

Original Research Paper

Analysis of the Impact of the Urban Built Environment on the Quality and Health of Citizens' Lives (Case Study: District 4 of Sari City)

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Abstract

Applied studies on the spatial form and the manner of physical-spatial development of the city can be useful in addressing urban issues and meeting the present and future needs of citizens. Therefore, the aim of this research is to analyze the impact of the urban built environment on the quality and health of citizens' lives (case study: District 4 of Sari City) in the year 2025. The research method is descriptive-survey, and the statistical population includes residents of District 4 of Sari City, which is considered the old texture of the city. To test the hypotheses, Pearson correlation and path analysis were used for modeling with SPSS software, version 26. The findings indicate that there is a significant and positive relationship between the components of the urban built environment and the quality and health of the lives of Sari citizens. Three components of the urban built environment—(security and comfort of the living environment, access to public spaces, and urban identity)—explain 55% of the variance in the quality and health of citizens' lives in District 4 of Sari City. District 4 of Sari, as the old texture of the city, includes elderly residents and the city center population. The components of the urban built environment directly and indirectly showed that more than half (55%) of the quality and health of citizens' lives can be improved through thoughtful design measures and prudent management, thereby achieving citizens' life satisfaction.

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Introduction

Improving the quality and health of life in any society is one of the most important policy goals of urban officials and planners. One of the most fundamental components of the city's physical environment that is of interest to urban thinkers and scholars is the quality of the city's public spaces. Since the quality of this category of spaces encompasses a diverse and broad range of audiences in the collective life of citizens, they are the building blocks of a healthy and prosperous society. Quality is one of the categories that has received attention in scientific circles in recent decades and various theories such as sustainable development, neighborhood developments, etc. have actually been challenges for improving environmental quality (Taqvaei and Marouf, 2010: 220). Urban public spaces are spaces that belong to all citizens and can be used by any class, age, race, and profession without any restrictions and it includes all open, closed and semi-open spaces, including parks, sidewalks, squares, commercial spaces, etc., Which not only has a physical aspect, but is also shaped by human presence and activity (Darvishi and Hosseini, 1400: 382; Turkman et al., 1396: 227). Cities are a complex combination of social, economic, spatial, etc. elements; these elements have various effects on the urban growth process and the interrelationship of these elements is very complex (Ziaecian et al., 2013: 13).

The city of Sari, the capital of Mazandaran province, has undergone its growth and expansion stages much faster than the natural rate, despite the rapid population growth, the area and size of this city have also experienced rapid growth in recent decades, and therefore, the city of Sari has encountered certain problems and dilemmas. This has increased the need for conscious planning and guidance, and fundamental organization for uneven and scattered urban construction. Therefore, careful study and understanding of the relationship and impact of the city's physical environment on the quality and health of citizens' lives is of particular importance and necessity for urban planners and thinkers.

The rapid growth of urban centers and the increasing demand for products and services have led to social, economic, and environmental challenges (Zanella et al., 2015: 695). The rapid population growth of Sari on the one hand and its status as the capital of

Mazandaran Province on the other hand have led to increasing structural and urban changes.

This situation has led to increased traffic, environmental pollution, a decrease in green areas, and consequently a decrease in the quality of life (Mollania Jelodar, et al, 2023). Following the development of urbanization, its problems gradually became known and emerged. From the mid-1960s, urban crises became more widespread and following the emergence and spread of the crisis in various aspects of urban life, including environmental, social, physical, economic, etc., a kind of public awareness of environmental problems and the decline in the quality of the urban environment at the scale of the city and residential neighborhoods emerged (Shakargozar et al., 2018: 94). The excessive growth of cities has created a wide range of factors that threaten human health and the quality of life of citizens in cities. Therefore, one of the main concerns of mankind in the present era, which has occurred with the increasing growth of the urban population, is improving the quality of life (Hajian Zeidy et al, 2022: 617). The city, as a living and dynamic entity, can play an important role in meeting the psychological and mental needs of individuals. According to this definition, the effects of urban environments on citizens can be examined from two basic human aspects, including the material senses and the human psyche. The visual factors of urban spaces that appear in cities in both desirable and undesirable ways are a topic that has not been addressed much. And this is while these factors, whether intentionally or unintentionally, influence the minds and psyches of individuals (Kamorshalmani and Hanachi, 2015: 66).

Since researchers live in the city of Sari and observe that the physical environment of the city has a great impact on the quality and health of life of its residents and the differences in this quality of life in multiple areas of Sari, they sought to investigate to what extent and how the physical environment of District 4 of Sari, which is located in the city center and is considered an old fabric, affects the quality and health of life of its residents. Therefore, this research seeks to answer this question: Does the urban physical environment (with its five components) have a significant relationship

with the quality of life and health of citizens in Region 4 of Sari city?

