Research on the Design of Aging-friendly Renovation of Community Canteens Based on Home-Based Care Model

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Abstract: In this paper, the author takes Xingfu Canteen in Qingyou Xili Community, Tianjin, as a typical case of urban community canteens. Through literature review and field research, it is concluded that "the elderly are the main users of community canteens", based on this reality to research the strategy of aging-friendly renovation of community canteens and explore the ways and methods. The existing problems of the community canteens include the confusion of the visual system, the lack of service system design, and the lack of aging friendly environment. In this paper, the author intends to solve the above problems from three angles: media content, user behavior, and spatial physics.

Keywords: community canteen;public Area; aging-friendly renovation;service Design

Research background

With the continuous development of urbanization, China is gradually stepping into an aging society and is currently in a mild aging stage. According to the data bulletin of the 7th National Census, there are 264.02 million people aged 60 and above in China, accounting for 18.70% (including 190.64 million people aged 65 and above, accounting for 13.50%), and the proportion of people aged 60 and above has increased by 5.44 percentage points compared with the 6th Census and is expected to continue to rise. On this basis, the "Government Work Report" in 2022 also clearly stated that "optimizing the supply of urban and rural old-age services, supporting social forces to provide daycare, helping meals and cleaning, rehabilitation care and other services". (7th Census Report, 2022) At the same time, the 2022 National Development and Reform Commission clearly stated that it should strive to gradually cover more than 80% of the communities in big cities within five years. Against this background, the number of popular community canteens under the superiority of China's socialist system has been developing to a certain extent that needs to be improved. At the same time, with the deepening of China's aging degree, home-based care for the aged advocated by the state and chosen by the people's independent wishes has become the future trend. And there is considerable demands for the aging-friendly renovation design of community canteens. For the old people, the Aging-friendly renovation of community canteens ensures the dining environment of the elderly and provides a place for them to socialize and improve their quality of life in their later years. For families, it reduces the burden of caregivers and helps young people to better partic-

ipate in social development and construction; For the government, it can further reduce the pressure of social pension.

Research methods

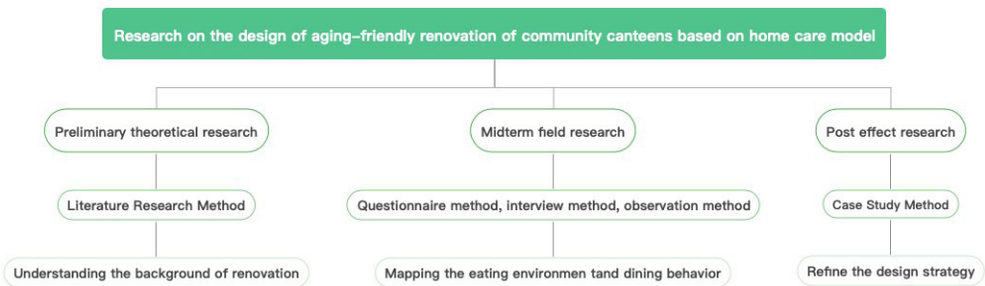


Figure 1.Research Model Mindmap

The current research methods of aging-friendly design include inclusive design, accessible design, universal design, emotional design theory, participatory design, user-centered design approach, and demand-oriented design approach. Although the design principles and methods of these theories and doctrines differ, they can all be used to explore design for aging. In this project, both observation and communication were employed to arrive at a design approach that applies to the actual situation.

Literature review

The researcher searched the existing literatures of Chinese domestic community canteens, and summed up common problems. Based on the review, researchers screened a large number of canteen samples in Tianjin and finally selected Qingyou Xili Community Canteen as the research site of this study.

Field research

The participatory observation method was used for the field investigation. The author selected Xingfu Canteen in the Qingyou Xili community as the investigation site, participated in the dining experience and service in the canteen, and observed the canteen environment ——from whole to details, from static to dynamic. The whole field research process is recorded by taking photos and videos.

User interview

Interview refers to researchers conducting individual interviews or centralized interviews with research objects according to specific goals and requirements.(Zhang Wei,2013) Through semi-structured interviews with aging users in Xingfu Canteen, exploring the living habits and physiological needs of aging users, and constructs an emotional connection with users. Data of user interview is recorded in the form of digital videos, photos and texts.

Xingfu Canteen's existing problems



Figure 2.Field Research and Analysis

Visual system chaos

First of all, the recipe uses a superimposed pattern with beige stripe and employed red as the background color. This kind of design reduces the clarity of reading. Secondly, the font models are Bold Heiti and Bold Fangsong. These two fonts can indeed bring emphasis, but in the senses of some aging users with visual decline, especially the whole-surround structure Chinese characters with dense strokes will be felt like a blurred square. At the same time, the smaller characters and narrow spacing greatly increase the difficulty of reading; Finally, by the observation, it was found that the notices located in the canteen is messy. The size and format of these notices are different, and the routine is difficult to distinguish.

