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A Research on the Supply of Breast-feeding Facilities in Public based on Homo-Urbanicus Theory

-- A Case Study of Suzhou City, China

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Abstract

In the context of the universal two-child policy, breastfeeding facilities in public places play a significant role in improving the overall performance of public facilities. However, most cities in China fail to pay due attention to breastfeeding facilities - a key indicator of city quality- in urban areas. The supply/demand imbalance grows even more prominent due to the lack of clear planning method and design standards and basis. The author, by analyzing the travel patterns of mothers and infants and the availability of facilities, discusses the relationship between archetypical Homo-Urbanicus and archetypical human settlements based on the Homo-Urbanicus theory, and proposes the facility supply mode of "subdivision, contact, match". Meanwhile, the author has taken Suzhou City as an empirical case to discuss the supply strategy of "demand-oriented and classified supply, localized and targeted supply, and planning and implementation via the means of zoning and collaborative governance.

Keywords

Breastfeeding Facilities; Homo-Urbanicus; Public Places; Supply; Suzhou.

1. Background

In the context of the universal two-child policy, breastfeeding facilities in public places have become a basic public service, reflecting the living quality and internationalization of a city[1]. With the upcoming baby boom, the current breastfeeding facilities in urban public places can hardly meet the demand of increasing newborns. However, most cities in China have not paid enough attention to the availability of breastfeeding facilities in public, which is a key indicator of urban civilization. Problems like facilities in short supply, uneven distribution, and low service efficiency often appear in cities [2], contributing to the expanding gap of breastfeeding facilities supply/demand in public places. Headlines such as "Is breastfeeding in public obscenity or choicelessness", "The struggle over the right of breastfeeding in public never stops", "Is breastfeeding in public a no-go" have set off a fierce debate.

One of the core functions of cities is to provide various public facilities for residents [3]. With the economy boom in cities, residents are improving their living standards and pursuing increasingly diversified public facilities [4, 5]. Mothers put higher demands on breastfeeding facilities to take care of their babies while travelling. The readiness and availability of these facilities have become a "thermometer" of urban civilization. This paper, by analyzing the supply of breastfeeding facilities in urban public places under the background of a universal two-child policy, builds the facility supply model based on the "Homo-Urbanicus" theory in order to satisfy the needs of travelling mothers and infants[6, 7]. Meanwhile, the paper takes Suzhou as an empirical case, discussing the development path and strategy of breastfeeding facilities in public, and seeking to build a more "people-oriented" city.

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2. Demands of Travelling Mothers and Infants and Problems of Facilities Supply

Research on the construction of breastfeeding facilities at home and abroad mainly involves legislation implementation assessment and refinement [8-10], research and discussion on the construction standards from the perspective of maternal and infant demands[11-13], and multidisciplinary and cross-discussion of optimization strategies [14]. These efforts together have advanced the planning of breastfeeding facilities in public. Generally, the research on breastfeeding facilities in China is still at a preliminary stage of policy discussion, and there is still a lack of systematic research on the actual demands of mothers and infants and the breastfeeding facilities supply system [2]. Therefore, this paper intends to reveal the problems of facilities supply by focusing on the actual needs of travelling mothers and infants.

2.1. Demand Analysis of Target Groups

2.1.1. Target Group Definition

The top priority for facility spatial planning is to respect the behavior pattern of the target population. Breastfeeding facilities as a public service are targeted at lactating women. The lactation period of females is generally about 10 months to 1 year, during which, infants need to breastfeed once 2-3 hours averagely when outing. There are also unexpected conditions (diaper change, clothes change etc.), which accounts why breastfeeding often occurs in public places. Therefore, breastfeeding facilities have become essentials to support mothers and infants travelling around.

