

Research on the Outdoor Activities and Spatial Characteristics of the Elderly in College Communities: Taking a University in Northern China as an Example

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Abstract: In view of the aging population in the country, college communities can better meet the needs of the elderly in the community by developing hardware facilities, environmental resources, and management systems. However, in China, the research on elderly care in colleges is still in its infancy. The paper presents an analysis on the characteristics of the elderly group, outdoor activities, and space characteristics in college communities through the field survey of a university in the north, questionnaire survey and interview with the elderly. Suggestions for optimizing the outdoor activities space of the elderly in college communities are then provided, hoping to provide some reference for relevant research.

Keywords: College endowment; Outdoor activities; Spatial characteristics; Suitable for aging

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1. Introduction

By the end of 2021, the population of the elderly aged 60 and above in China has reached 267 million, accounting for 18.9% of the total population. The issue of providing for the elderly has become one of the most concerned issues. At the same time, in the unit system reform and market-oriented transformation, due to the original housing distribution system, residence of some units or communities have developed an emotional attachment for their living space and the surrounding environment as they have cultivated a fixed interpersonal circle here. Therefore, after the renewal or the disintegration of the unit system, this group still lives in the original community and “ages together” with it, making the proportion of the elderly in the community increase year by year, accounting for 30%–40% of the residents ^[1]. Therefore, unit type communities has increasingly become an important place for the elderly to live in peace, and an important space for the city to cope with the aging society, among which the communities depending on universities is the most typical. Relying on the advantages of college communities in terms of hardware facilities, environmental resources, and management system, we can actively create a living space suitable for the elderly.

In this paper a college community in northern China was selected as the research subject, the basic situation, outdoor activities, and outdoor activity space tendency of the elderly in college communities are analyzed and summarized. The relationship between the outdoor activities of the elderly in college communities and their preferred space were also studied. According to the results of the analysis,

suggestions on optimizing the outdoor activity space in university communities are put forward, hoping to contribute to the research on the construction of university community elderly care services.

2. Overview of survey objects

2.1. Overview of college community

A university in northern China, was chosen as the research subject for several reasons, which are explained below.

2.1.1. The college community is well-established

The college community in this university is relatively well-established. The population composition and environmental characteristics are relatively stable, and the sampling of survey data is relatively accurate.

2.1.2. The campus has a variety of outdoor activity spaces

Compared to the general residential areas developed by real estate developers, college communities rely on the college resources, which includes a variety of outdoor activity spaces. The elderly have a lot of free time and regularly participate in community activities, which are both conducive to the discovery and research of problems.

2.1.3. The boundary of the campus is complete and clear

The south and east side of the campus are urban main roads, while north side is bounded by a railway road; the west side is close to a hospital and a junior college. Generally speaking, it is an analysis unit with a relatively complete boundary (**Figure 1**).

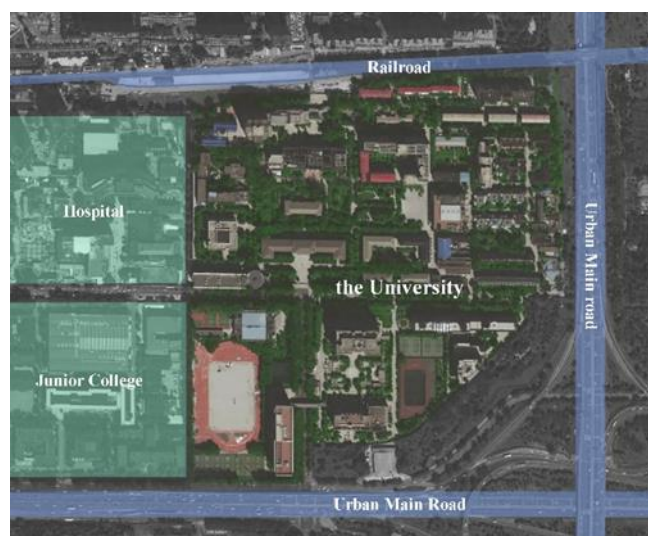


Figure 1. Surroundings of the university

2.2. Overview of the elderly in college communities

Due to factors like urbanization, the redistribution of employment and housing, the reform of unit systems, there is massive migration and relocation of the population in college communities. Therefore, the community has a certain degree of population hybridization, but the elderly population in college communities are still highly homogenous^[2]. Different from ordinary communities, the elderly in college communities are mainly composed of retired teachers, administrators, logisticians, and those who moved to the community with their children. The results of the survey are shown in **Figure 2**.