The lack of service system design

According to the results and analysis of the field investigation and interviews, the service design system of Xingfu Canteen is quite raw. On one hand, the visit path is irregular, the moving line including the three links of meal selection, meal taking, and dining cannot enable aging users to complete the target behavior conveniently. On the other hand, the functional configuration of each region is difficult for aging people to read. In other words, the configurations cannot meet the diverse needs of aging users in the dining process.

The aging and friendly environment of the canteen is insufficient

The community canteen was transformed from the former residential committee office of the community and the external facade, which lacked relevant spaces designed for public activities. The interior design can not meet the needs of the aging population. Also the whole space did not form a systematic design strategy for the aging-friendly dining environment. There are some hidden dangers in the layout of public dining space facilities, light distribution, slope and material of step floor, etc.——the tables and chairs are placed irregularly, the lights are dim and the location is distributed irrationally, the ceramic tiles with little anti-slip finishing are used in the traffic area. And the terrain

at the entrance of the gate has step which can easily trip an elderly person.

Xingfu Canteen's design strategy

Through a series of analysis results obtained by research methods, the researcher adopt the dual-track parallel design strategy of reshaping the canteen interior visual design to improve the canteen service design. Such a stratey can meet the physiological requirements and living habits of the aging population. This includes not only the food form, eating tableware, dining environment, and other elements but also the dining habits, dining methods, and interactive behaviors in the moving of aging users. (Zhang Yaling,2021)This study attempts to exert a certain influence on each factor through design means, not only from its physiological needs but also fully considering users' psychological needs.(Wang Jingshang&Chen Jinglian,2021) So that the target aging users can get a good eating experience in public areas.