Literature Review

The word "body" literally means "form" and is the content of economic and social relations in space, and since it is three-dimensional, it is considered the definition of space (Center for Urban Planning and Architecture Studies and Research, Physical Planning, 1991: 340). Baig believes that livability is an important and vital aspect of urbanization that reflects the quality of life. These cities face diverse urban challenges, including low quality of life, which has focused urban planners towards livability criteria (Baig et al., 2019: 91). According to Busselman, the original meaning of livability was neighborhoods with residents relatively free from disturbance, but this term has gradually expanded to include indicators such as safety, sustainability, and comfort, access to services, walkability, and trafficability. He considers livability to be different from vitality and a sense of belonging (Bosselman, 2008: 142). City residents view city spaces as a way to spend time and a place to earn income; In fact, instead of inviting people to stop, reflect, and engage in social interaction, the environment of Sari encourages them to ignore and pass by. Seeing, understanding, and experiencing do not happen properly, which results in discouragement, fatigue, routine, and even mental and physical illnesses (Heidari-Tamarabadi and Karami, 1401: 119). The physical-functional perspective of planning on various dimensions and aspects of life in the past has led to the emergence of new social concepts such as social welfare, quality of life, and social justice in the realm of public planning and development since the late 1960s, under the influence of new needs and awareness. With the prevalence and application of these concepts in order to achieve qualitative criteria for the desirability of urban environment quality, the involvement of environmental, cultural, social, and psychological factors was proposed as an essential principle (Meshkini et al., 2015: 18).

A) Theories of urban environment quality:

The quality of the urban environment is an aspect of the quality of life that includes

people's sense of well-being, comfort, and satisfaction with the physical-spatial, socio-economic, environmental, and symbolic factors of their living environment. In other words, environmental quality is not only concerned with the areas of estimating human material needs, it also focuses on providing and promoting social capacities and developing communities, which also affects their social behavior patterns (Rafii and Askari, 2007: 9). The quality of the urban environment depends on the quality of the city's infrastructure and its proper management, and it includes the physical environment (rainwater management, air quality, green space, noise, traffic, etc.), housing facilities (water supply, electricity, gas, telephone, sanitation, sewage disposal, etc.) and the social environment (society, independence, social actions, sense of satisfaction and social security) (Kamroozman et al., 2007: 14). The World Health Organization (WHO), in its definition of quality of life (environmental quality), believes that quality of life should be seen in connection with environmental, social, and cultural contexts (Yaros, 2010: 192).

B) Cognitive-psychological theory:

Perception generally means a person's knowledge and awareness of the external and internal worlds, and in today's psychology, it refers to the set of processes through which a person recognizes and organizes sensory information received from environmental stimuli and gives them meaning (Rajabi et al, 2023: 56). This theory refers to important aspects of living in an urban environment, such as: a sense of peace and security, the historical discussion of living in that city, place identity, and also green spaces for leisure such as parks. Understanding the urban environment is a mental process that occurs through the relationship between humans and the space around them. Humans receive sensory messages from the environment and create an image of the environment in their minds. One of the factors influencing the formation of this image is individual or collective memories of the environment. In this definition, memorable spaces are spaces that humans have previously experienced and are familiar with. The more familiar spaces there are in your living environment, the easier it will be to

communicate. Finding familiar spaces will create a sense of peace and security in the environment. On the contrary, the change, transformation, or disappearance of familiar spaces creates a sense of loss, rootlessness, and loss of part of life in humans (Mir Moqtadai, 2009: 6). The understanding of the city, its concept and organization vary according to nations, their natural conditions, their history, their family and social structure, their fashion and standard of living, their culture, land use and type of transportation. In addition, the perception of urban space varies depending on characteristics such as age, place of birth, gender, type of activity, standard of living, level of culture, housing conditions, methods of transportation, level of mobility, and social class (Bastiet and Darz, 2003: 434). This perspective emphasizes the relationship between humans and the environment, and it is believed that this relationship is influenced by individual characteristics and the environment. People are working on their environment, which today leads to a degradation of environmental quality. On the other hand, the poor state and conditions of the environment also have a negative impact on the population (Arzhang, 2011: 49). Those who have lived in the city remember and recount memories of their settlement, but immigrants and newcomers recount memories of their previous settlement to the new generation and have no memories of the city's past. For this reason, new cities or cities where the immigrant population predominates over the old residents have weaker and more faded collective memories, and the new generation only remembers its own experiences. This recollection is possible through oral transmission of memories or the preservation of their physical traces. Urban monuments (monuments, architectural style of buildings, graffiti, and place names) play an important role in this regard. Some of these memorials are created by those in power, such as the construction of monuments, the naming of streets, and the like, and others are natural features (Loyika, 2008: 1-23). Talcott Parsons considers function as a set of activities that are carried out to satisfy a need or needs of the system according to this perspective, Parsons

considers function as a set of activities aimed at satisfying a need. It can be said that parks are one of the needs of a city, and urban centers use them to meet their specific needs, including spiritual, social, and cultural needs, etc. So with these interpretations, the park has a function for a community, if urban green space managers and administrators can, through social monitoring and adopting various measures, gain people's confidence in spending their leisure time in parks and create social order and cohesion in parks, and attract people to public green spaces at different times of the day for various social activities such as sports, socializing with friends and family, cultural affairs, etc., the social productivity of urban green spaces will be enhanced. For this purpose, it is essential that these places meet the conditions and criteria for park management (Rabbani et al., 2011: 125).