Figure 2. Overview of the elderly in the college community

2.2.1. The phenomenon of “empty nesting” is prevalent among the elderly in college communities

In terms of living conditions, the proportion of the elderly who live alone or only with their spouses is large, while the proportion of the elderly who live with their children is small. In other words, the “empty nesting” phenomenon is prevalent among the elderly in college communities. On one hand, this is because the elderly in college communities are more independent. On the other hand, it is related to the family structure, in which most of the elderly have two or fewer children. In addition, some of their children are either studying abroad, working outstation, or have emigrated, which also contributes to the phenomenon.

2.2.2. The elderly in college communities generally have high level of education and stable income

The survey found that only 11.7% of the elderly in the community received primary school education and below, while 52.94% of the respondents received undergraduate/junior college education and above. Given that most of the respondents were retired teachers and workers of the university, their level of education were generally high. In terms of the monthly income, 35.29% of the respondents have a monthly income of less than RMB 5000, and the respondents with month income of more than RMB 5000 accounted for 64.71% of the total sample. The main source of income for most respondents were their pension, which was stable.

2.2.3. Relationship of the elderly in college communities are close

As mentioned earlier, most respondents were retired university staff. Therefore, due to the homogeneity of their identities, occupations, social relations, education and other aspects, the respondents of the college community regularly communicated with each other, and the neighbors were familiar with and trust each other, resulting in a close neighborhood relationship.

2.2.4. The elderly in college communities have a strong sense of belonging and a “unit complex”

Most of the elderly in this college community have lived here for more than 10 years or even more than 20 years. The thinking and habits formed by residents in the unit system era have been ingrained in their daily life for a long time and had become an internalized unit system concept. This profound “unit complex” is difficult to eliminate with the disintegration of the unit system [2]. Some elderly people in the interview said: “I have lived here for decades, and I certainly hope to continue to live in the familiar environment,” and “The environment in the university is really much more convenient than that in ordinary communities.”

3. Summary of investigation status

3.1. Analysis of outdoor activities characteristics of the elderly in college communities

3.1.1. Diversity of activity types

There are mainly three types of outdoor activities of the elderly: social interaction, exercise and fitness, leisure and recreational (Table 1). Benefiting from the rich and diverse types of outdoor space in college communities, the elderly were generally more willing to participate in outdoor activities, and there are more variety of exercises. The survey found that the number and proportion of respondents who choose to exercise and fitness are the largest (Figure 3), and outdoor activities with low physical energy consumption, such as walking, have become the first choice for the elderly of all ages. It can be seen from the analysis that the elderly tend to engage in outdoor activities with low physical energy consumption due to the limitations of their physical strength and other physical functions.

Table 1. Activity type

Activity type	Specific type
Social interaction	Babysitting, chatting, partying
Exercise and fitness	Walking, equipment fitness, badminton, tennis, basketball
Leisure and recreational	Taking a rest, enjoying the scenery, basking