2.1.2. Survey on the Behavioral Pattern of Mothers and Infants

In order to further understand the behavior pattern of mothers and infants and the use of breastfeeding facilities, the author has conducted a survey on the activities and travel methods of mothers and infants in Suzhou. A total of 300 questionnaires were distributed in this survey, among which 293 questionnaires were recovered and 283 were valid. According to the survey results: ①The top six destinations in public places are “urban parks/squares, large shopping malls, children's playgrounds, neighborhood centers, maternal and child health centers, and supermarkets”, which is an evidence that mothers and infants have varying degree of demands in various public places. Parks/plazas, close to nature and rich in greenery, is the first choice for mothers and infants; followed by large shopping malls, which, based on the interview, have been decently equipped with complete and well-maintained breastfeeding facilities; according to the statistics, mothers and infants also have great needs in other public places of medical care, leisure, cultural and sports. ②The order of travel methods for mothers and infants is “walking, driving, bus, subway, taxi”. Public transportation method like taxi, subway and bus, accounts for 30.39% of the surveyed population. Therefore, nursing facilities provided in public transportation should be improved to better satisfy the needs of travelling mothers and infants.

2.1.3. Demands of Travelling Mothers and Infants

In November 2016, the National Health and Family Planning Commission and other 9 departments jointly issued the *Guidelines on Speeding Up the Construction of Mother and Child Facilities*, requiring baby care rooms in public places shall not be less than 10 square meters and be installed with basic tools such as anti-slip floor, diaper change with safety buckles, wash basin with hot water and hand sanitizer, baby cot, breastfeeding seat, table for breastfeeding supplies, power socket, trash can, and lockable door/curtain (for privacy protection). With the development and application of new technologies, additional smart facilities like air conditioners with the function of adjusting temperature and humidity according to babies’ temperature, voice controlled lights and curtain, and cloud shelves for emergency supplies, are also provided in order to meet the diversified needs of the “new generation” (post-80s, post-90s) mothers. It is also feasible to build an integrative maternal and child service platform to

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target at this specific group of people. First, build women's rights protection complex, diversified service carriers and 24/7 women safe harbor and rescue platform; second, create a new public welfare pilot facility that is led by the government, open to social participation, and jointly regulated by relevant authorities; and third, female information service platform, information promotion platform and legal aid platform can be built with big data and AI technologies.

2.2. Analysis of the Supply of Breastfeeding Facilities in Public

Breastfeeding facilities in public provide significant guarantee for travelling mothers and infants, which, however, are undervalued in three aspects: demand, supply, and operation. First, insufficient supply. Driven by economic interests, profitable public places (like shopping malls) are well equipped with breastfeeding facilities while non-profit public places (such as transportation hubs and hospitals) are scarcely supplied, which runs counter to the needs of travelling mothers and infants. Second, flawed supply standards. Currently, the public facilities in China are quantitatively allocated according to culture, education, and business functions. However, the construction standards do not involve breastfeeding facilities, resulting in poor construction quality, inadequate supporting facilities, and discounted service satisfaction. Third, ineffective management mechanism. Facility programs often become abortive due to the lack of responsibility system and regulatory measures as well as the conflict of interests and buck-passing.

3. Supply Model of the Breast-Feeding Facilities in Public based on Homo-Urbanicus Theory

Drawing on the concept of “Homo economicus”, proposed by a Canadian scholar Mr. Hok-Lin Leung, and Doxiadis’ Ekistics, “Homo Urbanicus” are “people who rationally choose to live together to pursue opportunities for spatial contact” [6]. Based on the theory, urban planning is about matching archetypical “Homo Urbanicus” (defined mainly by demographic and life-cycle variables) with archetypical human settlements (defined mainly by population size, population mix, and spatial density), focusing on public interest in line with China's national conditions [7]. The mission of “Homo Urbanicus” theory is to create people-oriented human settlements to match the needs of Homo Urbanicus. In dealing with the relationship between public service facilities and users, the theory emphasizes the requirements of archetypical “Homo Urbanicus” (users) for nearby, convenient, and safe accessibility. Based on the analysis above, this paper uses the “Homo Urbanicus” theory as guidance to build a tertiary-layered supply model of “subdivision, contact and matching”.