c) Landscape improvement theory: The urban lifestyle also creates conditions for houses to remain unoccupied for a period of time, and this opportunity causes the rate of theft and robbery in cities to increase. Burgess believes that the mobility of urban life, along with the increase in the number and intensity of stimuli it creates, inevitably leads people to confusion and moral degradation (Dole et al., 2015: 118). One of the most important issues is how it relates to a free society. This issue is important in the culture of many Western countries, especially Scandinavian countries. There is a major difference between experienced and imagined security on the one hand and real and actual security on the other. The portrayal of crimes reported through the media often conveys a very different perception than actual crimes. With the mindset that the feeling of security or insecurity is somewhat related to the age and gender of individuals, the question can be raised as to what level of risk is acceptable and permissible for starting a business? Greenland considered this the main concept of "crime-free design" through the contemporary urban environment and construction (Rahmat, 2011: 202). The idea that spaces influence a person's behavior and can be used to regulate their behavior is acceptable. There is a possibility that, primarily through

urban planning and design, and by combining plans with a kind of regulatory system, the moral and social advancement of the individuals in society could be achieved. Therefore, just as urban spaces can be places where human virtues can be manifested and manifested with proper planning and design, On the other hand, they can become places for all kinds of urban crimes through abandonment and incorrect and simplistic planning and design. A survey conducted in 8 major cities of the country shows that 81 percent of citizens feel insecure (Taherkhani, 2002: 88).

Research Background

Velayati and Rezaei Tabrizi (1403) concluded in their research that the correlation between more than 90 percent of physical and psychological components is strong or moderate. And this result shows that the physical components of urban spaces in the two mentioned urban spaces have a high impact on the mental health of citizens. Saeedi Zaranji et al. (1403) concluded in their research in the city of Ardabil that art and aesthetics, physical and environmental elements have a strong impact on the mental and psychological health of individuals. And the lack of proper management by city managers has led to a multifold increase in the number of neurological and mental patients. Asadi et al. (1403) concluded in their research in the city of Maragheh that social indicators (sense of belonging to the place of residence, active participation in public ceremonies, trust in one's neighborhood, women's sense of security, lack of thugs, suitable environment for children to grow up, appropriate social interactions, trust in the market, and street and alley security) had the greatest impact on the quality of the urban environment. Karamipour Shamsabadi et al. (1401) concluded in their research that five factors in the social dimension and six factors in the physical dimension were identified using exploratory factor analysis. The results of the Friedman test indicate that in the social dimension, the three factors "social security (2.81)", "comfort and convenience (2.68)" and "inclusiveness (2.42)" are below the acceptable level, considering their importance coefficient (less than 3). In the physical dimension, the

factor "efficiency (2.93)" is at a low level and the factors "service and traffic access (3.27), diversity and variety (3.22), "color of belonging (3.9)" and "spatial desirability (3.18)" are at a moderate level. Hajjforosh (1401) concluded in his research in Yazd city that the characteristics of health services (0.96), security and social relations (0.92), social services (0.88), and noise level with a coefficient of (0.85) had the greatest impact on the components of urban environment quality. Zanganeh et al. (1400) concluded in their study that among the physical-spatial components, the status of accessibility and access to public services had the greatest impact on the livability of urban neighborhoods in Region One. Pasandidhe et al. (1400) concluded that 38% of the variance changes in the social health variable were explained by the quality of the residential environment variable and individual variables. Rajabi-Amirabadi and Rahmani concluded in their 2019 research that improving the socio-economic, cultural, and access to urban services can help improve the quality of life in Malayer. Azimi et al. (2019) concluded in their research in the city of Ardabil that legibility and visual quality, access to urban green space, urban space security, quality of urban furniture, and mix and diversity of uses have a positive and significant impact on the mental health of citizens. Hosseinzadeh Dalir et al. (2019) concluded in their research in the city of Tabriz that at the level of physical-spatial characteristics, the organization of access and roads had the greatest impact on the level of citizen satisfaction and at the functional-service level, the social welfare services index and at the content features level, the environmental health index had the most impact. Shaterian et al. (2019) concluded in their research in the city of Kashan that the indicators of a healthy city in terms of the research sample were as follows: Indicators of urban facilities and infrastructure, social trust, satisfaction with social hope, sufficient strength of materials, accessibility, health and hygiene, economy, physicality of the neighborhood, and recreation and leisure. Alizadeh and Mohammadi (2019) concluded in their study that for every one unit change in the physical-environmental component, satisfaction with quality of life changes by

0.351 units. In their research, Akhgari-Sang-Atesh et al. (2018) concluded that the two criteria of color with a score of 0.82.2 and green space with a score of 0.77.7, respectively, played a more effective role than other criteria in the beauty of sidewalks and the overall visual appearance of the city.

The Area under Study

Sari County, located in the Mazandaran Plain, is located between 35 degrees and 58 minutes to 36 degrees and 50 minutes north latitude and 53 degrees and 59 minutes to 52 degrees and 56 minutes east longitude from the Greenwich Meridian. This city, with an area of about 3685.3 square kilometers, covers a quarter of the total area of Mazandaran Province, which is located 38 kilometers from the Caspian Sea to the north and 25 kilometers from the Alborz Mountains to the south (Statistical Yearbook of Mazandaran Province, 2011: 7). Four-city area (ancient fabric of Sari Municipality): The area located on Farhang Street, Shahr-dari Square, Sheikh Tabarsi Street, Razi Street, Amir Mazandarani Boulevard, Molla Majduddin intersection to Shohada Square, has been designated as a special physical unit under the

name of the central core, considering its role, importance, and function in urban life and the significant distinction of its physical texture and function from other parts of the city. The old fabric and most of the city's historical monuments are located within this neighborhood. The city's major commercial and administrative activities take place around the streets of this area and the Nargesiyeh Bazaar. Most of the city's government offices and organizations and the old Sabzmeydan Park are located in this core. While the area of this neighborhood is 5.4% of the total area of the city and its population is 7% of the total population of the city, 30% of the city's commercial spaces, 16% of religious spaces, 16% of health-treatment spaces, and 25% of the city's sports spaces are located in this neighborhood, and the per capita residential use in the city's central core is 57.5 square meters. Therefore, it is clear that the concentration of administrative-political centers in Sari, and the referrals from other cities in the province to this area, causes special conditions and diverse faces in the central core of the city (Sari City Master Plan, 1993: 27-31).