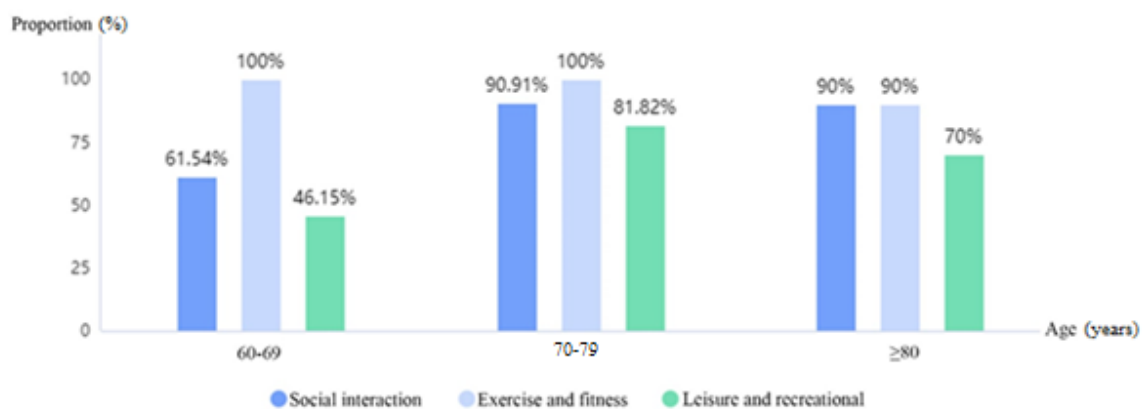


Figure 3. Preference of outdoor activity type for the elderly

2.1.2. Regularity of activity time

The daily life of the elderly after retirement is mainly composed of family affairs, rest, and outdoor activities. Therefore, they more free time and regular daily life. According to the survey, there are two peaks of outdoor activities among the elderly in the college community in a day, namely 7:00–9:00 and 16:00–18:00 p.m. (Figure 4).

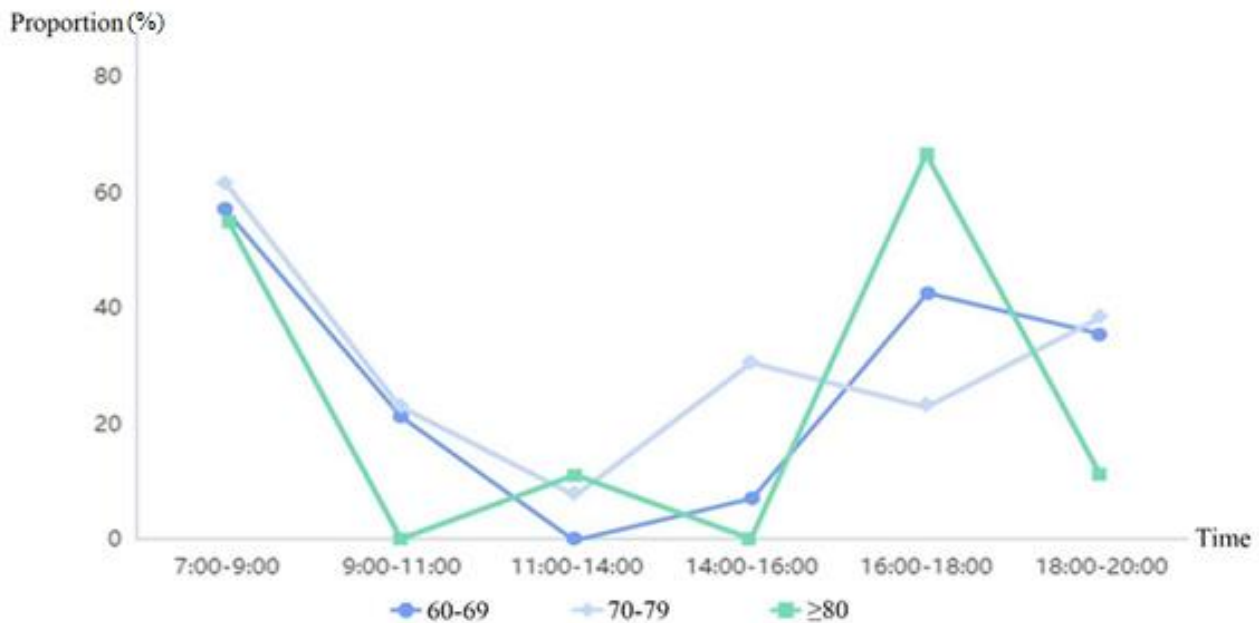


Figure 4. Time preference of outdoor activities for the elderly

With the increase of age, the duration of outdoor activities gradually decreases. The time of activity is mainly in the morning and evening. The elderly of different ages also show different characteristics in the time of activity. The young elderly have a longer activity time, including all time periods of the day and a large number of people, while the elderly usually have two time periods in the morning and evening.

3.1.3. High frequency of outdoor activities

The activity frequency can reflect the willingness of seniors to engage in outdoor activities. According to the survey, more than 45% elderly aged 60–69 and 70–79 years old engage in outdoor activities more than 7 times a week. Although the frequency of outdoor activities of the elderly will decrease with the increase of age (**Figure 5**), the frequency of outdoor activities of the elderly of all age groups in this survey is generally high, which indicates that outdoor activities are very important in the daily life of the elderly.

