Studying Relationship between Indices of Residential Environment and Women's Lifestyle in Rasht

Abolfazl Etebarian, Atefeh Ghanbari Khanghah[*], Ezzat Paryad, Zahra Atrkar Roshan

Abstract

Introduction: Lifestyle is an index that can affect the physical and mental health of individuals; many factors can affect it, including the residential environment. The purpose of this study was to identify and introduce those indices of residential environment that affects lifestyle dimensions. **Methods:** This study was performed on 497 women living in 5 districts of Rasht by analytical cross-sectional method. Data were collected using a questionnaire including demographic and lifestyle profiles and residential environment indices. SPSS software version 20 was used to analyze the data, also Pearson correlation coefficient, independent t-test and linear regression. **Results:** The findings showed that (11.3%) of the samples had a history of smoking, about 5% of them had a history of alcohol consumption and their physical activity level (score range: 1-5, mean score: 2.41) was modest. The strongest predictor of tobacco use, alcoholic drinks consumption and physical activity was marital status, dissatisfaction with facilities and dissatisfaction with the social variables of the residential environment, respectively. **Conclusion:** The results have shown that the human environment is of effect on the dimensions of women's lifestyle, especially physical activity, which can provide the basis for the incidence of non-contagious diseases; so there is a need for macro-management programs for improving the residential environment in order to reach the desired health outcomes.

Key words: Lifestyle, Tobacco, Alcoholic Drinks, Physical Activity, Food Habits.

Introduction

In the twenty-first century, with the industrialization of the world and the increase in change duration, people around the world were exposed to lifestyle changes (Shojaeizadeh and et al, 2008); with these changes, infectious diseases have declined and were replaced with chronic diseases. By 2020, according to the World Health Organization estimation, three-fourths of the deaths of developing countries will be due to the chronic diseases (Kelishadi and et al, 2008).

Nowadays, a variety of chronic diseases, such as obesity, types of cancers, hypertension, diabetes, and mortality due to them, is associated with lifestyle changes and is the result of people's behaviors and their lifestyle (Janjani and et al, 2015).
In Iran, the diseases caused by lifestyle disorders are among the major causes of mortality and disability (Janjani and et al, 2015).
In this regard, the Iranian Statistics Center in 2011 reported that about 380,000 deaths in Iran, at least 180 thousand cases, are related to seven main sources of death (smoking and hookah, unhealthy eating, unhealthy inactivity, obesity, high blood pressure, high blood sugar and high blood cholesterol). Another important factor affecting lifestyle is the residential environment of individuals. The residential environment is a tangible environment in which people live. The social and physical factors of the residential environment, including: air

Abolfazl Etebarian
Nursing (MSc), School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.

Atefeh Ghanbari Khanghah*
Social Determinants of Health Research Center (SDHRC), Department of Nursing (Medical- Surgical), Associate Professor, Guilan University of Medical Sciences, Rasht, Iran.

Ezzat Paryad
Social Determinants of Health Research Center (SDHRC), Department of Nursing, Instructor, Guilan University of MedicalSciences, Rasht, Iran

Zahra Atrkar Roshan
Social Determinants of Health Research Center (SDHRC), Bio-Statistics, Assistant Professor, Guilan University of Medical Sciences, Rasht, Iran.

*Email: at_ghanbari@gums.ac.ir

pollution, traffic accidents, inappropriate housing, exposure to hazardous materials, dust, safety and security, street design, population density, as well as facilities of the residential environment may affect the lifestyles of those who live in it (Salehi and et al, 2017)
Recently, numerous studies have dealt with the social and physical characteristics of the residential environment and their relationship with the health of the future life, and have presented numerous and contradictory results that have been of concern in the field of health (Cubbin and et al, 2008). Rooks believes that the social and physical aspects of the residential environment may be related to factors such as physical activity, diet, smoking, and the ability to adapt to stress, which, in turn, is more closely related to diseases such as hypertension, Diabetes, obesity and high blood fat (Cubbin and et al, 2008).

