**The Impact of Neighborhood Environment on the Quality of Life of the Elderly**

**ABSTRACT**

**Background:** The community is the main living place for the elderly, and the neighborhood environment is an important factor affecting their health status and the quality of life. **Objective:** To understand the concept, components, and impact of neighborhood environment on the quality of life of the elderly. **Methods:** The literature retrieval method was used to review empirical papers published in English or Chinese in the past 11 years in Google Scholar, Pubmed, CNKI, and Wanfang database. **Results:** Forty-eight articles were included. The neighborhood environment can affect both physical health and quality of life, as well as mental health and social relationships. **Conclusion:** Neighborhood environment is a necessary link for healthy aging, but relevant research is still in its infancy, with research tools and methods needing to be improved and research perspectives needing to be refined.

**Key words:** Elderly; Neighborhood environment; Quality of life

**1. Introduction**

The so-called quality of life is a concept relative to life span (the length of life), which refers to the quality and level of life of members of society. It includes three aspects: tangible material level, intangible spiritual life, and environmental conditions. It is a reflection of the individual's survival value, an important predictor of life expectancy and mortality, a key indicator of active aging, and a symbol of a country's overall strength and an important indicator of human civilization progress [1]. Therefore, countries around the world are paying more and more attention to the issue of quality of life. Both developed and developing countries attach great importance to improving the quality of life of their citizens. Many countries have also established relevant indicator systems to evaluate and monitor the quality of life. For example, China has a special study to compare the quality of urban life using indicators such as "clothing, food, housing, transportation, birth, aging, illness, death, and living and working in peace and contentment". In November 2021, the CPC Central Committee and the State Council issued the Opinions on Strengthening the Work on Aging in the New Era. The opinions indicate that, in the context of advocating active aging and healthy aging, it is important to address the practical issues of providing for the elderly and their health, and to enhance their sense of gain and happiness, that is, their quality of life. The documents of relevant UN organizations also strongly advocate improving and enhancing the quality of life.

At present, the number of elderly people in the world is accelerating, and the aging situation has entered a new stage of acceleration (2021-2050). With the development of medical technology, the life expectancy of the elderly is constantly increasing, but the increase in the prevalence and disability rates of chronic and degenerative diseases has seriously affected the quality of human life.

Neighborhood relationship is an important type of interpersonal relationship and one of the main sources of social support for individuals. As the scope of travel for the elderly gradually shrinks, the community is the main place for their daily activities, and neighbors become their main interpersonal relationships, which is also a key element of the "home-based care" strategy [1]. A survey of the elderly showed that the role of health, family and community was ranked first among factors that may reduce quality of life. Therefore, the neighborhood environment is a very important factor affecting the satisfaction of the elderly with their quality of life [2]. It is crucial to explore how the neighborhood environment affects the behavior and quality of life of the elderly.

This article expounds the research progress of the impact of neighborhood environment on the quality of life of the elderly from six aspects: related concepts, indicator measurement, influencing factors, research process, action path, summary and outlook, in order to provide suggestions for empirical research and planning practice in related fields.

**2. Related concepts**

For the neighborhood environment, in terms of connotation, it is centered on the interpersonal relationships of residents, including the overall situation of related infrastructure and inner perception [3]. The neighborhood environment is considered to be composed of the built environment and the social environment [3]. Among them, the built environment refers to the man-made buildings and places, including buildings, roads, natural/artificial ecological environments and other landscapes, as well as infrastructure/commercial service facilities and other economic environments; The social environment focuses on psychological perceptions such as residents' satisfaction, sense of belonging, and sense of security, as well as social relationships consisting of various types of neighborhood relations.

The connotation of quality of life (QoL) is multidimensional and extensive [4], with neither an agreed definition nor a standard measurement form. The difficulty of defining QoL is exacerbated by the interchangeable use of similar terms and concepts. For example, it can be exchanged for subjective well-being, life satisfaction, and so on. Generally speaking, quality of life (QoL) refers to the satisfaction and happiness index obtained by individuals evaluating their health level, living conditions, social and spiritual life, etc. It is the result of the combined effects of subjective and objective, internal, and external factors.

