Original Paper

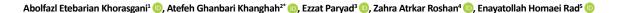# The Relationship Between Living Environment and Life Satisfaction in Residents of Rasht City, North of Iran

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ABSTRACT

Introduction: Life satisfaction reflects an individual's overall feelings about life, influenced by various factors.

Objective: This study aimed to identify and introduce the indices related to the living environment that affect life satisfaction.

Materials and Methods: The study was conducted on 1000 residents of 55 neighborhoods of Rasht City (north of Iran) by an analytical cross-sectional method. The participants were chosen with a multistage cluster sampling method. The study data were collected using questionnaires, including the residents' characteristics, indicators of the living environment, and the satisfaction with life scale. The obtained data were analyzed using descriptive statistics, and inferential statistics, including the Pearson correlation coefficient, independent t test, analysis of variance, and linear regression.

Results: Based on the present study results, the Mean±SD age of the subjects in the study was 43.73±15.55 years. The analysis showed that their level of life satisfaction was average Mean±SD: 19.41±7.63, range: 5-35). The regression analysis identified dissatisfaction of facilities (B=-0.366; 95%CI: -0.434, -0.298; P=0.001), satisfaction with living in the local area (B=0.248; CI: 0.123, 0.373; P=0.001), duration of residence (B: -0.364; 95%CI: -0.625, -0.102; P=0.006) and gender (women compared to men) (B: 0.896; CI: 0.011, 1.781; P=0.047) as the predictors of life satisfaction.

Conclusion: According to the results, the life satisfaction of our study participants was at a moderate level and was affected by living environment indicators, especially facilities.

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Highlights

• Life satisfaction plays an essential role in physical, social, and psychological wellbeing.

• By assessing the life satisfaction of the community residents, we can understand the health of the community.

• There is a complex association between living environment and life satisfaction of the residents of the community.

• Dissatisfaction of facilities, duration of residence, satisfaction with living in the local area, and gender (women compared to men) are predictors of life satisfaction.

Plain Language Summary

This study aimed to assess the association between the characteristics of the living environment and life satisfaction in an adult population in Rasht City, Iran, which helps future researchers and governments design health-promoting neighborhoods that can improve the wellbeing of their residents. The current study has shown that all physical, social dimensions and living environment facilities positively affect life satisfaction. However, the "facilities of the living environment" was the strongest predictor of life satisfaction. Regarding the concept of fairness of services in most communities, each person must have an equal opportunity to receive service attention through fair practices based on the need, not based on social impacts. This issue is the case when the resources are limited. Therefore, based on the study results, the healthcare providers should consider the fair distribution of health services and facilities in downtown areas to increase residents' satisfaction with life. This study provides an essential perspective on the relationship between life satisfaction and satisfaction with living in cities of Iran, which could be the starting point for more extensive studies in other cities of Iran and a better understanding of the relationship between the living environment and community health. It lays the foundation for performing proper interventions by the policymakers of our society to improve satisfaction with life and increase the health level of the community members.

Introduction

The rapid advancement of technology has led to a greater range of health problems in various societies [1]. However, today, people tend to pay less attention to health issues, as recent research in Iran has shown a significant decrease in people's attention to health issues [2]. Satisfaction with life is one of the components closely associated with the health and happiness of society [3, 4]. It is recognized as an individual's assessment of various aspects of life. In other words, this concept reflects the balance between the wishes of people and their current state [5]. Therefore, a better understanding of the determinants of life satisfaction can contribute to more efficient policy-making for improving public health and welfare [6].

A stuy have proved an association between life satisfaction and a wide range of factors, such as social-individual variables, such as age, income level, occupational status, and health status [7]. In this regard, Harris et al. performed research in Shiraz, Iran. They reported that older age was associated with decreased life satisfaction [4]. Also, they found a positive and strong relationship between socioeconomic status and the level of life satisfaction of individuals [8]. In other words, income inequality was associated with a lower level of living and played an essential role in shaping a variety of psychological phenomena [9]. Addressing social and economic inequalities is one of the main steps in public health worldwide, and the World Health Organization (WHO) recommends monitoring and evaluating the socioeconomic disparities in health behaviors as one of the social determinants of health [8]. It is only through understanding the formation of these inequalities and discovering the related factors that valuable information for developing practical solutions can be obtained [10].