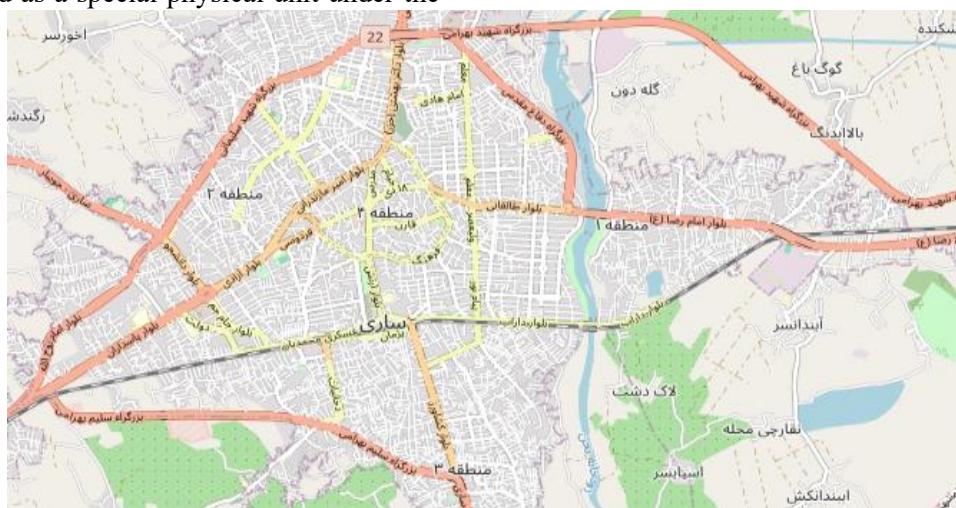


Fig1. The four regions of Sari city, (Source: <https://gisplus.ir/product>)



Fig2. Sari city area, (Source: <https://gisplus.ir/product>)

Research population and statistical sample

A statistical population is all people who share one or more common traits within a geographical area. The statistical population of this study includes residents over 18 years of age in the central core of Sari city, which is considered an old area by the Sari Municipality, District 4.

$$n = \frac{X^2 NP(1-P)}{d^2 (N-1) + X^2 P(1-P)}$$

$$\frac{(3.84) \cdot (27730) \cdot (0.5) \cdot (1-0.5)}{(0.0025) \cdot (27730) + (3.84) \cdot (0.5) \cdot (0.5)} =$$

$$\frac{21422675}{55884} = 383.57$$

According to the 2016 census, there were about 67,500 people. The sample size of the study was determined as 384 people using the Cochran formula, but to increase confidence, 440 people were selected, and due to the high dispersion of respondents, samples were selected using the cluster sampling method. Then, randomly select alleys from each neighborhood, finally, considering the size of the neighborhood's population and its proportion to the sample size, individuals were selected to respond as follows (96 people from

Saat Square, 22 percent; 132 people from Qarn Street, 30 percent; 84 people from 18 Dey Street, 19 percent; and 128 people from Jomhuri Eslami Alley, 29 percent). The data for this study were collected using a questionnaire and analyzed using SPSS 26 software.

Conceptual and operational definitions of variables:

A) Dependent variable (Quality and health of urban life): The meaning of quality of urban life is to pay attention to social, cultural, economic, environmental, psychological, etc. indicators in both objective (quantitative) and subjective (qualitative) aspects in the urban planning process. Such as better educational conditions, quality of access, quality of housing, quality of leisure spaces, creating opportunities for social interaction, social opportunities, employment, and welfare, social participation (Rajabi-Amirabad and Rahmani, 2010: 325). This variable measures citizens' overall perception of the quality of life and health in the urban environment.

The concept of quality is considered to be the nature of an object that has an emotional and intellectual impact on the audience (Pakzad, 1400: 106). Quantity and quality are two inseparable aspects of phenomena. Qualities are formed based on quantity (Taqvai et al., 2013: 44). Residential satisfaction; In urban environments, people spend most of their time in residential environments, and after working

throughout the day, the residential environment is not only a place for them to rest but also gives them an opportunity for spiritual regeneration. Working in urban environments causes a lot of stress and pressure on people. Therefore, the quality of the residential environment and satisfaction with it have attracted the attention of many researchers (Zhao, 2009: 4594). To measure this variable and encompass the concept of quality and health of urban life, 10 questions (items) based on the Likert scale were prepared and asked from respondents and information was collected. The variable of urban life quality and health in this study was collected from respondents with 10 items (expressing the assessment of their overall quality of life, the level of satisfaction with their physical health, performing daily activities without problems in the urban environment, the level of citizen satisfaction with access to health-treatment services, the level of contribution to mental health by the urban environment, the level of citizen satisfaction with the security and comfort of their living environment, the level of citizen satisfaction with the quality of the city's air and environmental conditions, the level of feeling of belonging and satisfaction with their neighborhood and city, the level of availability of welfare, recreational, and cultural facilities in the city, the level of citizen's desire to stay and live in this city). The results of the validity test show that the alpha value of this variable is 0.83 for ten items, meaning that there is acceptable internal consistency and coherence for measuring the concept of quality and health of urban life.

b) Independent variables: (physical environment of the city):

1) Access to public spaces: When the services needed by citizens are easily accessible from all parts of the city, optimal living conditions can be expected (Zanganeh et al., 1400: 84). Public spaces are places that are generally open and accessible to all members of society without social, cultural, or economic restrictions. These spaces include parks, squares, streets, sidewalks, and other open urban spaces that allow for individual and collective activities.

