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The Comprehensive System of Healthy Streets in China from the Perspective of Greenways with Beijing Boulevard Plan as an Example

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Abstract

It is crucial to provide high-quality green public spaces with the aim of preventing increasingly prevalent urban chronic diseases and enabling residents to live a life which is more active and healthier (BMPN et al. 2018). As a crucial element of public spaces, street space not only serves as an important and common green space that afford a diverse and healthy street life that urban residents are in high demand of, but also makes contribute to the construction of urban greenways in a systematic manner. In this context, widespread attention of the authorities and professionals in China has been drawn to the concept of ‘healthy streets’ (TfL 2017) in the context of the strategic background—Healthy China (State Council 2016).

On such basis, comprehensive system of healthy streets in Beijing is studied following the analytic layers of urban landscape, including ‘the global systems at level G’ represented by the policy of healthy city and the goals of planning, constructing a harmonious and livable city as well as a city which is pedestrian and bicycle-friendly, ‘the mediating level M’ of green fabric, and ‘the private level P’ of daily life (Lefebvre 2003). Accordingly, healthy streets can provide the advantages of sustainability, safety and equity for specific functions in terms of air quality and climate mitigation (level G), the advantages of connectivity, accessibility and green priority for storm water management and alternative transportation (level M), and the advantage of historic and cultural landscape elements for improved aesthetics in diverse public spaces (level P).

Furthermore, according to the research project of Beijing Boulevard Plan (2020-2022), the planning of a healthy street framework in District XC is carried out. In conclusion, from the perspective of greenways, a new network of healthy streets in District XC is established and this comprehensive system proposed has four characteristics—sustainability, safety and equity, connectivity, aesthetics. All of these characteristics have the potential to promote the development of public spaces and greenways for China as a whole.

Introduction

As a fundamental human right (WTO 1946), health signifies “a state of wellbeing emergent from conductive interactions between individual’s potentials, life’s demands, and social and environmental determinants” (Bircher and Kuruvilla 2014). Good health and wellbeing have always been deemed as a key Sustainable Development Goal acknowledged by the international community, according to the 2030 Agenda for Sustainability (United Nations 2015). At home, the health of the urban population has turned out to be a focus of attention at the national level and it has even been elevated to a strategic position. Meanwhile, given the prediction that urbanization rate will arrive at 71% by 2030 (Chen et al. 2017), there will be the emergence and expansion of the challenges about urban health in association with large-scale migration, ageing, pollution, constant changes in diet and lifestyle, and social inequality (Yang, et al. 2018).

However, confronted with these challenges, cities are not the problem but the solution (De Leeuw 2012). In other words, cities are even regarded as the key to health development and management. As far as authorities, researchers and urban planners are concerned, how to understand and then address the challenges encountered in the aspect of urban health in the unique context where China is experiencing rapid and dynamic urban development is a crucial problem that has been raised. Under such circumstance, China has begun to experiment with the improvement of urban health systems by scheduling the plan of Healthy China 2030 at the national level adopted in 2016 for the construction of Healthy Cities. This ambitious plan in association with pilot projects of healthy city promotes the concept of healthy streets in a top-down manner, with the aim of integrating health into the entire process of urban planning, construction and governance. Moreover, this plan with Chinese characteristics lays a foundation for the establishment of healthy streets in a systematic manner through the efforts made by local government and community-based initiatives. Under the influence of the strategy—urban health, the study on ‘unlocking the power of cities for a healthy China’ (Yang et al. 2018) is conducted accordingly through a bottom-up approach.

This study presents relevant research project of Beijing Boulevard Plan (2020-2022) from Beijing University of Civil Engineering and Architecture that responds to the call for the exploration of the comprehensive system of healthy streets in District XC in terms of worldwide urban health from the perspective of greenways. This district which covers an area of 50.7 square kilometers stands out as the core functional area of the capital, the core bearing area of the political and cultural center, and the crucial area where there is the focus on the protection of the natural, historic and cultural resources (Bjxch 2022). Regarded as an experimental area for the exploration over the construction of Health China in both top-down and bottom-up approaches, the study of this area reflects the importance and typicality of healthy street planning. In conclusion, from the perspective of greenways, District XC is a pivotal area for the systematic building of healthy streets with green public spaces, in addition to serving as a demonstration area which further complements the community greenways in the framework of ‘city-district-community’ greenways.