Physical touchpoints design

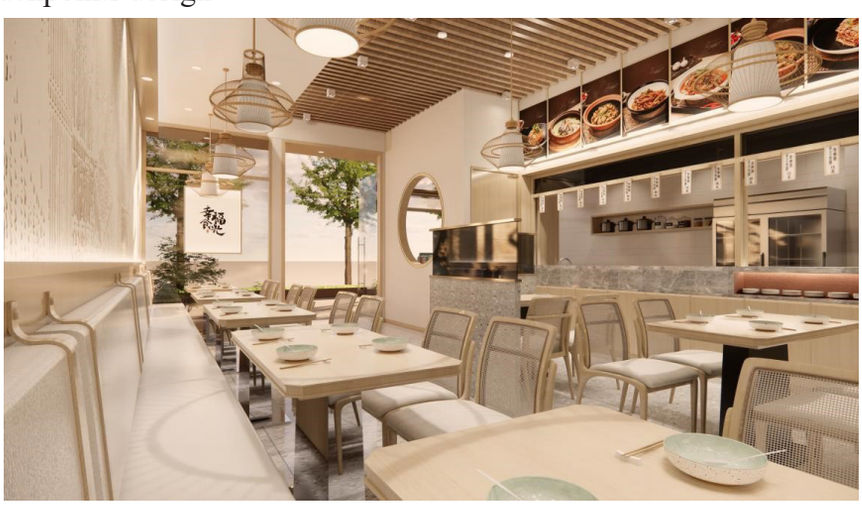


Figure 3.Canteen interior design

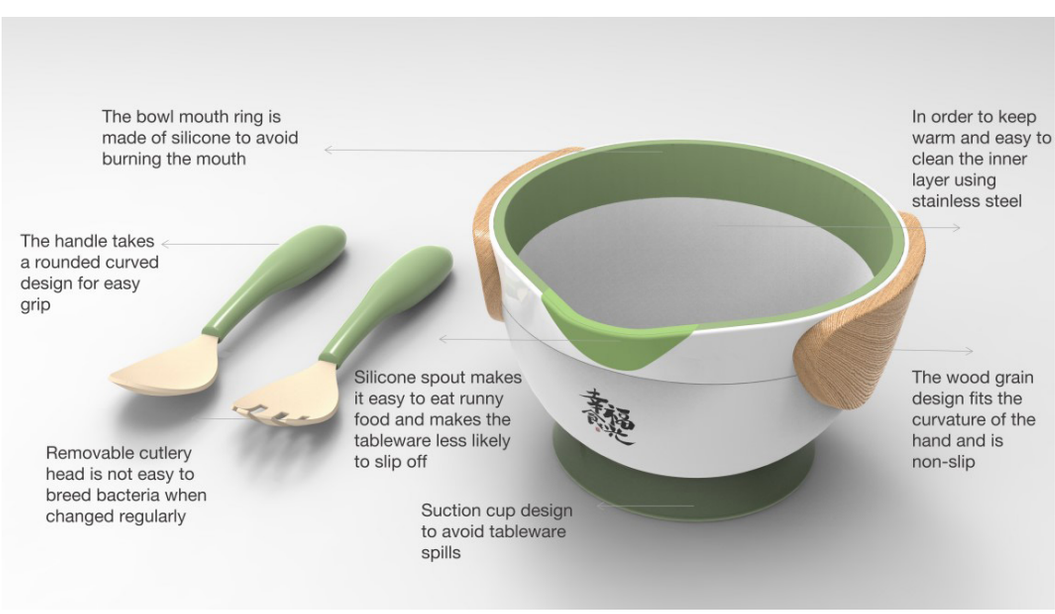


Figure 4.Aging-friendly tableware design instructions

The most obvious physiological characteristics of the elderly are the decline of the body's adjustment abilities, motor function, and sensory abilities. Physical changes are manifested as weakened muscle strength, decreased coordination ability, vision, and so on. In addition, memory loss, slow response, inability to concentrate, and poor adaptability appear in thinking. Psychologically, when accomplishing a simple goal, will consume more time and energy, and even encounter many difficulties, resulting in the psychological pressure of "doing things badly". Based on the reality of the canteen and the research on the psychology and behavior of aging users, the aging-suitable transformation of Xingfu Canteen follows the following design principles. The directional and all-around multi-mode is better than single mode. The aging-friendly design should be carried out as a whole considering every details. Familiarity is better than freshness. So the moving-line design is carried out to deliver familiarly and acceptably touchpoints for aging users. Also, aging-friendly design considers action is better than description. So the UI design minimize unnecessary tedious content, and focuses on conciseness and clarity.

Intangible medias and contents design

The key media design and contents in this aging-friendly transformation design include a material display and client page. These intangible design can better help aging users improve their visual experience from online and offline aspects. Select eye-catching positions for offline material display and design. This includes adopting matrix scale planning rules to arrange menus, avoid single and thin strokes, slender glyphs, and special emphasis in font selection. The font choice composes softer fonts represented by thick circles and regular script as fonts in vegetable selection area. On-line client pages, function identification should be intuitive and concise to avoid excessive cognitive load. The interface is matched with audio reading guidance, and the relevant information on the page can be explored by hearing.

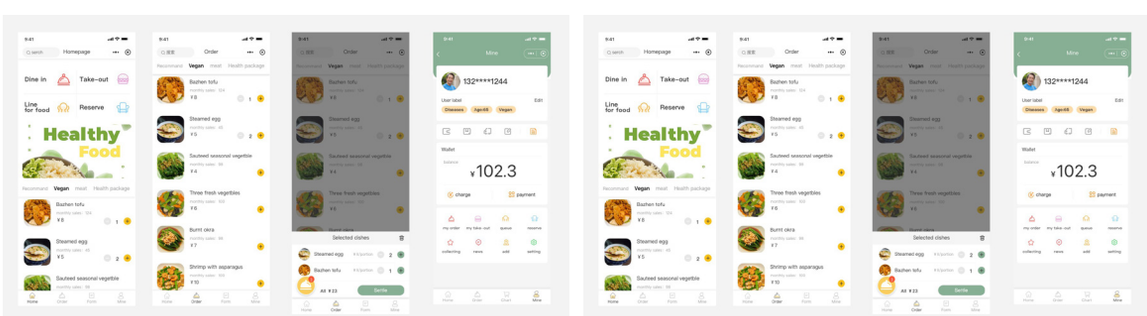


Figure 5.Interface design in Chinese and English

User behavior design

User behaviors in the canteen are mainly a series of actions, such as taking meals, porting meals and seating, and other interactive behaviors that will take place in the process of these actions. According to the series actions of users, the dining and service behavior guide of aging users and service personnel is designed. Tablewares suitable for aging according to the eating behavior habits of aging users is designed. The project also designs certain interface incentive modes and activities according to the potential social behaviors of users.(Peng Hui.2022)