Easy access to these spaces through public transportation networks, walking and cycling paths, and convenient location in densely populated areas are key factors in the success of public spaces. Such access increases usability and enhances social interactions. To measure this component, information was collected from respondents with 5 items of awareness (sufficient access to parks and green spaces in one's neighborhood, appropriateness of distance to public spaces such as parks, squares, sidewalks, convenient use of facilities in public spaces, adequacy of public spaces in the area for social and recreational activities, helping to improve the quality of life of the individual in using public spaces in the neighborhood).

2) Security and comfort of the living environment: Physical security is one of the main pillars of housing security, which plays a fundamental role in improving the quality of urban life. Having a safe shelter is considered one of the most basic human needs (Khaderloo, 1402: 5). Security and comfort in the physical environment of the city means providing conditions where citizens can easily be present and operate in urban spaces without fear of physical or psychological dangers. This component includes appropriate spatial design, sufficient lighting, traffic control, urban surveillance, and creating a calm and disturbance-free environment that helps improve the quality of life and mental health of citizens. To measure this component, data was collected from respondents using 5 items (feeling of security in their neighborhood, especially at night hours, sufficiency of lighting in alleys and streets, being disturbed in the living environment by nuisance factors such as noise or air pollution, appropriate measures in the neighborhood to reduce crime and delinquency, feeling comfortable and calm in their living environment).

3) Urban Identity: Urban identity refers to the identity and personality by which an individual recognizes themselves and is recognized by others. When a person thinks about themselves, they consider themselves connected to a place, regard that place as part of themselves, and establish a deep relationship with it. Therefore,

place identity is a fundamental and foundational part of a person's identity and is the result of their perception of the world in which they live (Moghareh Abed et al., 2024: 172). Urban identity refers to the set of unique features and elements of a city that distinguish it from other cities and give its citizens a sense of belonging and recognition. This identity can include architecture, culture, history, symbols, and specific public spaces that manifest in social interactions and urban behaviors. Urban spaces, as the context for the emergence and vitality of individual and social ideas and desires, play an important role in shaping the city's identity. To measure this component, data was collected from respondents using 5 items (the harmony of the urban environment of the neighborhood with local culture and history, observing the presence of historical symbols or cultural elements in the neighborhood, a sense of belonging and pride toward their city, the local identity reflected in the urban design and architecture of the neighborhood, the importance of preserving and enhancing local identity for the individual).

4) Urban Participation: Urban participation can be defined as the serious, active, conscious, voluntary, organized, and effective involvement of individuals, groups, and urban organizations in the economic, social, and cultural activities of urban life to achieve collective urban goals (Karami et al., 2015: 163). Urban participation means the active and voluntary presence of citizens in the processes of decision-making, planning, and urban management. This participation is strengthened through the use of public spaces and social activities within these spaces and contributes to the formation of civil society and a sense of citizenship. Public spaces, as the context for social interactions, provide opportunities for exchanging opinions and collective awareness-raising, which facilitates participation in urban affairs. To measure this component, data was

collected from respondents using 5 items regarding awareness of (participation in decision-making related to the urban environment in their neighborhood, being heard in urban matters, the activity and accessibility of local institutions or community associations, participation in activities to improve the urban environment of their neighborhood, improvement in individual quality of life through their participation in urban affairs).

5) Urban Visual Perception: The visual art of the city includes: the tradition of visual aesthetics, the social tradition, and the tradition of creating urban place (a combination of aesthetic and social traditions). The guidelines of art create a beautiful urban place by fostering participation, identity, quality of public space, ease of movement, legibility, compatibility, diversity, visual qualities, and aesthetic experiences (Heydari-Tamr Abadi & Karami, 2022: 120). Urban visual perception, or urban landscape, refers to the quality and visual attractiveness of the city's physical environment, which has a direct impact on citizens' experience of urban spaces. Urban design should be such that open views, lighting, colors, and natural and artificial elements are combined in a way that creates a sense of calm, security, and satisfaction among individuals. Appropriate urban visual perception can contribute to improving quality of life, reducing stress, and strengthening urban identity.

To measure this component, data was collected from respondents using 5 items (satisfaction with the view and visual beauty of their neighborhood, the attractiveness and pleasantness of urban space design, the importance of having artistic elements or special designs in the urban environment, feeling calm and comfortable with the design of their neighborhood's urban environment, attention to cleanliness and beauty of the urban environment in their neighborhood).

Tab1. Reliability Report of the Research Instrument

Scale		Number of Items	Cronbach's Alpha
Independent Variable (Physical Urban Environment)	Access to Public Spaces	5	0.81
	Security and Comfort of Living Environment	5	0.77

Overall Alpha (0.90)	Urban Identity	5	0.77
	Urban Participation	5	0.82
	Urban Visual Perception	5	0.89
Dependent Variable (Quality and Health of Citizens' Life)		10	0.83

Source: Research Findings, 2025

To assess reliability, Cronbach's alpha test was used, as shown in Table 1. All scales were at a desirable level and above 0.7.