Studies have shown that the impact of environmental conditions on the health of women and men is different, and the human environment has strongly affected women's health in developing countries (Chum & O'Campo, 2015). Although some of the health problems of women are affected by biological agents, but socioeconomic factors either alone or through biological factors have a considerable role in creating such problems. It is safe to say that in any society the health of men and women is not equal. In Iran, because of different reasons the women are more likely to suffer from more problems than men (Nwokoro & Agbola, 2011).

The most important subject that threatens the physical health of Iranian women is a series of inappropriate nutrition, inactivity and obesity leading to cardiovascular disease and metabolic syndrome (Firouzbakht and et al, 2017). In addition, the rate of smoking in women is increasing, which can be alarming for policy-makers and health professionals (Ebrahimi and et al, 2017). In a study by Salehi et al on young women in Shiraz and Anderson et al in Americans and Africans low-income neighborhood (Salehi, 2015), the results indicate that improving social variables and human environment facilities is associated significantly with increasing physical activity. Diez & Mair also showed that people who have less access to facilities in their environment will have less chance of improving their physical activity (Andersen and et al, 2015). In an Australian Cohort study conducted on 4056 males and females over the age of 18 years, the results suggest that lifestyle dimensions such as physical activity, eating habits and smoking may be affected by the physical and social variables of the neighborhood (Roux & Mair, 2010). Deguzman et al came to the conclusion that having a healthy, safe and non-criminal environment would encourage residents to adhere to a healthy lifestyle, such as physical activity, non-use of tobacco and alcoholic beverages (Ngo and et al, 2014). However, Borji et al did not report a significant relationship between physical activity and place of residence in their study in Ilam (DeGuzman and et al, 2013). In addition, in some studies across the world, numerous and contradictory interactions between the social and physical conditions of the human environment and physical activity (Khoukhazade and et al, 2016). Therefore, given the gap in studies on women's lifestyles, with regard to different cultural contexts and geographical environments, since women constitute almost half of the population of Iran (Tovar and et al, 2018) and have a central role in family health, growth and dynamism of the family and future generations and play a pivotal role in the lifestyle of the family and society (Firouzbakht and et al, 2017) and limited studies have been conducted on the relationship between the human environment and the health of women, especially in different ages, this study examines the relation of the Indices of residential environment with the lifestyle in Iranian women.

Methods

This cross-sectional study was carried out to examine the relationship between the indices of residential environment and lifestyle of 497 women in Rasht. Sampling was done in a multistage cluster to select samples using the census data of the municipality of Rasht. As a result, five municipalities according to the population of each area were considered as study classes. Each class consists of 11 neighborhoods that are considered as clusters of that class. In each cluster, the large, general, private, religious places and local communities were randomly selected; the samples were selected according to the weights corresponding to the number of individuals of that cluster (demographic distribution) were selected as at convenience.

In the sample selection, the gender and age distribution was observed based on the national census of 2016 in Guilan province in three age groups of young (18-29), middle-aged (30-59) and elder (over 60) (Tovar and et al, 2018; Afshar and et al, 2016). Criteria for participating in this study are: age of 18 years and over, lack of dementia, non-exposure to psychological problems (deaths of loved ones, accidents and injuries caused by driving, severe clashes and large cramps) in 6 Last months; also those who did not want to cooperate, they were not selected for sampling. To facilitate data collection, four colleagues, including two female colleagues and male ones, students of the Guilan University of Medical Sciences and familiar with Rasht neighborhoods, cooperated; before sampling the training needed on how to use the tool was done during the sessions. Sampling was performed on all days of the week in two shifts in the morning and evening, and the time for answering the questions was on average 20 minutes. In each cluster, the research samples were selected available based on the inclusion criteria and the questionnaires were completed by interview. The questionnaire included Residents' characteristics, lifestyle and residential environment indices. The Residents' characteristics included age, ethnicity, marital status, having a child, number of family members, education, occupation, monthly payments and non-communicable disease; the questions related to the lifestyle section for whose evaluation a questionnaire was used taken from the London Behavioral Health Questionnaire and three dimensions of lifestyle including smoking / hookah, alcohol and physical activity were studied. For smoking / hookah, the range of responses was used, ranged from 1 (never) to 8 (more than 20 times a day), for alcoholic beverages, the range of