One of the factors affecting life satisfaction is the living environment, which its role has been underestimated in developing countries [11]. The living environment is defined as the built social environment, including social support, social networks, social deprivation, income inequality, racial discrimination, social cohesion, and social capital within the neighborhood. The living environment, and related effects such

Etebarian Khorasgani A, et al. Living Environment and Life Satisfaction. J Holist Nurs Midwifery. 2021; 31(3):194-202.

195

as emissions, may shape individual health behavior through diverse mechanisms and may be harmful or beneficial for health [12].

It is hypothesized that neighborhood design may influence how people interact with each other and their communities that can influence mental health. For example, green spaces, mixed-land use may play a role in promoting social interactions and relationships, which proved to be associated with higher self-rated health and improved mental wellbeing. Urban planners believe that developing a living environment has a particular impact on life satisfaction [13].

In a study on 79 European cities, it was found that economic conditions and the safety of the living environment affect the level of satisfaction with life in residents of those cities [14]. In another study, a relationship was found between satisfaction with life and variables of the physical and social condition and access to facilities in the living environment [15, 16]. Furthermore, research in New Zealand showed that having access to facilities in the living environment (e.g., stores and service centers) was influential in improving the mental conditions of the residents [17]. A study performed in the cities of Australia showed that access to green spaces was an influential factor for improving the life satisfaction of subjects [18]. Moreover, Ma et al., in Beijing, China [6] and Shields et al., in Australia [19], reported an association between socioeconomic conditions of the living environment and satisfaction with life.

Despite the recent significant changes in the cities of Iran and the existing barriers to development and infrastructural facilities, and the present socioeconomic situation [20], a few studies have so far been conducted to evaluate the relationship between social and physical aspects of the living environment.

This study aimed to assess the association between the characteristics of the living environment and life satisfaction among the adult population in Rasht City, north of Iran. This research helps future researchers and governments to design health-promoting neighborhoods that can improve the wellbeing of their residents.

Materials and Methods

The present study is an analytical cross-sectional study that the required sample size is based on Montazeri et al. study's result [21], with 95% confidence interval, 11.9 standard deviations for the mental sub-

scale of short-form health survey (SF-36), and considering 5% for absolute error limit. Thus, a total of 541 people were determined based on the sample size formula. According to the analytical objectives, 18 variables are included in the regression model, and 25 additional samples are considered for each variable. So the final sample size was determined as 1000 people. The participants were chosen with a multistage cluster method. In this regard, five municipalities, according to the population of each area, were considered as study classes. Each class consisted of 11 neighborhoods that were considered clusters of that class. In each cluster, some large public and private places, religious and local communities were randomly selected, and the samples were selected proportionate to the number of individuals of that cluster (demographic distribution). In the sample selection, the gender and age distribution were observed based on the national census of 2016 in Guilan Province, Iran. The study age groups were young (18-29), middle-aged (30-59), and elderly (over 60) [22, 23]. Accordingly, we selected half of the samples from men and a half from women, which accounted for 24%, 59%, and 17% of the samples, respectively, for young, middle-aged, and elderly groups.

The inclusion criteria were as follows: 18 years and older, and non-exposure to psychological problems (deaths of loved ones, accidents, and injuries caused by driving, severe clashes, and large cramps) during the last 6 months. Also, those uninterested in cooperation with the study were not included.

For measuring the characteristics of the residents, several personal and socio-demographic characteristics were examined, including gender, age, ethnicity, marital status, parental status, number of family members, education, occupation and having a child, receiving a monthly salary, immigration over the last 5 years and non-communicable disease.

To determine the indicators of the living environment, we used a questionnaire derived from the Salehi et al. questionnaire in their study named "relationship between environmental indicators and wellbeing and behavioral health in Shiraz" [12]. Permission to use the questionnaire was obtained from the authors of this article. The qualitative content validity of this tool was done based on the ten experts' opinions in this field. The quantitative content validity was measured based on the calculating Content Validity Index (CVI) and Content Validity Ratio (CVR) and was reevaluated by faculty members of Guilan University of Medical Sciences. The results confirmed the validity of this

questionnaire. The living environment construct questionnaire is a 20-item scale incorporating the three domains of the physical environment (such as traffic, industrial fumes, rubbish, household waste disposal, noise, and graffiti), the social environment (such as neighborhood disorder, homeless people, troublesome neighbors, teenagers hanging around, frightened after dark, and drug abuse) and leisure facilities (such as places of recreation, the presence of jobs and work, quality of the environment, quality of houses, public transportation services, health centers, schools and universities, shopping centers) with a range of response from 1 (very satisfied) to 5 (very dissatisfied). For the physical and social variables, the range of responses is from 1 (never an issue) to 5 (always an issue). The period of living in the local area and satisfaction of living there was measured, too. The duration of living in the local area includes one item on how long participants have lived there, with seven response options from less than 12 months to 20 years or more than 20 years. Satisfaction with living in the local area includes three items, scored on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The reverse scoring was calculated for items as required.