Due to the broad connotation of "quality of life", it increases the difficulty of use. To help address this issue, the term 'health-related quality of life (HRQoL)' was introduced [5]. The term aims to narrow the focus to health, exploring the impact of disease and treatment on QoL.

**3. Evaluation indicators**

**3.1 Neighborhood Environmental Indicators**

The indicators of the neighborhood built environment mainly include subjective and objective ones. Subjective indicators are mainly based on the dimensions set by various scales. Objective assessment is mainly based on GIS-based objective evaluation. The neighborhood social environment generally refers to the acquisition of social resources by individuals or groups in neighborhood interactions and neighborhood spaces. Broadly speaking, they include: interpersonal relationships, social inequalities, and neighborhood and community characteristics. In some studies, social participation is also included.

**3.2 Quality of Life Indicators for the Elderly**

QoL of the elderly has not only the commonality of general population QoL, but also the specificity of the population. The commonality is that the QoL of all populations is affected by living conditions and satisfaction with life, and the measurement indicators include both material conditions and spiritual factors. The uniqueness is mainly manifested in the strong cultural dependence and population differences in QoL and HRQoL, such as the sensitivity of physical health status to the elderly population, and the vast differences in QoL between healthy elderly and disabled elderly. Therefore, it is necessary to pay attention to both QoL and HRQoL [5]. At present, there are few studies that evaluate QoL from an objective perspective. The WHOQOLBREF is the most commonly used evaluation tool. In terms of HRQoL, the main instrument is the Medical Outcomes Study General Survey (SF-36).

**4. The Impact of Neighborhood Environment on the Quality of Life of the Elderly**

A large number of studies have shown that the neighborhood environment has a direct or indirect impact on the QoL of the elderly. Poor community and neighbourhood environments are often associated with a variety of adverse health and well-being outcomes, such as depression risk, health risk behavior and low subjective well-being [6].

**4.1 Neighborhood Environmental Factors Affecting the Quality of Life of the Elderly**

Neighborhood environmental variables typically include land use characteristics, accessibility of public services and facilities, accessibility of public green spaces, perceived crime and anti-social behavior, and walkability. Previous studies have focused more on the built environment (such as safety and security, and comfort in sports) [7], and less on social environmental factors (such as peer support, intergenerational activities/volunteer service). The research results of social environmental factors have become increasingly rich in the past 10 years.

**4.1.1 Built Environment Factors**

The built environment can be divided from two perspectives: subjective and objective. The subjective perspective is the evaluation of the elderly on the supporting living facilities, greening environment, and walking environment within the community [8]. The objective perspective includes buildings, roads, service facilities, and green landscape.

Most foreign studies focus on the promotion of physical activity, physiological function, cognitive function, and social activities by the built environment [9-11], mobility of the elderly [12], and open spaces in neighborhoods [13]. It has been found that the quality of open spaces is an important factor affecting the QoL of the elderly. In recent years, there has been a growing focus on green spaces, which has gradually evolved into the exploration of mediating effects [14], and further expanded to the analysis of the role of neighborhood safety, walkability, and neighborhood facilities. A few studies have also found that the third space promotes social interaction, thereby improving residents' life satisfaction and QoL [15].

 There are not many early studies in China, and recent studies have focused on the impact mechanism of residential environment on residents' subjective well-being, finding that residential environment has a significant direct impact on residents' subjective well-being. As for the built environment, it was found that if there is sufficient open space, high levels of greening, good accessibility to infrastructure, convenient public transportation and services, residents have a stronger subjective sense of happiness [16].

**4.1.2 Social Environmental Factors**

The social environment encompasses perceived social cohesion/support, collective efficacy, and neighborhood relationships, including psychological perceptions such as residents' satisfaction and sense of security, as well as social relationships formed by various types of neighborhood relationships. A survey [5] found that social dynamics is one of the important factors affecting the overall satisfaction of the elderly, and good social ties improve neighborhood satisfaction.