responses was used from 1 (no consumption) to 4 (continuous consumption) and for physical activity in the range of responses from 1 (never) to 5 (every day). To determine the indices of the residential environment, we used a questionnaire that was derived from the Foxton & Jones Social Capital Scale. The Foxton and Jones Social Capital Scale contains a set of questions that the researcher can select the questions he needs. The questionnaire of residential environment indices was used in a study on The Role of Social Capital in Shaping the Wellbeing and Lifestyle Behaviours that was conducted on young women in Shiraz by Salehi et al.

To ensure the association of the questionnaire with the Iranian society, the study was evaluated by a specialized panel of Iranian and Australian health experts; it was reported that the questionnaire had acceptable reliability (Firouzbakht and et al, 2017).

Additionally,Qualitative content validity was done based on the expert panel opinions. Quantitative content validity was measured based on the calculating Content Validity index (CVI) and Content Validity Ratio (CVR) CVR and CVI of this questionnaire were reevaluated by a specialized panel of faculty members of Guilan University of Medical Sciences.The residential environment construct is an 20-item scale incorporating the three domains of the physical environment (such as traffic, industrial fumes, rubbish, Household waste disposal, Noise and graffiti), and the social environment (such as neighbourhood disorder, homeless people, troublesome neighbours, teenagers hanging around, frightened after dark, and drug abuse) and leisure facilities of living environment (places of recreation, the presence of jobs and work, quality environment, quality of houses, public transportation services, health centers, schools and universities, shopping centers) with a range of responses 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 in the local area were measured. The period of living in the local area includes one item on how long participants have lived in their local area, 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, with a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The reverse scoring was calculated for items as required.

For the physical and social variables, the range of responses is from 1 (I am satisfied) to 5 (I'm completely dissatisfied) for the variables of facilities. The period of residence in the residential environment and the satisfaction of the residential area were measured. Data were analyzed using SPSS software version 20, descriptive statistics, Pearson correlation coefficient, independent t-test and linear regression based on stepwise method.

Findings

The findings showed that the mean age of women in this study was 43.23 ± 15.43 years old of which (60.8%) were middle-aged. (33%) of the samples suffered at least from one type of non-contagious diseases, 74/84% of them created changes in one dimension of their lifestyle after they became infected; this is while around 24.84% of the samples did not change their lifestyle.

The individual-societal indices are briefly presented in Table 1. Based on the findings (21.3%) of the participants from 0 to 5 years, (12.3%) of the participants from 5 to 10 years, (23.7%) of the participants from 10 to 20 years and (42.7%) of them lived in their place of residence for more than 20 years. The average satisfaction with the place of residence (scores ranging from 3-15) was 10.72. The results of independent t-test showed that there was a difference between ethnicity (0.046), having children (0.006), marital status (0.004) and smoking and also between having a child (0.008) and Alcohol consumption. The results of Pearson correlation test showed that there is a significant relationship between some independent quantitative variables and lifestyle; it is shown in Table 3. Finally, for Determination of lifestyle predictors, the variables with (p <0.2) were investigated by stepwise method in linear regression. Results have been presented in Table 4.

Discussion

Since the subject of women's health and its related factors is very important in addition to other aspects of health, this study aimed to investigate the relationship between indices of residential environment and Iranian women's lifestyle. In the current study (11.3%), samples had a history of smoking; Salehi et al reported, in their study on young women in Shiraz (Ebrahimi and et al, 2017), by about 25% the amount of smokers, which is far more than women in Rasht.

The present study has shown that age is one of the predicting factors of smoking, so that with the increase in age, the amount of smoking is reduced; this result is consistent with the other studies in this area (Hawe & Shiell, 2000; Jitnarin and et al, 2015). The results showed that tobacco consumption in Gilak women is lower than other ethnic groups; it can be attributed to the cultural and social foundations of tobacco use in Gilak women.