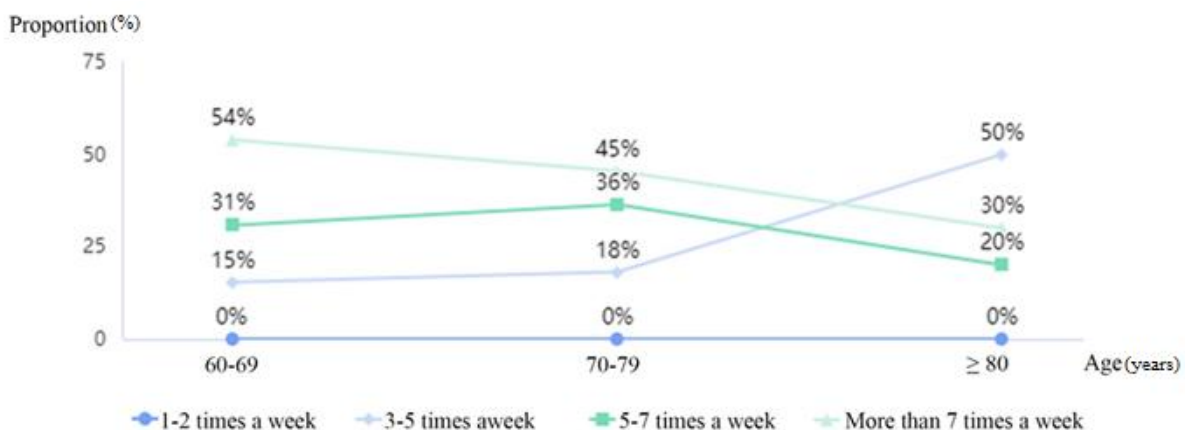


Figure 5. Frequency of outdoor activities for the elderly

3.2. Preference of outdoor activity space for the elderly in college communities

3.2.1. Current situation of outdoor space in the college community

The entire campus covers an area of 33.3 hectares, with a compact land layout and a regular overall outline. The residential area is located in the northeast corner of the campus. The middle part is the student dormitory area and service facilities. The teaching area is mainly located in the west of the campus. The sports facilities are located in the south of the campus. The Yuxiu Garden and Yuxiu Square in the middle of the campus are the core areas of the entire campus because not only does it connect groups in space, but also undertakes all kinds of activities for various groups of people, like the staff and the elderly (**Figure 6**).