3.1. Subdivision - Establish a Classified Supply System to Meet the “Rational” Choices of Different Human Settlements

Mr. Hok-Lin Leung believes that contact opportunities, human settlements, and Homo Urbanicus should be subdivided since specific environment triggers specific emotional tendencies and behaviors. Public places are the spatial carriers of breastfeeding facilities [2], which should differentiate each other in size, spatial structure, and accommodation capacity. Nursing facilities planning needs to consider the different demands of target population. For example, despite the high population densities in both locations, the actual demands in maternal and child health care centers are much higher than that in commercial service places. Construction standard for breastfeeding facility should be raised accordingly. Therefore, taking into account the characteristics of different public places (scale, spatial structure, population, etc.) and the priority of female needs, public places have been divided into six categories to meet the comprehensive travel needs of mothers and infants: public transportation station,

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places for cultural and sports activities, maternal and child health care centers, administrative service offices, tourism and leisure venues, commercial service places.

3.2. Contact - Satisfy the Needs of Archetypical Human Settlements for "Accessibility", and Establish a Multi-Level Allocation System

"People-oriented" planning should increase the matching degree of Homo Urbanicus and the selected settlements by optimizing the contact opportunities of settlements. The planning of breastfeeding facilities should focus on optimizing the possibility of contact between the target population and facilities to ensure that the spatial layout of facilities matches the urban spatial hierarchy. Facilities at each level target at specific population and usage frequency. The higher the level, the greater the coverage and the higher the usage frequency. Thus, both allocation rate and standards should be raised accordingly. Mothers and infants have different service needs in public places at different levels. For city-level public places with large gatherings, we should focus on improving the standards of facility construction and increasing the service availability; for street-level areas, we need to focus on their convenience and accessibility. Therefore, taking into account the public management and facility services, we should build a multi-tiered (city level-district level-street level) allocation system with multiple centers, organizations, levels. Each level is interconnected and dependent on each other and combines to increase the contact between mothers and infants, and facilities.

3.3. Match-"Balanced" Supply for Specific Human Settlements and Match the Actual Needs of Mothers and Infants

"Homo Urbanicus" are people who rationally choose to live together to pursue opportunities for spatial contact. Different "Homo Urbanicus" have specific expectation for settlements that promise different opportunities of contact. Matching is the key [6]. It is the duty of planners to reach a balance between the subjective expectations of the nursing space and the objective contact opportunities of nursing facilities. Therefore, facilities should be allocated according to the settlement variables (population size, residential density) in different urban areas. For instance, the standards for facility construction and the number of facilities should be raised in areas with high population density and sharing rate while areas at lower levels should adjust the facility scale, construction standards and quantity accordingly to better satisfy supply/demand requirements of target population.

4. Applied Research on the Supply of Breastfeeding Facilities in Public based on the "Homo Urbanicus" Theory

According to the survey on the allocation of breastfeeding facilities around the residence and the existing public places with breastfeeding facilities: ①The allocation rate of public facilities around the residence is insufficient to guarantee the travel needs of the target population. 55.4% of the interviewees indicated that there is "no" breastfeeding facilities within 1000 meters of their residence, 18.5% indicated that they "do not know", and only 26.1% made it clear that there are breastfeeding facilities available. ②Insufficient supply of breastfeeding facilities in key destinations. According to the results of questionnaire, the allocation rate of breastfeeding facilities in six key destinations (parks/plazas, playgrounds in shopping mall, neighborhood centers, maternal and child health centers, and supermarkets) does not exceed 30%. Compared to shopping centers and neighborhood centers, the allocation rate in parks/squares, playgrounds, maternal and child health hospitals and supermarkets is extremely low, severely affecting the travelling of the target population. ③A 1000-meter service circle radiating from the existing public places with facilities covers only 5.5% of the city's residential land. The service capacity of surrounding facilities is grossly inadequate to meet the requirements of target population.