Our study showed that there is a significant relationship between marital status and having a child and smoking, so that people who do not have children do smoke more than those who have and the unmarried people smoke more than single people. Moreover, there is also a significant relationship between having children and consuming alcoholic beverages, and alcohol consumption in those who have not children has been reported to be more due to unemployment and lack of entertainment; for Mehralhassani et al, in their study in Rafsanjan, the main cause of consumption of Alcoholic beverages is unemployment and not having fun. in our study there is a direct relationship between the level of education and consuming alcoholic beverages. In a Cohort study conducted by Camillia et al. in the United States, the results indicated that the increase in the level of education of women increases the amount of consuming alcoholic beverages (Haghdoost and et al, 2015). In addition, during a Cohort study by Guruchvili et al in Russia, it was reported that there was an inverse relationship between education level and consuming alcoholic beverages, but this relation was not observed in the women population (Lui and et al, 2018).

In the present study, there is a significant relationship between age and alcohol consumption; it introduces age as one of the predicting factors of alcohol consumption. As the age increases, the amount of alcohol consumption decreases, which is consistent with studies that preceded (Hawe & Shiell, 2000; Gugushvili and et al, 2018). In our study, there is a direct relationship between dissatisfaction with facilities of the residential environment and alcohol consumption, which is consistent with the study conducted by Salehi et al on young women in Shiraz. In the next study of lifestyle, the findings show that the average score of physical activity in the present study is moderate, which is consistent with the study of Salehi et al conducted in Shiraz. The level of education was significantly correlated with Physical activity and education was introduced as a predicting variable of physical activity, which is consistent with many studies in Iran and the world (Khoukhazade and et al, 2016; Salehi and et al, 2016). In the current study, there was a reverse relation between the discontent with the social conditions of the residential environment and the level of physical activity; the social discontent was introduced as a predictor of the level of physical activity: with an increase in dissatisfaction with the social conditions the level of physical activity increases. In this regard, Salehi et al reported in their study in Shiraz that social factors in human environment such as dark fear prevented women from physical activities. This indicates that neighborhood security is an important condition for social and public activities, and the lack of neighborhood security can prevent healthy behaviors such as physical activity in the human environment. Also in their study in Belgic, Van Hoole et al described the social conditions of the human environment as one of the factors that encouraged residents to engage in physical activity (ABDI and et al, 2016). According to the study of Anderson et al in the American and African low-income neighborhoods, the results indicated that the improvement of social variables in the residential environment was accompanied by an increase in the level of physical activity (Salehi, 2015). There was an inverse relationship between the dissatisfaction with facilities of the residential environment and the level of physical activity; Salehi et al in their study on young women in Shiraz (Denny and et al, 2009) and Diez and Mair in their review reported that people who have less access to facilities in their environment would have less chance of improving their physical activity (Andersen and et al, 2015). In a Cohort study on 4056 males and females over the age of 18 in Australia, the results showed that lifestyle dimensions such as physical activity and smoking could be affected by the physical and social variables of the neighborhood (Roux & Mair, 2010). In their study, Deguzman et al came to the conclusion that having a healthy, safe and crime-free environment would encourage residents to adhere to a healthy lifestyle such as physical activity (Ngo and et al, 2014). However, Borji et al did not report a significant relationship between physical activity and place of residence in their study in Ilam (DeGuzman and et al, 2013). In the current study, there was observed a direct correlation between satisfaction with place of residence and the level of physical activity. In their study Salehi et al reported that satisfaction with place of residence affects greatly the lifestyle (Denny and et al, 2009). The duration of residence in the residential environment was associated inversely with smoking and the level of physical activity. It is not consistent with the study done by Salehi et al (Salehi and et al, 2017) and Mohnen et al (Van Holle and et al, (2016). This study has several limitations. First, although this study was carried out in the metropolis of Rasht, its results may differ from other Iranian cities. Second, the division of neighborhoods was based on the division of the municipality of Rasht, which is not based on wealth and social conditions, and only neighborhoods were located in a region based on the geographical proximity. Third, given the cultural and religious conditions prevailing in Iran, it may be the respondents are not honest in answering to questions about drinking and smoking. However, the present study has shown that social conditions, satisfaction of residential environment and its facilities affect the women's lifestyle. Therefore, there is a need for large-scale programs to promote the level of residential environment in the economic/cultural/social fields for achieving the desired health outcomes.

