		3.30		
		North-Shemiranat	42		3.39		
		East-Damavand	49		4.29		
Test	Groups	Frequency	Means				
Duncan	West-Shahriar	146	3.18				
	South-Varamin	145		3.30			
	North-Shemiranat	42			3.39		
	East-Damavand	49				4.29	
Sig.	-		1.00	1.00	1.00	1.00	

Table 15 The results of ANOVA for the socio-cultural dimension of subjective quality of life (QOL)

Hypothesis	Independent variable	Different levels	Frequency	Dependent variable	Mean	F	Sig.
There is a significant difference between different regions in terms of subjective QOL.	Regions	South-Varamin	145	Subjective QOL	3.01	214.255	0.00
		East-Damavand	49		3.20		
		West-Shahriar	145		3.36		
		North-Shemiranat	42		3.78		
Test	Groups	Frequency	Means				
Duncan	South-Varamin	145	3.01				
	East-Damavand	49		3.20			
	West-Shahriar	145			3.36		
	North-Shemiranat	42				3.78	
	Sig.	-	1.00	1.00	1.00	1.00	

Discussion

QOL is a multi-dimensional concept that is not just confined to the material and physical aspects of life. Measuring and understanding QOL depends on various physical, spatial, environmental, socio-cultural, and economic factors. QOL in rural areas, whose main purpose is to stabilize the population in villages, depends on many factors, including employment, decent income, and access to services such as education, health, and security. Research has recently been done in rural Europe, which compares urban and rural areas, but unfortunately, it did not use the very precise

Table 16 The results of ANOVA for the physical-spatial dimension of subjective quality of life (QOL)

Hypothesis	Independent variable	Different levels	Frequency	Dependent variable	Mean	F	Sig.
There is a significant difference between different regions in terms of subjective QOL.	Regions	South-Varamin	145	Subjective QOL	2.71	147.263	0.00
		East- Damavand	49		3.26		
		West-Shahriar	146		3.38		
		North-Shemiranat	42		3.62		
Test	Groups	Frequency	Means				
Duncan	South-Varamin	145	2.71				
	East- Damavand	49		3.26			
	West-Shahriar	146			3.38		
	North-Shemiranat	42				3.62	
	Sig.	-	1.00	1.00	1.00	1.00	

Table 17 The results of ANOVA for the overall quality of life (QOL)

Hypothesis	Independent variable	Different levels	Frequency	Dependent variable	Mean	F	Sig.
There is a significant difference between different regions in terms of overall QOL.	Regions	South-Varamin	146	Overall	28.79	17.50	0.00
		West-Shahriar	49	QOL	28.83		
		East-Damavand	145	30.65			
		North-Shemiranat	42	42.49			
Test	Groups		Frequency		Means		
Duncan	South-Varamin		146		28.79		
	West-Shahriar		49		28.83		
	East-Damavand		145		30.65		
	North-Shemiranat		42		42.49		
	Sig.		-		0.372 1.00		

indicators that this study has attempted to address as far as possible (Bernard 2018). The results of this study showed that the status of subjective QOL in the economic aspect, especially the statement of adequate savings, indicates an unfavorable situation. This result is in agreement with the findings of Rezvani and Mansouryan (2008), Ghalibaf et al. (2011), Khorasani et al. (2013), and Gholizadeh et al. (2017). While the results showed few savings in terms of the objective quality of the individuals, this amount does not suffice to meet their needs when compared to ideal savings. It shows that the numbers alone do not represent the perceptions of individuals, which are well addressed in this study. Since in the economic aspect, the lowest average was related to the items of having adequate savings and job security, measures to increase savings and job security of rural households should be considered through creating new job opportunities via providing the right environment for the deployment of specialists and service workers in rural areas to create stable, well-off jobs with good incomes, thereby increasing the annual household savings in the villages. In the environmental dimension, the lowest mean was related to the waste management variables. This is one of the most important measures that require immediate planning. Given that in the physical-spatial dimension, the lowest mean was related to the quality of housing and

Table 18 The results of Pearson correlations between the variables of the research and quality of life

Variables 1	Variable 2	r	Sig
Age (years)	QOL	- 0.186**	000.0
Monthly income (\$)		0.442**	000.0
Saving (\$) (per year)		0.562**	000.0
Family size (persons)		- 0.023	0.635
Number of employed people in the household		0.431**	000.0
Credit facilities and bank loans (\$)		0.461**	000.0
Immigration rate of family members		- 0.240*	0.041

access to financial and credit services, measures such as improving the quality of rural housing through texture improvement and immunization, renovation of residential units, and establishment of banks and loan funds in rural areas should be considered. In the socio-cultural dimension, the lowest mean was related to the items of annual ability to travel with family, appropriate cultural and artistic facilities, and appropriate sports and recreational facilities. As a result, measures should be taken to improve the annual capacity of rural people to take trips by increasing their income, establishing cultural centers and libraries in rural areas, developing recreational facilities, and establishing sports centers for the benefit of the youth and families. Furthermore, it should be mentioned that the role of migration-related factors has not been considered in this research which can be a good topic for future research.

Conclusion

Improving QOL is one of the most important goals that ultimately lead to rural development which is one of the main goals of planners. As long as QOL is an interdisciplinary issue, the ways to improve it will depend on various factors. Improving QOL should be considered as the main objective of urban, regional, and rural development plans. The results of this study highlight the importance of concurrently studying the relationship and the profound impact of objective and subjective QOL and the key role of the subjective QOL rather than merely the objective QOL. In addition, the approaches, methods, findings, and results of this study can be used to plan future studies on rural QOL. Moreover, it should be mentioned that to measure QOL in some dimensions, the cultural issues are somewhat cumbersome.

We further propose to investigate the relationship between subjective QOL and happiness and life satisfaction among villagers and their tendency to stay in the village.

Overall, given the results of the research and the implications, such as the desire to migrate from village to city and the lack of appropriate infrastructure services in villages, the followings should be put on the agenda of rural development planners and policymakers:

- Adopting policies to reduce rural migration by creating a coordinated approach to rural and urban development and improving the physical and environmental conditions of rural communities to provide welfare services and reduce the disparity between urban and rural areas.
- Establishing health villages in rural areas to allow villagers and urban residents to benefit from their services. The health village is considered as accommodation complexes that provide health services for their guests. A perfect example is the creation of a natural environment away from the pollution of urban life and the provision of traditional medicine and herbal remedies for the clients. Whereas the first priority derived from the results of the present study is the issue of employment and income generation, if the project is fully implemented in the rural areas of Tehran province, we can see economic prosperity, tourism attraction, financial exchange, and employment creation. This will definitely increase QOL in these areas.
- Encouraging villagers to obtain bank loans and facilities to invest in economic activities. In this regard, considering the need to expand the role of NGOs in the

rural economy around the world, these organizations can play a significant role in attracting funds and credits from international and national rural development organizations and institutions.

- Establishing newsstands to provide villagers with access to newspapers and magazines. Furthermore, by creating a rich library in rural areas, in addition to raising public awareness, tourists can be attracted to these areas.

In addition, the deployment of facilities in the villages will lead to reverse migration from polluted urban areas to rural areas; providing the necessary infrastructure can be very helpful in this regard. Improving rural access to telecommunications, post office, veterinary, bank and debt funds, post office, service centers, etc., which can prepare the rural areas for the services, can be one of the practical suggestions in this regard. Finally, this study recommends that in order to have a more detailed and comprehensive analysis, future studies should consider the role of immigration-related factors when selecting the sample size of households.

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