Background and Literature Review

The literature review is composed of two parts expounding the concepts of both healthy streets and greenways, which function as an essential premise for probing the integration of healthy streets, an emerging concept, with the evolving understanding of greenways theoretically. Thereby, it is possible to analyze the healthy streets in Beijing from the perspective of greenways.

Above all, a street is a common green public space with multi-purpose for urban dwellers, and it is of vital significance in terms of adapting to and tackling climate changes, addressing the priorities regarding public health, alleviating inequalities and strengthening the ties among communities (Saunders 2022). Considering the significant importance of streets in public life and their potential impact on citizens’ health, the development of the concept, healthy streets, was conducted by Lucy Saunders, an expert in the field of health and urban, from UK in 2014 through her research into the health impacts of transport, public realm and urban planning. The concept features as a central policy platform all the strategies proposed by the Mayor of London Government, and it is now being adopted by local and state governments in Singapore, Auckland, and Sydney (Denholm 2021). The creation of healthy streets implying attractiveness, accessibility, and friendliness can be implemented with the aim of alleviating heavy traffic and reducing pollution and noise, where

people can enjoy spending time and being physically active, which improves people's health ultimately (TfL 2017). Furthermore, the approach of healthy streets for assessing the extent of health impacts of urban and traffic elements in street environments has been promoted by Transport for London and the Mayor of London in the Draft London Plan with the purpose of encouraging more urban residents to walk, cycle and use public transport, thereby increasing active travel and activating more sustainable patterns of movement (Ede and Morley 2020).

Through review, from the perspective of transportation and healthy policy, it is observed that the idea of healthy streets has been increasingly regarded as a strategic concept for the system of green public spaces, as well as a tool employed by both social governance and technical assessment for better urban environments. In the process where a 'healthy streets approach' is applied and the assessment index system is established, the cutting-edge conception and implementation framework of healthy streets has been focused on by both authorities and professionals in the fields of urban planning and landscape architecture under the background of the Healthy Cities Movement in China. Particularly, the plan Healthy China 2030 was launched by the State Council with the goals related to the promotion of healthy lifestyles, optimization of health-related services, improvement in the coverage of health care, provision and protection of a healthy environment, and the construction of healthy cities (State Council 2016).

In parallel with the concept of healthy streets, greenways deemed as 'a living network' (Fabos 1995) or 'networks of green' (Little 1990) cover the fundamental benefits including the integration of natural resources with cultural resources, connectivity of landscape, synergistic multiple use and aesthetics of landscape (Ahern, 2002). This evolving concept falls into three essential categories composed of 'greenways of corridors and natural systems with ecological significance', 'recreational greenways', and 'greenways with historical heritage and cultural values' (Fabos 1995). On the basis of the three categories mentioned above, five crucial characteristics are available and they are greenways that are embodied in the aspect of linear spatial configuration, the linkage at multiple levels, multifunction for the ecological, cultural, social and aesthetic goals, sustainable green development (Ahern, 2002), and a distinct spatial strategy formulated with the advantages of integrated linear system as the basis (Checkland 1989).

In this study, the categories and characteristics of greenways can be beneficial to the understanding of the concept of healthy streets in a systematic framework that means viewing things in a way that is holistic, dynamic and connected. As a crucial component of public spaces, the healthy streets not only function as a carrier of a green, diverse daily life that is greatly required by urban residents, but also make contribution to the constant construction of various urban greenways. Regarding the similar characteristics available between greenways and healthy streets, such as planning strategies for sustainable cities, linkages of green spaces, integration of natural resource with cultural resource, and the benefits for cities in the aspects of ecology, society and culture, the healthy streets can be hereby interpreted as a new model for greenways just as the emergence of many innovative ideas in landscape planning with the purpose of expressing some aspects of greenways. For instance, the scholars perceived the evolution of networks such as railway and highway systems in the past studies on greenway.