Table 1- Frequency of individual-social variables (N=497)

Age	Frequency (%)
Young (18-29)	116 (23.3)

Middle-aged (30-59)	302 (60.8)
Elder	79 (15.9)
Ethnicity	-
Gilak	397 (79.9)
Fars	30 (6)
Turk	37 (7.4)
Talesh	16 (3.2)
Others	17 (3.4)
Education	-
illiterate	40 (8)
Under diploma	164 (33)
Diploma	142 (28.6)
Professionally skilled / BA	129 (26)
MSc / Ph.D.	22 (4.4)
Job	-
worker	9 (1.8)
Employee	38 (7.6)
Retired	44 (8.9)
Student	47 (9.5)
Unemployed / job seeker	20 (4)
housewife	244 (49.1)
Free	88 (17.7)
Others	7 (1.4)
marital status	-
Single	112 (22.5)
Married	348 (70)
Separated from wife	10 (2)
Wife-died	27 (5.4)
Child	-
Yes	357 (71.8)
No	140 (28.2)
number of family members	-
> 4	366 (73.6)
<4	131 (26.4)
Getting paid monthly	-
Yes	154 (31)
No	343 (69)
Non-contagious diseases	-
Yes	163 (32.8)
No	334 (67.2)

Table 2- Descriptive analysis of dependent and independent variables

	variables	Mean	Standard deviation
residential environment indices	Physical environment (score range: 6-30)	12.97	5
	Social environment (score range: 6-30)	10.98	4.47
	Facilities (score range: 8-40)	16.87	6.42
	Satisfaction with residential environment (score range: 3-15)	10.72	3.51
lifestyle	tobaccos (score range: 2-16)	1.16	0.91
	Alcoholic drinks (score range: 1-4)	1.07	1.07
	Physical activity (score range: 1-5)	2.41	1.58

Table 3. Correlation of lifestyle and quantitative independent variables (Pearson statistic correlation test)

	Smoking	Consuming alcoholic drinks	Physical activity
Age	P = 0.00	P = 0.00	P = 0.23
	r = -0.16	R = -0.001	r = -0.05
Education	P = 0.21	P = 0.01	P = 0.00
	r = 0.010	r = 0.011	r = 0.017
Number of family members	P = 0.05	P = 0.42	P = 0.91
	r = -0.08	r = -0.03	r = -0.00
Time of residence	P = 0.00	P = 0.57	P = 0.00

	r = -0.16	r = -0.02	r = -0.012
Satisfaction with living in the local area	P = 0.02	P = 0.61	P = 0.03
	r = -0.05	r = 0.02	r = 0.09
Dissatisfaction with the Physical environment	P = 0.86	P = 0.50	P = 0.77
	r = -0.00	r = 0.03	r = -0.01
Dissatisfaction with the Social environment	P = 0.60	P = 0.37	P = 0.00
	r = -0.02	r = -0.04	r = -0.015
Dissatisfaction with the Facilities	P = 0.34	P = 0.02	P = 0.00
	r = -0.04	r = -0.09	r = - 0.12

Table 4- Analysis of multivariate regression: relationship between independent variables and dimensions of lifestyle