Satisfaction with life scale (SWLS) was measured using the life satisfaction scale designed by Diener et al. [24]. The SWLS is a 5-item self-report scale scored on a 7-point Likert response format (1=strongly disagree, through 4=neutral, to 7=strongly agree) with a total score ranging from 5 (low satisfaction) to 35 (high satisfaction). Each individual's total score was categorized as one of six levels of satisfaction with life (extremely dissatisfied (5-9), dissatisfied (10-14, slightly below average (15-19), average(20-24) satisfied (25-29), and extremely satisfied (30-35). The validity and reliability of this scale have been confirmed in Iranian society [25].

To facilitate the data collection, four colleagues (two women, two men), who were students of Guilan University of Medical Sciences and familiar with Rasht neighborhoods, were selected. They received the required training for using the tool during the sessions. The time for answering the questions was 20 minutes on average, and in each cluster, the research samples were selected based on the inclusion criteria, and the questionnaires were completed by interview. Sampling started on September to February 2017, and was performed in two shifts in the morning and evening during the weekdays.

The data were analyzed using SPSS v. 20. Descriptive statistics were used to describe the participants' char-

acteristics. The Pearson correlation coefficient was used to examine the correlation, and 1-way ANOVA and independent t test were used to examine the relationship between residents' characteristics and dissatisfaction of physical and social environment and facilities and satisfaction with living in the local area with satisfaction with life. Tukey test was then used as a post hoc test for assessing the differences between all pairs of groups. The level of significance was set at 0.05 (2-tailed). Variables with a P value less than 0.2 were then entered into the regression model. Therefore, a stepwise multiple linear regression was used. The assumptions of the final regression model (e.g., linearity, homogeneity of variance of residuals, and normality of residuals) were checked, and there were no major violations.

Results

The study participants were 1407 people, of whom 407 were excluded due to lack of criteria for entry or non-participation during the interview. Among the study samples, 503 (50.3%) were men with a Mean±SD age of 43.73±15.55 years. The majority of participants were married (69.2%), and 81.6% were of Gilak ethnicity. Most participants (70.3%) had children, and 43.3% received a monthly salary. The residents' characteristics are summarized in Table 1.

According to the findings, 21.3% of participants lived less than 5 years in their local area, 12.3% for 5 to 10 years, 23.7% for 10 to 20 years, and 42.7% more than 20 years. The results showed that their Mean±SD scores were as follows: for the dissatisfaction of physical environment, 13.63±5.52; for dissatisfaction of social environment, 10.92±4.5; for dissatisfaction of facilities, 18.35±6.89; and for satisfaction with living in the local area, 10.56±3.65; and for satisfaction with life, 19.41±7.63.95%

The findings revealed a positive and significant correlation between satisfaction with living in the local area (r=0.225, P=0.0001) and satisfaction with life. Furthermore, the findings revealed a negative and significant correlation between the period of living in the local area (r=-0.113, P=0.0001) and dissatisfaction with the physical environment (r=-0.151, P=0.0001), with the dissatisfaction of social environment and dissatisfaction of facilities (r=-0.390, P=0.0001) with life satisfaction.

According to the results of the independent t test and 1-way ANOVA analysis, significant differences were found between gender (P=0.001) and marital status

Etebarian Khorasgani A, et al. Living Environment and Life Satisfaction. J Holist Nurs Midwifery. 2021; 31(3):194-202.