Method

This section will illustrate the method applied in this study. In the case study of District XC in

Beijing, the systematic analysis is conducted by using Henri Lefebvre's conceptual levels of urban landscapes based on the comprehension over the general process of urbanization (Lefebvre 2003). The analytical method employed in the healthy streets in District XC from the perspective of greenways consists of three interlocking layers, including the level G of global systems represented by the policy of healthy cities and the planning goals of establishing a harmonious and livable city as well as a city which is pedestrian and bicycle-friendly for Beijing, the level M of green fabric with planned and added greenways, and the level P of everyday life in green public spaces.

Most importantly, at the level M, the new greenways in the community in District XC are proposed by means of Space Syntax carried out by DepthMap, referring to the Beijing 'city-district-community' greenway planning system (Bjghy 2014). Considering the factors of Space Syntax such as total depth, integration, choice, synergy and space efficiency, the integration, which is known as the core element, is emphasized with the intention of further optimizing the greenway system and connecting primary healthy streets. The element of integration shows the extent to which a space is aggregated or discrete to other spaces, and it is usually the case that the higher the value of integration, the more spatially accessible it is and the more closely it is connected to other spaces. From the perspective of greenways, the green fabric in Beijing is supposed to be compact and open with small gridded blocks (Salat et al. 2011), mixed use and multiple functions that are conducive to reducing commuting times, improving green travel, and creating green ventilation corridors to improve the climate. Therefore, the integration that can reflect connectivity is a vital step for the establishment of a comprehensive healthy street system.

Results

At the level G, it is suggested that Beijing makes great efforts to address urban health-related challenges globally. The city is making attempts to integrate into the common global sustainable system of urban health through the comprehensive network of healthy streets, according to the plan Healthy China 2030. With regard to Beijing, the overall goals of the planning are constructing a healthy city with healthy streets, a harmonious and livable city for citizens and a city which is pedestrian and bicycle-friendly so as to improve air quality, mitigate climate change and ensure safety and equality. Moreover, greenways at multiple levels of city, district and community are developed as a construction model that is a combination of citizens' needs for recreation, green travel, and utilization of green space resources in urban and rural areas. These specific planning policies have laid the foundation for the establishment of healthy street system in District XC, coupled with Chinese green and healthy ideas.

At the level M, the urban green fabric in District XC is inadequate. It is obtained from Beijing Municipal Greenway System Plan (2013-2017) where there are only greenways at the district level including part of green loop of cultural landscape at the 2nd ring road, and several important green branches such as Diversion Channel of Yongding River and South Changhe River. Hence, taking into account the demand for healthy streets, the creation of a network of community-level greenways in this area is in high demand with the aim of complementing the lack of green spaces in the city center and further improving the functional greenway system. Through the approach of Space Syntax, the degree of spatial integration reflecting the accessibility of streets is thereby analyzed for District XC, as shown in Figure 1, which lays foundation for the networking of the healthy street system from the perspective of greenways. Taking into consideration the factors including the analytical result of integration, the status of existing streets suitable for development

as alternative transportation, the connectivity to landscape nodes of historical and cultural importance and storm water management, a new comprehensive system of healthy streets is established (Figure 2).