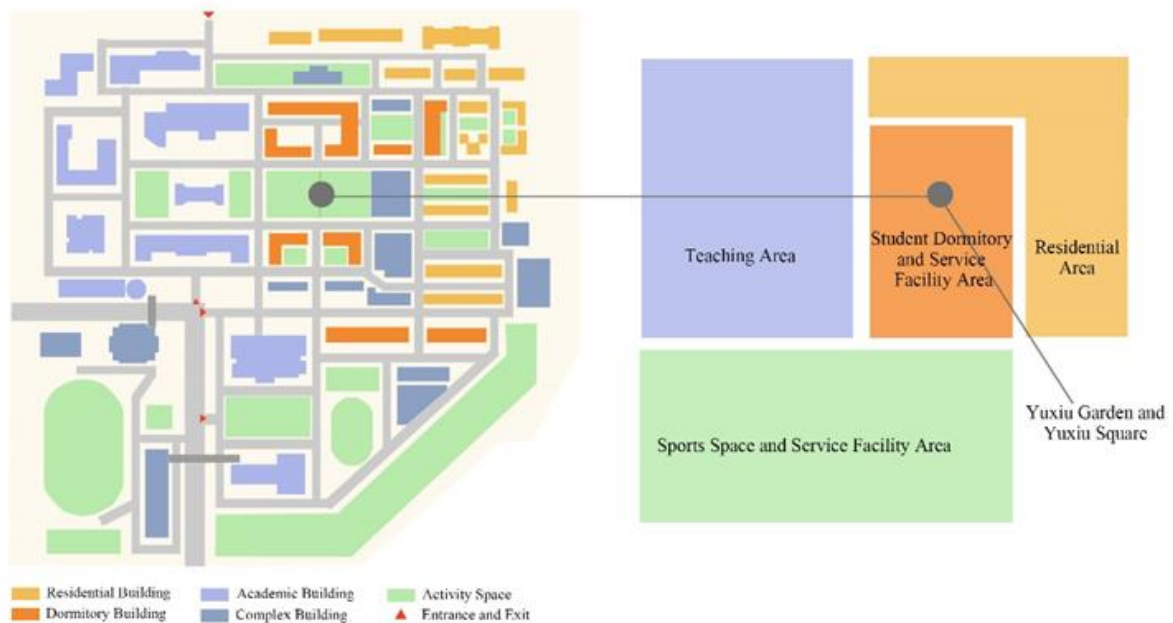


Figure 6. Plan of the campus

The outdoor activity space in the community is divided into residence, group, and community activity space^[3], as shown in the **Figure 7**. Residence activity space refers to the activity sites between and near residential buildings, mainly including the open spaces in front of the houses and footpaths; the group activity spaces consist of two or more types of activity venues, including small gardens, small squares, fitness venues, and many more; community activity spaces are places for large-scale group activities and professional activities, which generally involve using public service facilities in the campus and requires a large space.



Figure 7. Distribution of outdoor activity space in the university community

3.2.2. Space characteristics of outdoor activities for the elderly in college communities

The survey found that the elderly in college communities were more inclined to carry out outdoor activities in the residence activity spaces or group activity spaces, with the former slightly more frequently used than the latter. This phenomenon may be related to the management of college communities. College communities pay more attention to teaching areas rather than residential areas in the maintenance and management of outdoor activity spaces, resulting in lower comfort of their facilities, which is not conducive to the activities of the elderly. As a result, the elderly activities in community spaces decreased, which to a certain extent show that the venue of activities of the elderly is somewhat related to their physical condition (Figure 8).

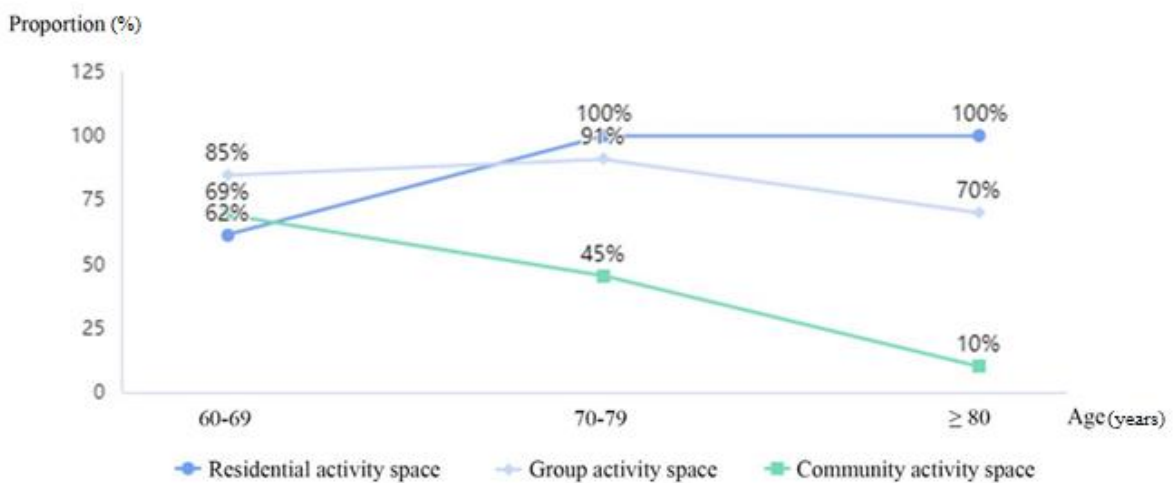


Figure 8. Preference for outdoor activity space of the elderly

Yuxiu Garden is one of the important campus spaces with the largest number and highest frequency of elderly activities in the university community. During the survey, most of the elderly expressed their willingness to go to Yuxiu Garden for outdoor activities. There are a few reasons why the elderly prefer Yuxiu Garden over other places.

(1) High spatial accessibility

With the increase of age, their physical abilities would decline. Therefore, the accessibility of space is particularly important for the elderly in their choice of outdoor activity space. Yuxiu Garden is located at the core of the entire campus environment, surrounded by multiple road intersections, adjacent to canteens, supermarkets, and other facilities, and it is also near the residential area. Overall, the area is surrounded by necessary buildings, and has compact layout and easy access to space, thus it was one of the most favorite outdoor activity spaces for the elderly of all ages (**Figure 9**).