Previous studies have mainly focused on three dimensions: interpersonal relationships, social inequality, and neighborhood and community characteristics. Among them, social capital and neighborhood cohesion are the two most important factors affecting the QoL of the elderly. Research abroad has focused on the loneliness and social networks of older adults, and found that socioeconomic status, personal social capital and loneliness are the most important determinants of QoL [17-19], social capital and socioeconomic status have a direct positive impact and mediating effect on the satisfaction of QoL among the elderly. Most domestic studies focus on social support, interpersonal relationship mobility, meaning of life, social capital, and socioeconomic status [20-22], and find that these five variables have a significant positive correlation with the quality of life of the elderly.

**4.2 The Quality of Life of Different Elderly Populations Is Affected by the Neighborhood Environment**

Different groups of elderly individuals yield varying results. In summary, social care [23], health status [24], personality traits [24], physical activity [22], pension methods[25], age [25], gender [25], ethnicity [26], family income [25, 27], educational level [26] and other socio-demographic characteristics can potentially affect this effect relationship.

Most previous studies have involved socio-demographic factors, with about 5% focusing on elderly patients, exploring the impact of the environment on the QoL of elderly people with chronic diseases [24], and comparing differences between elderly people in different cities [28]. About 5% of the studies take the elderly care mode as the research background and influencing factors [28], of which 55% focus on home-based care [29], the rest of the literature focuses on immigrants and relocated elderly, while paying less attention to institutional care for the elderly.

Research has found that the factors affecting the QoL of elderly people of different ethnic groups are varying [30]. The impact of neighborhood environment on the health of elderly people of different age groups is also varying [25]. Elderly patients with an optimistic attitude are more satisfied with life, and social support and social presence positively predict subjective well-being and QoL in elderly patients [26]. The ability to pay and the level of education are positively correlated with the QoL of the elderly [29]. The differences in the characteristics of the elderly population and their pension patterns also explain to some extent the different conclusions drawn from studies on the same dimension [25].

**5. Path of Action**

The neighborhood environment affects the health and social relationships of the elderly from both the built environment and social environment, which in turn affects QoL. Compared with healthy elderly people, elderly patients affected by one or more chronic diseases are more dependent on neighborhood resources [31]. The factors that have the greatest impact on the QoL of healthy [13] and sick [32] elderly people are physical health, mental health, and social relationships. Due to the impact of the built environment and social environment on the behavior, activities, and emotional needs of the elderly, which in turn affect their physical and mental health and social relationships, three major pathways of neighborhood environment affecting QoL and HRQoL have been formed.

**5.1 Path 1: Neighborhood Environment Affects Physical Health and then Affects Quality of Life**

The neighborhood environment affects behavior and activities from both the built environment and social environment. Objective indicators of the built environment include buildings, roads, service facilities, and green landscapes, while subjective indicators include safety, aesthetics, convenience, and comfort. Social environment includes interpersonal relationships, social inequality, and neighborhood and community humanity characteristics, all of which can affect the physical health of older adults by influencing their behavior and activities.