197

Table 1. Relationship between residents' characteristics and living environment with Satisfaction With Life (SWL)

Variables		No. (%)	Mean±SD	Sig.
Gender	Male	503 (50.3)	18.36±7.87	0.001*
	Female	407 (40.7)	20.47±7.24	
Age (y)	Young (18-29)	230 (23)	20.48±7.23	0.771**
	Middle-aged (30-59)	607 (60.7)	19.08±7.56	
	Elder (>60)	163 (16.3)	19.20±8.31	
Ethnicity	Gilak	816 (81.6)	19.56±7.70	0.186*
	Others	34 (3.4)	18.73±7.29	
Education	Illiterate	74 (7.4)	19.40±8.74	0.058**
	Under diploma	314 (31.4)	18.71±8.09	
	Diploma	310 (31)	19.18±7.28	
	Professionally skilled / BA	269 (26.9)	20.18±7.04	
	MSc / PhD	33 (3.3)	21.87±7.71	
Job	Yes	375 (37.5)	20.01±7.52	0.541*
	No	625 (62.5)	19.05±7.67	
Marital status	Single	248 (24.8)	18.89±7.36	0.008**
	Married	692 (69.2)	19.71±7.59	
	Separated from wife	24 (2.4)	14.66±7.92	
	Widowed	36 (3.6)	20.19±9.05	
Having child	Yes	70.3 (70.3)	19.34±7.62	0.679*
	No	297 (29.7)	19.56±7.67	
Number of family members	≤3	99 (9.9)	20.62±7.75	0.095*
	>3	901 (90.1)	19.27±7.61	
Receiving salary monthly	Yes	433 (43.3)	19.85±7.22	0.103*
	No	567 (56.7)	19.07±7.91	
Immigration over the last 5 years	Yes	110 (11)	19.96±7.23	0.422*
	No	890 (89)	19.34±7.68	
Non-communicable diseases	Yes	306 (30.6)	19.13±7.63	0.445*
	No	694 (69.4)	19.53±7.63	

* Independent sample t-test; ** Analysis of Variance (ANOVA).

Table 2. Analysis of multivariate regression: the relationship between independent variables and dimensions of satisfaction with life

Predictors	Non-standard Regression Coefficient	SE	Standard Regression Coefficient	95%CI Lower-Upper	Sig.
Dissatisfaction of facilities	-0.366	0.032	-0.330	-0.434, -0.298	0.001
Satisfaction with living in the local area	0.248	0.064	0.119	0.123, 0.373	0.001
Duration of residence	-0.364	0.136	-0.079	-0.625, -0.102	0.006
Gender (Women compared to men)	0.896	0.449	0.059	0.011, 1.781	0.047

(P=0.008) with satisfaction with life. So that the level of life satisfaction was higher in women than men, and in the married women and widowed wives were higher than divorced.

Finally, multiple linear regressions were performed to predict satisfaction with life, based on several residents' characteristics and the living environment. As there were many independent variables, stepwise modeling was used, and successively adding or removing variables, including socio-demographic variables, particularly those with significant correlations. The stepwise modeling began with adding all potential variables in the model and proceeding step by step. Table 2 presents the results of regression models predicting satisfaction with life from socio-demographic and living environment characteristics. With regard to results of regression model, dissatisfaction of facilities (B: -0.366, 95%Cl: -0.434, -0.298; P=0.001), duration of residence (B=-0.364; Cl: -0.625, -0.102; P=0.006), satisfaction with living in the local area (B: 0.248, CI 95%: 0.123, 0.373; P=0.001) and gender (women compared to men) (B=0.896; Cl: 0.011, 1.781; P=0.047) accounted for a significant amount of variance in satisfaction with life, with an adjusted R^2 of 0.17.

Discussion

This study aimed to evaluate the relationship between satisfaction with life and indices of the living environment in the North of Iran. According to our results, the mean score of satisfaction with the subjects' lives was average. Moreover, a significant relationship was detected between all indices of the living environment and satisfaction with life. Results demonstrated a significant reverse association between satisfaction with life and dissatisfaction with the physical and social environment. In this respect, Dong et al. researched residents of Beijing, China, to determine the relationship between satisfaction with the living environment and life satisfaction. These researchers reported a sig-

nificant positive correlation between the physical and social variables of the living environment and satisfaction with life [11].

In another study by Shields et al. in Australia, there was a low level of satisfaction with life in areas with social deprivation [19]. According to studies, social and physical deprivations may reduce various sports, cultural, and social activities [15, 16] in residents and consequently lowers their satisfaction with life. Research conducted in the United States and Europe reported that households living on low-traffic streets had a better quality of life. Families, the environment of this street, were considered as warm, friendly, and safe [26].