Figure 9. Accessibility of Yuxiu Garden

(2) Complete facilities

The width of walkways, railings and handrail facilities, road paving, setting of ramps and steps, benches and fitness facilities can all affect the comfort of outdoor activities for the elderly. Yuxiu Garden and other spaces with high frequency of elderly activities are reasonably equipped with different forms of leisure tables and chairs or simple facilities for activities, making them suitable for outdoor activities. Secondly, the pavement of the pedestrian road is flat, with a suitable width and unique patterns. Most importantly, there are barrier-free railings and handrails, which ensures the safety of the elderly while moving around ^[4] (**Figure 10**).



Figure 10. Facilities of Yuxiu Garden

(3) Good environment

The different kinds of trees and flower beds in Yuxiu Garden are important attraction points for the elderly to stop for activities. In addition, it is also equipped with a variety of distinct landscape. The combination of low shrubs and tall bushes is conducive to blocking the vision around, creating a relatively private environment. The diversified plant configuration improves the ornamental quality of the garden, and the reasonable distribution of seats are conducive to outdoor activities of the elderly, especially leisure activities (**Figure 11**).



Figure 11. Environment of Yuxiu Garden

(4) People flow

The functional complexity and fuzzy boundary of university community determine the diversity of people using outdoor activity space ^[5]. Yuxiu Garden, as the core green space of the campus, is also used for many campus activities. The open-air square outside Yuxiu Garden is an important place for campus activities. It is highly public, with high people flow and is lively. According to observations and results of this research, the elderly in the university community also tend to stop at a relatively busy places to communicate and participate in public activities as bystanders or direct participants.

4. Suggestions on the optimization of outdoor activity space for the elderly in college communities

Although the main function and service of a campus is to hold educational activities, the activity space and welfare of retired employees and elderly living around the university is also important for the state, society and universities to show respect for human rights and promote a humanistic spirit. In combination with the problems found through literature review, some suggestions are given for further improvement of outdoor facilities of the elderly.

4.1. Establish a separate management system for elderly activities

While normal teaching activities are held on campus, specific campus spaces can be opened in a targeted manner according to the activity time and content of the elderly, which is in accordance with the “time sharing and peak shifting, site division, and self-management” concept to ensure that the reasonable distribution of teaching resources and at the same time meeting the needs of the elderly to a certain extent.

4.2. Improve infrastructure construction in public places

Reasonable allocation of public facilities in outdoor spaces plays an indispensable role in encouraging outdoor activities among the elderly, extending the activity time, and at the same time ensuring their safety. First of all, the rational placement of tables and chairs allow them to rest and promote social interactions; Secondly, the barrier-free design should be improved at all levels of the residence, group, and community activity spaces to reduce accidents and ensure the convenience of travel and transportation for the elderly.

4.3. Creation of space in specific places

Specific outdoor activity space can be created to cater to different activities. For example, the configuration of landscape, such as the reasonable layout of flower pool, tree pool, sculpture, and many more can be optimized to create a nice view. Public spaces of different levels of privacy and openness can be created through utilizing space boundaries and visual guidance. The design of dynamic and static zones in the functional area should be given much attention so that the zones do not interfere with each other and can cater to different outdoor activities.

5. Conclusion

With the aging of the population in China, home care and the construction of communities suitable for the elderly have become an important issue. It is an important topic and key research content to carry out suitable renovation for existing urban old communities. Besides, caring for the welfare of the elderly and understanding university communities is an important symbol of social civilization and progress. Taking a university in Northern China as an example, this paper analyzes and summarizes the characteristics of the elderly population, outdoor activities, and space characteristics of the university through field research, questionnaires, interviews, and other ways. Although the existing campus public space environment has not considered the needs of elderly in the original construction plan and current transformation, there is a large gap between the community outdoor space environment and the public service system as the main carrier of its activities and the current needs. Faced with the diversified and special needs of the elderly, college communities need to be upgraded and optimized in terms of space facilities and management system.

Disclosure statement

The authors declare no conflict of interest.

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