Variables	Predictors	Non-standard regression coefficient	Standard regression coefficient	Confidence distance of 95%	Significance level
Tobaccos	Age	-0.012	-0.101	(-0.022, -0.001)	0.036
	Time of residence	-0.145	-0.137	(-0.239, -0.050))	0.003
	Marital status (married compared to single)	-0.384	-0.100	(-0.734, -0.034)	0.032
Alcoholic drinks	Age	-0.003	-0.127	(-0.005, -0.001)	0.004
	Dissatisfaction with facilities of residential environment	0.006	0.103	(-0.011, -0.001)	0.021
Physical activity	Education	0.283	0.184	(0.140, 0.407)	0.000
	Dissatisfaction with social environment	-0.058	-0.164	(-0.058, -0.016)	0.000

References

Abdi, J., Efthekhar, H., Mahmodi, M., Shojaeizadeh, D., & Sadeghi, R. (2016). Physical Activity Status Of Employees Of Governmental Departments In Hamadan, Iran: An Application Of The Transtheoretical Model.

Afshar, P. F., Asgari, P., Shiri, M., & Bahramnezhad, F. (2016). A review of the Iran's elderly status according to the census records. *Galen Medical Journal*, *5*(1), 1-6.

Akbarnejad, K. H., Tol, A., Majlessi, F., Yaseri, M., & Alizadeh, H. (2016). Predictors of health-oriented lifestyle among health workers of Amol City. *Hospital*, *15*(4), 103-114.

Andersen, L., Gustat, J., & Becker, A. B. (2015). The relationship between the social environment and lifestyle-related physical activity in a low-income African American inner-city southern neighborhood. *Journal of community health*, *40*(5), 967-974.

Centers for Disease Control and Prevention (CDC. (2005). Cigarette smoking among adults--United States, 2004. *MMWR. Morbidity and mortality weekly report*, *54*(44), 1121.

Chum, A., & O'Campo, P. (2015). Cross-sectional associations between residential environmental exposures and cardiovascular diseases. *BMC public health*, *15*(1), 438.

Cubbin, C., Egerter, S., Braveman, P., & Pedregon, V. (2008). Where we live matters for our health: Neighborhoods and health.

DeGuzman, P. B., Merwin, E. I., & Bourguignon, C. (2013). Population density, distance to public transportation, and health of women in low-income neighborhoods. *Public health nursing*, *30*(6), 478-490.

Denny, C. H., Tsai, J., Floyd, R. L., & Green, P. P. (2009). Alcohol use among pregnant and nonpregnant women of childbearing age-United States, 1991-2005. *Morbidity and Mortality Weekly Report*, *58*(19), 529-532.

Ebrahimi, F., Aghamolaei, T., Abedini, S., & Rafati, S. (2017). Effect of Educational Intervention Using Mobile on Life Style of Women Who Referred to Health Centers in BandarAbbas. *Iranian Journal of Health Education and Health Promotion*, *5*(2), 81-89.

Firouzbakht, M., Riahi, M. E., & TIRGAR, A. (2017). A STUDY OF THE EFFECTIVE FACTORS ON THE WOMEN'S SOCIAL HEALTH: A REVIEW STUDY IN PERSIAN SCIENTIFIC JOURNALS.

Gugushvili, A., Azarova, A., Irdam, D., Crenna-Jennings, W., Murphy, M., McKee, M., & King, L. (2018). Correlates of frequent alcohol consumption among middle-aged and older men and women in Russia: A multilevel analysis of the PrivMort retrospective cohort study. *Drug and alcohol dependence*, *188*, 39-44.

Haghdoost, A. A., Emami, M., Esmaili, M., Soberinia, A., Nezhad Ghaderi, M., & Mehrolhassani, M. H. (2015). Survey the status and causes of alcohol consumption: A case study of the epidemic alcohol poisoning in Rafsanjan in 2013. *Journal of Rafsanjan University of Medical Sciences*, *13*(10), 991-1006.

Hawe, P., & Shiell, A. (2000). Social capital and health promotion: a review. *Social science & medicine*, *51*(6), 871-885.

Janjani Paris, momeni khodamorad, Jahangir Karami. (2015). the Relationship between Social Security and Life Style with Life Quality and Happiness of the Women in Kermanshah. Journal of clinical research in paramedical sciences. 3(4):247-56.