Methodology

The method of this research is documentary and survey, and is descriptive and explanatory. Using the documentary method, the conceptual and theoretical dimensions of the subject have been examined. The researchers used participatory observation for three years before developing the data collection tool (interview-questionnaire). The researchers designed a questionnaire using theoretical foundations and considering the research questions. Since most of these components and component indicators have been mentioned under different titles and categories in similar research, in this study, the main and secondary indicators required for the research were extracted through a comprehensive study of these studies and interviews with Sari Municipality employees. Due to the large size of the research population, the survey method was used, and due to the lack of access to a statistical sample, the cluster sampling method was used.

Research Hypotheses

Main hypothesis: There is a significant relationship between the physical urban environment and the quality and health of life of citizens in District 4 of Sari.

1. There is a significant relationship between access to public spaces and the quality and health of life of citizens in District 4 of Sari.

2. There is a significant relationship between security and comfort of the living environment and the quality and health of life of citizens in District 4 of Sari.

3. There is a significant relationship between urban identity and the quality and health of life of citizens in District 4 of Sari.

4. There is a significant relationship between urban participation and the quality and health of life of citizens in District 4 of Sari.

5. There is a significant relationship between urban visual perception and the quality and health of life of citizens in District 4 of Sari.

Findings

The hypotheses were tested using univariate and multivariate regression analyses, and the following results were obtained. Table 2 shows the relationship of each independent variable with the dependent variable. Considering that the measurement level of the dependent variable (quality and health of life of citizens in District 4 of Sari) and the independent variable (physical urban environment and its five components: access to public spaces, security and comfort of the living environment, urban identity, urban participation, and urban visual perception) is interval, Pearson's parametric test was used. Furthermore, multivariate regression and path analysis were conducted to examine the five research hypotheses.

Tab2. Results of Pearson Correlation Test between the Independent Variable and Its Five Components with the Dependent Variable

Independent Variables	Correlation Coefficient (r)	Significance (p-value)
Physical Urban Environment	0.67**	0.000
Access to Public Spaces	0.59**	0.000
Security and Comfort of Living Environment	0.66**	0.000
Urban Identity	0.54**	0.000
Urban Participation	0.27**	0.000
Urban Visual Perception	0.41**	0.000

Source: Research Findings, 2025

**Correlation is significant at the 0.01 level (2-tailed).

According to the results of Table 2 and considering that the significance level of the test error at a 95% confidence level is less than 0.05, it can be concluded that the main hypothesis is confirmed. There is a significant direct relationship between the physical urban environment and the quality and health of life of citizens in District 4 of Sari, with a correlation coefficient of 0.67 between the two variables. In other words, with the improvement of the physical urban environment, the quality and health of life of citizens in District 4 of Sari will also increase.

In Pearson’s test among the five components of the independent variable (physical urban environment), one component—urban participation—showed a weak direct relationship, and two components—urban visual perception and urban identity—showed a moderate direct relationship with the dependent variable (quality and health of life of citizens in District 4 of Sari). However, the other two components of the independent variable (security and comfort of the living environment and access to public spaces) showed a strong and direct relationship with the dependent variable (see Table 2).

Tab3. Multivariate Regression Coefficients for Independent Variables Entered into the Regression Model

Variables		Unstandardized Coefficients		Beta Coefficient	t-value	Significance Level (p)
		B	Std. Error			
(Constant)	5.840	1.026		5.692	(Constant)	5.840
1. Security and Comfort of Living Environment	0.752	0.068	0.43	11.070	1. Security and Comfort of Living Environment	0.752
2. Access to Public Spaces	0.454	0.065	0.28	6.934	2. Access to Public Spaces	0.454
3. Urban Identity	0.332	0.066	0.20	5.061	3. Urban Identity	0.332

Source: Research Findings, 2025

Table 3 presents the results of the stepwise multivariate regression analysis for the dependent variable "Quality and Health of Life of Citizens in District 4 of Sari." Independent variables that had a significant relationship with the dependent variable were entered into the equation. Among the five independent variables relevant to the study, three components met the criteria for entry into the equation. These three independent components were able to explain 55% of the variance in the dependent variable (quality and health of life of citizens in District 4 of Sari). To draw the path analysis diagram, initially, a multivariate regression test was conducted with the three components of the independent variable (security and comfort of the living environment, access to public spaces, and urban identity) against the dependent variable (quality and health of life of citizens in District 4 of Sari). The results showed that out of the five components of the independent variable, only

three had a direct and unmediated correlation with the dependent variable:

1. Security and comfort of the living environment (with a coefficient of 0.43)
2. Access to public spaces (with a coefficient of 0.28)
3. Urban identity (with a coefficient of 0.20)

Among the five components of the independent variable (physical urban environment), the above three components were considered more important in the regression analysis and showed a direct correlation with the quality and health of life of citizens in District 4, without the influence of other factors. To develop the path analysis model, each time one of the three components (security and comfort of the living environment, access to public spaces, and urban identity) is placed as the dependent variable in the multivariate regression test, and the effects of other factors on it are measured. In this way, indirect effects are obtained after assessing the direct effects and are represented by arrows pointing toward

the dependent variable. The corresponding Beta coefficients (standardized effect coefficients)

of each variable are written on their respective arrows.