 The impact mechanism of neighborhood environment on QoL is manifested in the following three aspects. Firstly, among the objective indicators of the built environment, in terms of architecture, building density has a negative impact on the physical activity of the elderly. In terms of road traffic, street connectivity promotes physical activities such as walking by providing a variety of alternative routes. In terms of outdoor places, the environmental quality of the place has little impact on the frequency of leisure activities for the elderly, while the increase in spatial visibility has an indirect promoting effect on the frequency of leisure activities for the elderly [33]. In terms of service facilities, the accessibility of public service facilities can promote transportation or outdoor leisure and sports activities, thereby promoting the health of elderly residents and improving their QoL [32]. In terms of green landscape, green spaces and open spaces are the main places for social activities, which can promote social activities for the elderly. From a subjective perspective, neighborhood safety [34], aesthetics, convenience, and comfort [35] can promote elderly travel and activities, which is beneficial to health and improves QoL. Secondly, in terms of social environment, in the dimension of interpersonal relationships, neighborhood support provides more opportunities for elderly people to communicate, familiarize, and help each other with neighbors, promoting social activities, while to some extent avoiding physical injury or sudden illness in the elderly, ensuring their physical health, and having a significant positive impact on the overall perception of QoL of those elderly people living at home [23]. The frequency of social interaction is positively correlated with the frequency of walking or cycling [36]. Social interaction can promote physical activity among the elderly, thereby improving their physical health. In the dimension of social inequality, neighborhood and community characteristics, neighborhood cohesion, and social capital [37] can all promote elderly people's participation in social activities, improve their social adaptability, and thus improve their physical health.

A similar situation also occurs in the mechanism of the impact of neighborhood environment on HRQoL. In addition, due to the fact that suffering from one or more chronic diseases poses a great threat to the health of the elderly, from the objective perspective of the built environment, improving infrastructure, increasing facility density, and enhancing the quality of green spaces and open spaces can effectively increase the willingness of chronic disease patients to engage in physical activity. From a subjective perspective, neighborhood safety is more conducive to physical activity among elderly patients, thereby reducing the risk of cardiovascular disease and diabetes, and providing benefits for a variety of diseases. In terms of social environment, higher social capital can enable the elderly to receive more help from relatives, friends, and neighbors, improve their daily activity ability and mobility, and thus improve the mental and physical dimensions of HRQoL [21, 22].

**5.2 Path 2: Neighborhood Environment Affects Quality of Life through Mental Health**

The mental health status of the elderly [38-39] is significantly correlated with QoL and HRQoL. On the one hand, the neighborhood environment can influence the mental health of the elderly by meeting their emotional needs. The influencing factors include objective indicators of the built environment such as buildings and green landscapes, subjective indicators such as safety and comfort, social environment such as interpersonal relationships, social inequality, and neighborhood and community characteristics. On the other hand, due to the direct influence of the neighborhood environment on the daily behavior of the elderly, they have corresponding emotional needs, which in turn affect their mental health. The influencing factors include the objective indicators of roads and service facilities in the built environment.

At the QoL level, both the built environment and social environment have an impact on it. First, among the objective indicators of the built environment, low-quality buildings are prone to induce negative emotions in terms of architecture [25]. In terms of road traffic, the density of pedestrian paths and the connectivity of car lanes are positively correlated with the frequency and range of leisure activities for the elderly. However, the topological form of roads significantly restricts the high-frequency participation of the elderly in leisure activities, which in turn affects their mental health indicators such as boredom [33]. In terms of land use, the layout pattern of land use has a dominant influence on the choice of leisure activity venues for the elderly, and the impact of land use diversity on the frequency of leisure activity for the elderly is significantly correlated with the layout pattern of land use [33]. In terms of service facilities, the proximity to the park is an important factor affecting mental health [39-40]. The richness of service facilities positively regulates the mental health of the elderly by bringing them a sense of belonging and pleasure from social and leisure activities, reducing their depression levels, and improving their cognitive function [41]. In terms of green landscape, a good natural environment can influence the mental health of the elderly through neighborhood support [42], while a poor natural environment can reduce the opportunities for outdoor activities for the elderly, causing them to stay indoors for a long time and leading to depression and irritability [42]. Among the subjective indicators, the beautification of the environment, traffic safety, and public security are significantly positively correlated with the physical activity of middle-aged and elderly people [43]. Due to the incomplete separation of pedestrians and vehicles in the neighborhood, the crowded and disorganized sidewalks increase the difficulty of travel and the risk of injury for the elderly, which can easily lead to anxiety. Second, in the interpersonal dimension of the social environment, a good social network can meet the emotional needs of the elderly, effectively reduce their sense of loneliness, and promote their mental health [41-42]. Local attachment and social relationships help improve the elderly's psychological representation ability of environment, affecting their QoL in various ways [44]. In terms of social inequality, elderly people with a disadvantaged socioeconomic status are at a higher risk of mental health problems [22]. In the dimension of neighborhood and community characteristics, a strong sense of community belonging can improve the mental health of the elderly and enhance their QoL [42].