Moreover, the current research demonstrated a significant association between dissatisfaction with the facilities in the living environment and satisfaction with life, in a way that increased dissatisfaction with facilities in the living environment decreases residents' life satisfaction. This finding agrees with the results obtained by Dong et al. in a study on 712 residents of Beijing [11]. Furthermore, Spiers et al. reported that access to entertainment facilities was an essential factor for happiness and satisfaction with life [27].

In the present study, dissatisfaction with the facilities of the living environment was one of the strongest predictors of life satisfaction, which is consistent with the results obtained by Salehi et al. in research conducted on young female residents of Shiraz, Iran [16]. It seems that living in deprived environments, in terms of facilities, is directly or indirectly associated with an increase in disease rate and satisfaction with life, which has been emphasized in various studies [11, 16]. Besides, reduced facilities may lead to fewer opportunities for using leisure time, gradually resulting in reluctance and reduced satisfaction with life. Besides, our findings have demonstrated that satisfaction with life increases by improved satisfaction with the living

Etebarian Khorasgani A, et al. Living Environment and Life Satisfaction. J Holist Nurs Midwifery. 2021; 31(3):194-202.

199

environment, which is in accordance with the results obtained by Dong et al. [11].

In the current research, results of the independent t test demonstrated satisfaction with was different significantly with life and gender, in a way that satisfaction with life was higher in female subjects, which is in line with the previous studies in this field [28, 29]. Interestingly, Kraemer reported that men were more vulnerable to health problems at their early age, but parents assumed that boys were more enduring than girls [30]. It seems that society expectations of how men react to women relation to social and emotional stressors and are effective in satisfying the lives of men.

Other results were indicative of higher satisfaction with life in married and widowed individuals compared to divorced subjects. Several studies have reported that satisfaction with life was higher in married people than other society members [4, 6]. It seems that marriage exerts a significant influence on the health, satisfaction with life, and happiness of individuals (both men and women). On the other hand, separation can cause problems for both genders in Iran due to our specific culture and adverse outcomes of this action. This condition leads to an inability to lead an everyday life, which is associated with reduced satisfaction with life. In the present study, the duration of residing in a specific location was one factor predicting the reduction in satisfaction with life, in a way that increased duration of living in a specific environment decreased the level of satisfaction with life. Perhaps long-term residence in one place could cause tedium. In other words, residents lose the excitement and motivation that is usually created by the experience of living in a new environment, which eventually leads to reduced satisfaction with life. However, Salehi et al. found no association between duration of residence in an environment and welfare of young women [15]. This inconsistency between the results could be attributed to the sample size of studies and the population surveyed.

Regarding the concept of equal quality of services in most communities, each person must have an equal opportunity to receive service attention through fair practices based on his or her need and not based on social impacts. This issue becomes more critical when the resources are limited. Therefore, it is expected that healthcare providers consider the fair distribution of health services and facilities in downtown areas to increase residents' satisfaction with life.

The cross-sectional nature of this study was a significant limitation. It is recommended that future studies use the prospective method to validate the relationships between the variables. In addition, results might have been affected by the mental and environmental conditions of individuals due to the self-report nature of data collection. Another limitation of the study was the lack of data on the respondents' social media, which is an essential aspect of life. Thus, the role of social media in life satisfaction and the neighborhood could not be discussed.

Despite these limitations, this study provides an essential perspective on the relationship between life satisfaction and satisfaction with living in cities of Iran. It could be the starting point for more extensive studies in other cities of Iran and a better understanding of the relationship between the living environment and community health. This study paves the way for performing proper interventions by the policymakers of our society to improve satisfaction with life and increase the health level of the community members.

Ethical Considerations

Compliance with ethical guidelines

Funding

Authors' contributions

Conceptualization: Abolfazl Etebarian Khorasgani, Atefeh Ghanbari Khanghah, Ezzat Paryad, and Enayatollah Homaei Rad; Writing the original draft: Abolfazl Etebarian Khorasgani and Atefeh Ghanbari Khanghah; Data collection: Abolfazl Etebarian Khorasgani; Data analysis: Zahra Atrkar Roshan; Suppervision: All authors.

Conflict of interest

The authors declared no conflict of interest.

200

Etebarian Khorasgani A, et al. Living Environment and Life Satisfaction. J Holist Nurs Midwifery. 2021; 31(3):194-202.

Acknowledgments

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