Tab4. Statistics of Four Runs of Multiple Regression Tests Based on Which Figure 1 Was Prepared and Designed





Dependent Variable	Three Independent Components of the Study	R	R ²	SEE	Adjusted R ²	F-test Value
Quality and Health of Life of Citizens in District 4 of Sari	1. Security and Comfort of Living Environment 2. Access to Public Spaces 3. Urban Identity	0.74	0.55	4.624	0.54	179.282
Security and Comfort of Living Environment	1. Access to Public Spaces 2. Urban Identity	0.56	0.31	3.256	0.30	98.677
Access to Public Spaces	1. Urban Visual Perception 2. Security and Comfort of Living Environment 3. Urban Identity	0.68	0.46	3.094	0.45	124.045
Urban Identity	1. Access to Public Spaces 2. Urban Participation 3. Security and Comfort of Living Environment 4. Urban Visual Perception	0.63	0.39	3.202	0.38	70.785

Source: Research Findings, 2025

The multiple regression correlation coefficient (R) between the components of the independent variable (1. Security and comfort of the living environment, 2. Access to public spaces, 3. Urban identity) and the dependent variable (quality and health of life of citizens in District 4 of Sari) was found to be 0.74. If this coefficient is squared, $R^2 = 0.55$ is obtained. This means that 55% of the variations in the

dependent variable are explained and accounted for by the above three components. In other words, 45% ($0.45 = 1 - 0.55$) of the variations in the quality and health of life of citizens in District 4 of Sari are determined by other factors, which require further research and investigation. The explanation of 55% by these three components seems reasonable and appropriate.

Tab5. Total Effects (Direct and Indirect) of the Five Components of the Physical Urban Environment on the Dependent Variable of the Study

Components	Direct Effect (Unmediated)	Indirect Effect (Mediated)	Total Effect of Components
Security and Comfort of Living Environment	0.43	$0.26 * 0.28 = 0.07$ $0.22 * 0.20 = 0.04$ $0.22 * 0.23 * 0.28 = 0.01$ $0.26 * 0.26 * 0.20 = 0.01$  0.13	0.56
Access to Public Spaces	0.28	$0.36 * 0.43 = 0.15$ $0.26 * 0.20 = 0.05$ $0.26 * 0.28 * 0.43 = 0.03$ $0.36 * 0.22 * 0.20 = 0.02$  0.25	0.53
Urban Identity	0.20	$0.28 * 0.43 = 0.12$ $0.23 * 0.28 = 0.06$ $0.28 * 0.26 * 0.28 = 0.02$ $0.23 * 0.36 * 0.43 = 0.04$  0.24	0.44
Urban Visual Perception	—	$0.37 * 0.53 = 0.20$ $0.17 * 0.44 = 0.04$  0.19	0.24
Urban Participation	—	$0.54 * 0.33 = 0.18$	0.10

Source: Research Findings, 2025

Table 5 shows the direct, indirect, and total effects of the independent variables in the study. The total effect is calculated as follows: the direct effect is the Beta (standardized

coefficient) representing the direct impact of the independent variable on the dependent variable. The indirect effect is obtained by multiplying the path coefficients along the

paths from the independent variable to the dependent variable, and then summed.

The effect of the urban visual perception component is calculated by multiplying its direct effect by the sum of the total coefficients

of access to public spaces and urban identity. Finally, the total effect of each of the five components is computed by adding the direct and indirect effects.

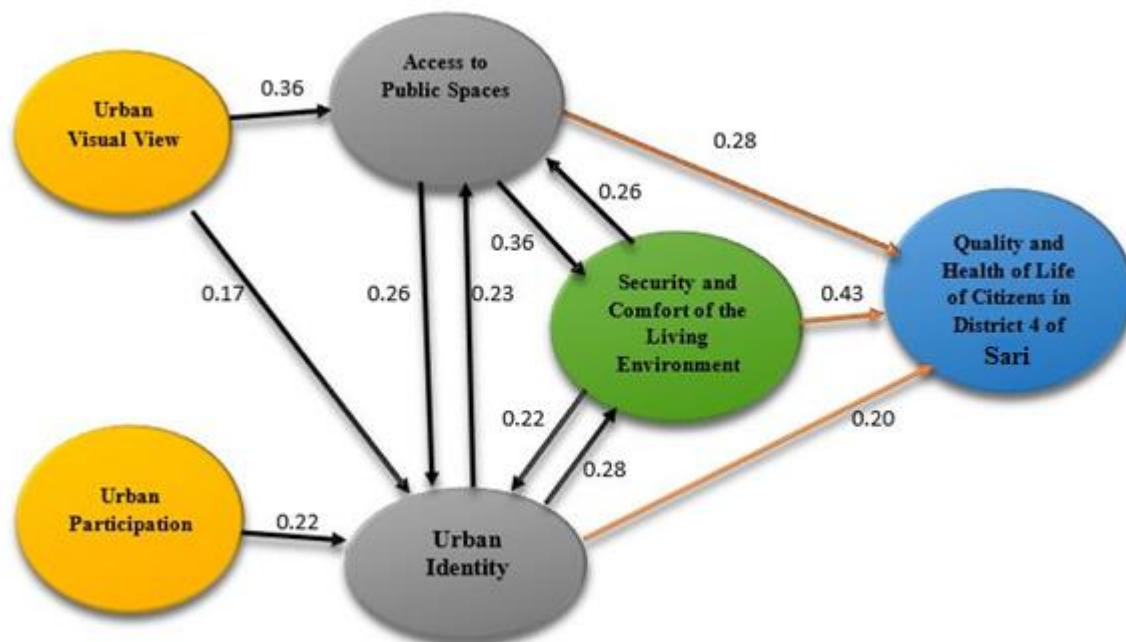


Fig3. Factors Affecting Gender Identity among Female Students (Including Path Coefficients)