As for HRQoL, the role of objective and subjective indicators of the built environment is similar to their effect on QoL. In contrast, in terms of social environment, the interpersonal relationship dimension, neighborhood trust, and HRQoL psychological dimensions are more closely related [45]. Social support can improve the mental health of patients with chronic diseases, especially those with myocardial infarction and stroke [46]. Neighborhood and community characteristics, social cohesion, and safety can better improve the mental health of depressed patients [47].

**5.3 Path 3: Neighborhood Environment Affects Social Relations and then Affects Quality of Life**

The social network structure of the elderly is closely related to their quality of life. Due to factors such as retirement and declining physical function, the scope of activities for the elderly has greatly narrowed, and their living environment has shifted from one with many social connections to one within their neighborhoods and families. The neighborhood environment can improve the social relationships of the elderly by promoting behavioral activities and meeting their emotional needs. The influencing factors include objective indicators such as roads, service facilities, and green landscape, subjective indicators such as safety, aesthetics, convenience, and comfort in the built environment, as well as interpersonal relationships, social inequality, and neighborhood and community characteristics in the social environment.

At the QoL level, both the built environment and social environment have significant impacts. First, among the objective indicators of the built environment, architectural features have a relatively small impact on social interaction and social relationships. In terms of road traffic, people in communities with high walking ability have higher frequency of social interaction [36, 48], higher community social cohesion, and richer and closer social relationships. In terms of service facilities, optimizing the allocation of daily life service facilities can strengthen the social relationships of elderly people living at home. In terms of green landscape, green spaces with their good ecological environment and open activity space have become the preferred place for elderly people to socialize, thus meeting their emotional needs and promoting neighborhood harmony. In terms of subjective indicators, neighborhood safety, aesthetics, convenience, and comfort all have a positive impact on social interaction [22]. Enhancing the sense of safety in the neighborhood can make elderly people feel safer and more relaxed at home, strengthen social networks, and improve QoL [23]. Enhancing the aesthetics and comfort of neighborhoods can provide elderly people with higher-quality public spaces, thereby promoting high-quality social interaction.

As for HRQoL, in terms of social environment, it is consistent with the QoL level. Social cohesion can promote mutual help, support, and trust among the elderly, alleviate anxiety, depression, and loneliness, and thus form a close social network [39]. In contrast, the built environment plays a relatively minor role.

**6. Conclusion**

Due to their low physiological function, the elderly are easily affected by their living environment, and their health and QoL need to be protected. It is necessary to comprehensively consider the impact of natural environment and social background. Enhancing the comfort of the neighborhood environment, providing open spaces for the elderly to engage in physical and social activities, and fostering a sense of place attachment to improve their mobility within these spaces are critical factors that must be prioritized.

Although a large number of studies have shown that the neighborhood environment has a significant impact on the QoL of the elderly, and attempts have been made to explore the complex mechanisms of their influence, there are still some shortcomings in existing research. First, there is a lack of in-depth exploration of research effects, mainly manifested in the broad scope of existing research subjects, the use of subjective questionnaires with the narrow coverage and insufficient accuracy. Second, the research methods need to be improved. Previous studies mainly used correlation research, and the impact of influencing factors on different QoL dimension have not been fully explored. Third, the lack of comparative studies in the same dimension cannot explain the differences in research conclusions. Fourth, the causal relationship between neighborhood environment and QoL is a difficult point for future research. Final, there are few studies on the impact of neighborhood environment on HRQoL, with a single perspective and insufficient empirical evidence. However, since chronic diseases have a greater impact on the elderly than other age groups, HRQoL is a key dimension of quality of life and should be a focus.

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