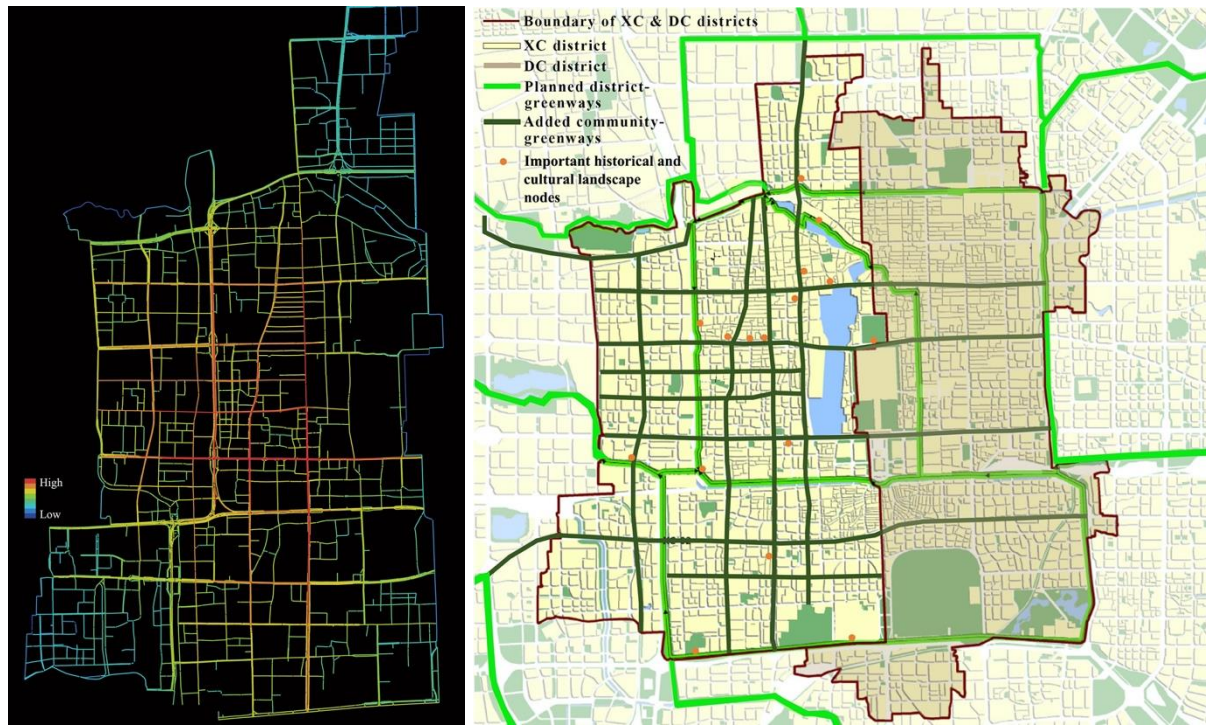


Figure 1. The levels of integration about healthy streets for District XC (Left)

Figure 2. Added healthy streets for building community-level greenways of District XC (Right)

At the level P, the new comprehensive system of healthy streets can provide urban dwellers with diverse, green public spaces in daily life. Concerning most people, the physical activities in important and acceptable forms, such as walking and cycling rather than travelling by car or bus, can be incorporated into daily life (Department of Health 2011). By linking the historical and cultural nodes in this district with the help of green network, such as Prince Kung's Mansion, Baitasi (the White Pagoda Temple), Jingshan Park, Xiannong Temple and Ming Dynasty Wall Site, it is more beneficial for people to walk and cycle through these public spaces coming across healthy streets. Furthermore, it means that the streets which integrate more diverse spaces with traditional Chinese cultural heritage and the elements of characteristic landscape will elevate people's aesthetic perception and comprehension to some extent.

Discussion and Conclusion

In this study, the exploration of the comprehensive system of healthy streets in the unique context of China is conducted from the perspective of greenways. Essentially, taking District XC as an example, a total of four characteristics of the healthy street system are proposed, and they are sustainability, safety, and equity at level G, connectivity at level M, and aesthetics at level P. The theoretical analysis on the healthy streets can provide an essential idea about a systematic planning for the construction of healthy cities, which has the possibility of imposing a positive impact on

relevant research in other countries. Lessons learned from this work in China will be beneficial for other countries confronted with the challenges in urban health. Furthermore, it is indicated by the research that the planned healthy streets integrated into the greenway system is likely to influence the sustainable construction and development of urban green spaces in Beijing at multiple levels. The planned green system embodied social, ecological and cultural factors that requires to be constantly established will become a resilient framework in the process of China's rapid and dynamic urban development. On the basis of all the factors mentioned above, it is easy to come to the conclusion that there is still a great demand for the comprehensive system of healthy streets by drawing lessons from the international experience. Based on this system, the related assessment on the healthy streets is possible to be built up in the future. Finally, these results obtained from the comprehensive research will contribute to the realization of the plan Healthy China 2030 step by step.

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