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4.1. Establish a Classified Supply System of Demand-Oriented Planning

"Homo Urbanicus", who rationally choose to live together to pursue opportunities for spatial contact, emphasize user participation. Based on user satisfaction and demand surveys, the author tries to delve into the actual needs of mothers and infants and build a "people-oriented" supply mode. Therefore, considering the distribution of breastfeeding facilities in Suzhou, the author has investigated breastfeeding facilities in six public places, collecting the opinions of target population concerning the completeness, convenience, demands and rationality of facilities through interviews and questionnaires. The results show that the overall satisfaction of the target population is low. People generally complained about the incomplete tools in facilities, lack of privacy, narrow space, poor sanitary environment, difficult accessibility and so on. Priority for facilities on the ranking list is "maternal and child health care centers, public transportation station, commercial service places, Tourism and Leisure Venues, administrative service offices and places for cultural and sports activities" (Table 1).

Table 1. Satisfaction Survey on the Use of Breastfeeding Facilities in Public

Classification of Public Places	Demand Priority	Reasons for dissatisfaction with facilities
Public Transportation Station	★★★★★	①Insufficient privacy; ②Inner space narrow; ③Unreasonable availability hours
Places for Cultural and Sports Activities	★	①Poor sanitary environment; ②Unreasonable availability hours; ③Incomplete tools;
Maternal and Child Health Care Centers	★★★★★	①Insufficient supply; ②Poor sanitary environment; ③Inner space narrow
Administrative Service Offices	★★	①Incomplete tools; ②Interior design unfriendly; ③Insufficient privacy
Tourism and Leisure Venues	★★★	①Incomplete tools; ②Poor sanitary environment;③Unsatisfactory comfort
Commercial Service Places	★★★★	①Poor accessibility; ②Insufficient privacy; ③Interior design unfriendly

The author proposes to build a classified system of public places to meet the actual needs of mothers and infants, and answer questions of "where to build, how to build, and who is responsible". First, where. According to questionnaires and interviews, the author establishes a classified facility construction standard for public places, which contains six categories of public places (at city level, district level, and street level) that need to be equipped with breastfeeding facilities and covers the daily whereabouts of citizens (Table 2). Second, how. Determine the facility construction modes to meet the needs of people in different regions according to the level of public places, the coverage of people, and the number of people served. The author advances four construction modes: Independent Construction, Joint Construction, Pro-Joint Construction, and Anti-Joint Construction in Principle. Independent Construction generally caters to high-level areas and large target population, which requires higher construction standard. Joint Construction and Pro-Joint Construction apply to combination with other functions of public places to improve the convenience of nursing facilities. Anti-Joint Construction in Principle focuses on the safety of facility users, aiming to avoid cross-infection of infants and children in densely-populated medical and health care centers. Third, who. Major construction participants, including governments, communities, and developers, should be involved and caution against "buck-passing".

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Table 2. Classified Construction Standard of Public Places

Public Places	Level	Locations	Construction Modes	Responsible
Public Transportation Station	City	Railway station, high-speed rail stations, rail transit interchange stations, long-distance passenger stations, expressway service areas, etc	Independent construction	Transport Bureau
	District	Long-distance passenger stations, rail transit interchange stations, bus terminals, etc	Independent construction	Transport Bureau
	Street	Rail transit interchange points, bus interchange stations, etc	Pro-joint construction	Transport Bureau/Community
Places for Cultural and Sports Activities	City	Municipal cultural centers, libraries, museums, exhibition halls, citizen activity centers, women and children activity centers, stadiums (halls) , etc	Independent construction	Sports Bureau
	District	District-level libraries, museums, citizen activity centers, women and children activity centers, stadiums (libraries), etc	Independent construction	Sports Bureau
	Street	Street-level reading rooms, activity rooms, etc	Joint construction	Community
Maternal and Child Health Care Centers	City	Municipal health care facilities for women and children, etc	Anti-Joint construction in principle	Sanitary Bureau
	District	District health care facilities for women and children, etc	Anti-Joint construction in principle	Sanitary Bureau
	Street	Street health care facilities, etc	Anti-Joint construction in principle	Sanitary Bureau
Administrative Service Offices	City	Municipal government service centers, convenient service centers and other government offices that provide public services, etc	Independent construction	Government
	District	District-level government service center, convenient service center, etc	Independent construction	Government
	Street	Street offices, police stations, etc	Joint construction	Government
Tourism and Leisure Venues	City	City-level scenic spots, parks, gardens and other tourist and leisure places, as well as city parks, squares, etc	Independent construction	Landscape Bureau
	District	District-level scenic spots, parks, gardens and other tourist and leisure spots, etc	Independent construction	Landscape Bureau
	Street	Neighborhood parks, plazas, etc	Pro-joint construction	Landscape Bureau/Community