Source: Research Findings, 2025

Conclusion

The present study has examined the impact of the physical urban environment on the quality and health of life of citizens in the city of Sari. To this end, the dependent variable of the study—quality and health of life of citizens—was measured using 10 questions, and the independent variable—physical urban environment—was measured using 25 items across five components. These were identified through literature review and previous research and data were collected from citizens in District 4 of Sari. The main research question addresses how much the components of the physical urban environment, from a social perspective and within the community, directly and indirectly affect the quality and health of life of Sari's citizens. The theoretical section explained that individuals' cognitive systems shape their behavioral systems, and by examining their ideas and opinions, their

behavioral orientations can be identified. District 4 of Sari, as the old fabric of the city, includes long-time residents and the city center population. This study aims to empirically demonstrate the effects of the physical urban environment on their quality and health of life based on the perspectives of the citizens themselves.

Based on the literature review, the findings indicate that the physical urban environment and its components significantly affect the quality and health of life of citizens. According to the results, the physical urban environment with its five components explains 55% of the variance of the dependent variable—quality and health of life of citizens in Sari—demonstrating that the physical urban environment is a key factor influencing the quality and health of life as a fundamental aspect of urban living. These findings align with previous studies by Asadi et al. (2024),

Saidi Zarenji et al. (2024), Karami Pour Shamsabadi et al. (2022), Haj Foroush (2022), Karami Pour et al. (2022), Zanganeh (2021), Pasandideh et al. (2021), Hosseinzadeh Dalir et al. (2020), Rajabi Amirabadi and Rahmani (2020), Azimi et al. (2020), Shaterian et al. (2020), Alizadeh and Mohammadi (2019), and Akhgari Sang Atash et al. (2018). Collectively, these studies emphasize the significant role of urban environment components in the quality and health of citizens' lives. Factors such as access to urban services, green spaces, urban safety, quality of urban furniture, legibility and visual quality, art and aesthetics, urban facilities and infrastructure, suitability of the environment for child development, security for women, trust in the neighborhood, sense of place attachment, active participation in public ceremonies, and appropriate social interactions all contribute to social health as the foundation of individuals' quality and health of life in the city.

The findings of this study show that among the five components of the independent variable—the physical urban environment—three components (security and comfort of the living environment, access to public spaces, and urban identity) were considered more important in the regression analysis and showed a direct correlation with the quality and health of life of citizens in District 4 of Sari without the influence of other factors. The multiple regression correlation coefficient (R) between these three components and the dependent variable was 0.74.

A notable and novel aspect of this study is that through multivariate regression, the standardized coefficients (Beta), indicating the relative influence of the three independent components, were ranked as follows: 1. Security and comfort of the living environment (0.43) 2. Access to public spaces (0.28) 3. Urban identity (0.20)

Clearly, the effects are ranked according to their Beta coefficients, which appears appropriate. Although the fourth and fifth components—urban visual perception and urban participation—did not show a direct and significant relationship with the dependent variable and were excluded from the

multivariate regression model, their indirect effects were calculated through path analysis and shown in Table 5, indicating a considerable impact on the dependent variable. All five independent components showed significant correlations with the dependent variable in the Pearson test, as seen in Table 2. Therefore, all six research hypotheses were confirmed: the main hypothesis and the five hypotheses related to the five components of the independent variable all demonstrated significant relationships with the dependent variable. However, in multivariate regression, considering the importance of the variables' effects on the dependent variable, the components of urban visual perception and urban participation did not show a direct relationship with the dependent variable.

The physical urban environment, through thoughtful design and prudent management, can significantly influence the quality and health of citizens' lives. Urban security and comfort had the greatest impact on the dependent variable (quality and health of life of citizens in District 4 of Sari). This is noteworthy because urban security and comfort reduce anxiety, increase mobility, encourage active presence of women and children, and enable nighttime use of public spaces, all of which contribute substantially to quality and health of life. Security is a prerequisite for any presence, participation, social interaction, and psychological peace in the urban environment. Access to public spaces is directly related to mobility, social interaction, exercise, mental health, and satisfaction with urban life. Access to public spaces can improve mental nourishment, strengthen social interactions, and ensure equitable access to urban resources. Urban identity has a deep but gradual effect on the sense of belonging, urban pride, and long-term satisfaction. It can influence the quality and health of life through memorable spaces, cultural symbols, local visual language, and indigenous architecture. Urban visual perception also significantly affects the perception of beauty, psychological calmness, and sense of belonging to space. In urban environments, architecture, lighting, vegetation, color harmony, and preservation of

place identity through landscape design can enhance the quality and health of citizens' lives. Finally, urban participation is effective in the long term but faces cultural, managerial, or

educational barriers in many cities. In today's modern life, active urban participation greatly contributes to urban sustainability and justice.

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