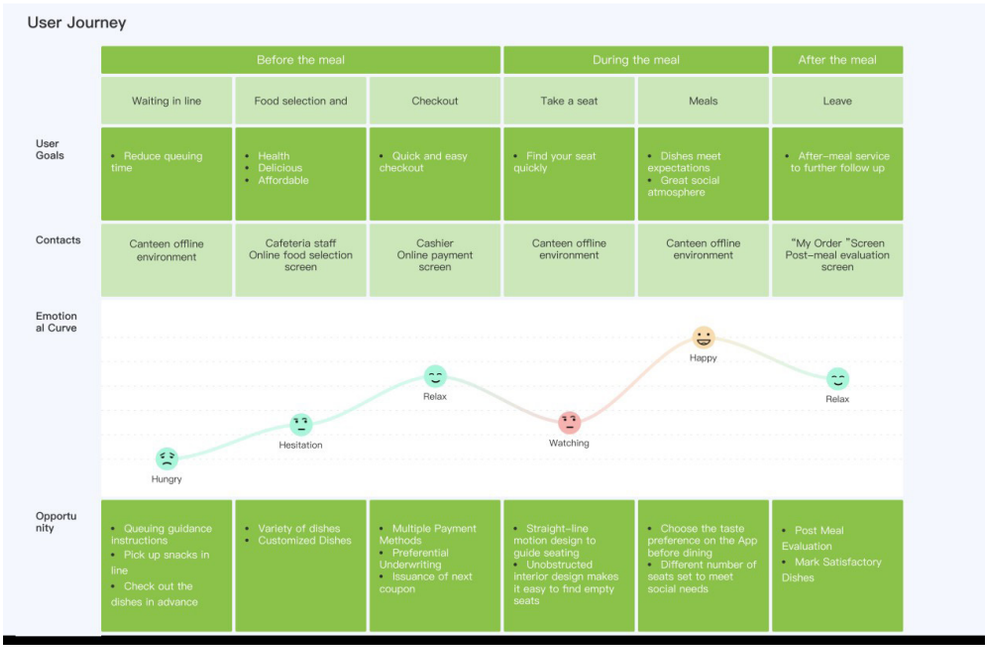


Figure 6.User Journey Map

Space Design

Starting from the overall spatial layout, the functions of each region are clarified, and the community canteen is upgraded to a space with interwoven behaviors to meet the catering needs and the social needs of the aging population. (Zhang Qiuyao&Zhang Weiyu,2023)The layout of the functional area is simple and clear. The left-hand side of the entrance is the food selection area, the right-hand side is the dining area. And the deep interior of the space is designed for the toilet and other infrastructure. Such a space layout avoids the inconvenience of the elderly caused by the complicated moving-flow. The interior decoration adopts the new Chinese style, and the overall tone is warm. The unique color of the wood board is matched with the light-colored wall surface. And the materials are all used by diffuse matte materials to prevent a blinding reflective effect caused by glossy surface. By constructing a warm and cozy visual experience to stimulate relaxing emotional feelings. The design can not only improve the dining comfort of the elderly but also meet their aesthetic requirements.

The entrance is designed with a gentle slope to facilitate the movement of the elderly. The tables and chairs used in the canteen and the turning points of the easily accessible wall are all chamfered and equipped with barrier-free handrails. The facilities are helpful in avoiding the elderly from serious falling or bumping. The seats are equipped with cloth cushions and mesh elastic backrests, which are ergonomic and provide a comfortable seating experience. At the same time, the canteen adopts a design which combining natural light with lamplight. The light design not only saves energy but also protects the eyes.

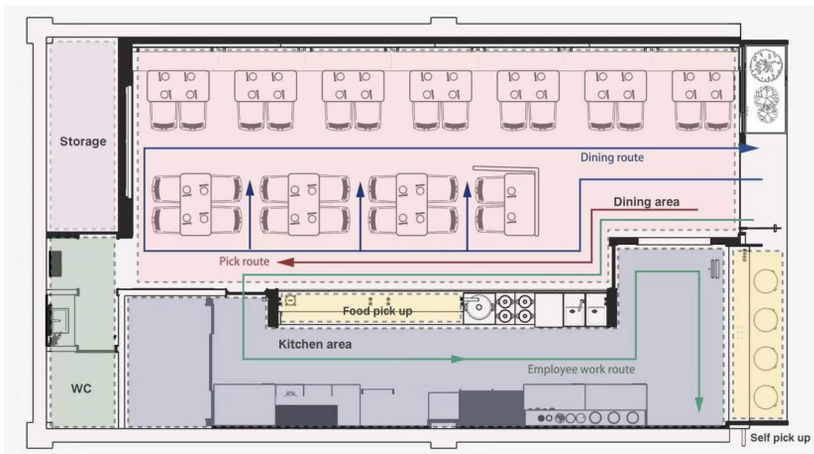


Figure 7.The internal movement line of the canteen is shown



Figure 8.External view of the canteen

Conclusion

This thesis selects Qingyou Xili Community Canteen in Tianjin as the basis, takes aging-friendly as the design standard to explore the aging-friendly transformation direction of public dining areas. Based on research analysis, transformation strategies are put forward from the aspects of the visual system, environmental design, user experience design, etc. The design strategies can achieve the purpose of reducing costs and improving efficiency in community canteens, being replicable, and being comfortable, fast and easy to accept for aging users. It is expected that the transformation will provide a reference for the renewal and utilization of public dining areas such as urban community canteens and the improvement of the level of home-based care for the aged in China.

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