Jitnarin, N., Heinrich, K. M., Haddock, C. K., Hughey, J., Berkel, L., & Poston, W. S. (2015). Neighborhood environment perceptions and the likelihood of smoking and alcohol use. *International journal of environmental research and public health*, *12*(1), 784-799.

Kelishadi R, Alikhani S, Delavari A, Alaedini F, Safaie A, Hojatzadeh E. (2008). Obesity and associated lifestyle behaviours in Iran: findings from the first national non-communicable disease risk factor surveillance survey. Public health nutrition.11 (3):246-51.

Khoukhazade, T., NAVKHASI, S., KHALAFZADE, A., MORADI, M., VEYSI, A., & BORJI, M. (2016). The Relationship Between Physical Activity And Balance Control In The Elderly With Diabetes In Ilam, Iran, In 2016..(4)

Lui, C. K., Kerr, W. C., Mulia, N., & Ye, Y. (2018). Educational differences in alcohol consumption and heavy drinking: An age-period-cohort perspective. *Drug and alcohol dependence*, *186*, 36-43.

Mohnen, S. M., Völker, B., Flap, H., Subramanian, S. V., & Groenewegen, P. P. (2012). You have to be there to enjoy it? Neighbourhood social capital and health. *The European Journal of Public Health*, *23*(1), 33-39

Ngo, A. D., Paquet, C., Howard, N. J., Coffee, N. T., Taylor, A. W., Adams, R. J., & Daniel, M. (2014). Area-level socioeconomic characteristics, prevalence and trajectories of cardiometabolic risk. *International journal of environmental research and public health*, *11*(1), 830-848.

Nwokoro, I. I., & Agbola, T. S. (2011). Environment and Health Inequalities of Women in Different Neighbourhoods of Metropolitan Lagos, Nigeria. In *Geospatial Analysis of Environmental Health* (pp. 283-302). Springer, Dordrecht.

Rastegar, M., Zendehtalab, H., Yavari, M., & Mazlom, S. (2015). Health-promoting lifestyle and its related factors among health volunteers Mashhad in 2015. *Journal of Torbat Heydariyeh University of Medical Sciences*, *3*(3), 55-48.

Roux, A. V. D., & Mair, C. (2010). Neighborhoods and health. *Annals of the New York Academy of Sciences*, *1186*(1), 125-145.

Salehi, A. (2015). *The role of social capital in shaping the wellbeing and lifestyle behaviours of young Iranian women*(Doctoral dissertation, Griffith University).

Salehi, A., Harris, N., Sebar, B., & Coyne, E. (2016). The Association between Socio-economic Context at Individual and Neighbourhood Levels, Wellbeing and Lifestyle Behaviours of Young Iranian Women. *Iranian journal of public health*, *45*(9), 1159.

Salehi, A., Harris, N., Sebar, B., & Coyne, E. (2017). The relationship between living environment, well-being and lifestyle behaviours in young women in S hiraz, I ran. *Health & social care in the community*, *25*(1), 275-284.

Shojaeizadeh D, Estebsari F. Azam k, Batebi A, Mostafaei D. (2008) The comparison of factors affecting the Lifestyle of type II diabetic patients with healthy individuals in Shaheed Rajaei hospital of Tonekabon in 2005. Journal of Shahid Sadoughi University of Medical Sciences. 16(2):71-9

Tovar, M., Walker, J. L., & Rew, L. (2018). Factors associated with physical activity in Latina Women: A systematic review. *Western journal of nursing research*, *40*(2), 270-297.

Van Holle, V., Van Cauwenberg, J., De Bourdeaudhuij, I., Deforche, B., Van de Weghe, N., & Van Dyck, D. (2016). Interactions between neighborhood social environment and walkability to explain belgian older adults' physical activity and sedentary time. *International journal of environmental research and public health*, *13*(6), 569.

Volunteers Mashhad in 2015. Journal of Torbat Heydariyeh University of Medical Sciences. 2015;3(3):48-55