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Commercial Service Places	City	City-level commercial retail business premises, commercial centers, large-scale commercial complexes with a business area of more than 10,000 square meters, etc	Joint construction	Developer
	District	District-level commercial service centers, medium-sized commercial complexes, etc	Joint construction	Developer
	Street	Neighborhood center,convenience store, etc	Joint construction	Developer

4.2. Establish a Classified Construction System According to Local Conditions

Based on the Homo Urbanicus theory, urban planning is about matching archetypical "Homo Urbanicus" with archetypical human settlements (defined mainly by population size, population mix, and spatial density) [6]. On the one hand, the supply of breastfeeding facilities in public depends on human settlement variables and sets different facility construction indicators for population mix and spatial density to match the needs of "Homo Urbanicus". Public places located in the core areas of cities with large population scale and high population densities should be equipped with high-standard breastfeeding facilities, which, as an integral part of urban public facilities, should coordinate the systematic and networking design of general public facilities and cater to the all-around needs of travelling mothers and infants; for medium-sized public places where nursing facilities are targeted at the local area, and whose scale and construction standards are lower than the municipal level, they should focus on the connection to the structure and system of the entire breastfeeding facilities system and provide high-quality services to mothers and infants in the area. For public places with low human settlement density, they need to pay attention to improving the interior environment and service quality, providing user-friendly design to mothers and infants, and enhancing the accessibility and convenience of facilities. On the other hand, breastfeeding facilities should adopt a unique sign system to display the urban construction and echo with the regional culture, which needs to be designed in a concise and clear way and allows accessibility in just a few minutes.

4.3. Strengthen Program Planning and Implementation Via Collaborative Governance

It needs the joint efforts of government agencies, laws and regulations, and society to strengthen the planning and implementation of breastfeeding facilities in public places. First, improve the task organization and implementation. Establish a coordination organization for breastfeeding facilities construction, which is composed of the Municipal Women's Federation, Health and Family Planning Commission, Planning Bureau, Development and Reform Commission, to execute the special plans of nursing facilities construction. Second, formulate and improve relevant laws and regulations. Establish and improve laws and regulations on breastfeeding facilities in public places, further identify the goal of breastfeeding facility construction in the process of social and economic modernization, and formulate measures according to various laws and regulations, historical conditions, and economic and environmental status. Third, establish a multi-channel investment and financing system involving government, enterprises, associations, and individuals. Raise funds from enterprises and institutions, social groups, and individuals, and introduce social funds to the construction of breastfeeding facilities. Finally, strengthen supervision and management of breastfeeding facilities. Proposal should be submitted at the National People's Congress and the CPPCC, accurately and thoroughly describing the problems in executing the breastfeeding facility plans,

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mobilizing the whole society to solve the problems in a timely and effective manner and advance the process and effectiveness of the program.

5. Conclusion

With the boom of economy and society and under the background of the universal two-child policy, breastfeeding facilities in public places have become a symbol of urban civilization and human care. However, the current public facility planning and construction fails to satisfy the demands on breastfeeding facilities. More scientific and accurate systems and methods are urgently needed to guide the planning of breastfeeding facilities in public places and promote forward the construction and development of facilities. This paper takes Suzhou as an example to introduce how to prepare breastfeeding facility planning in public places from the perspective of Homo Urbanicus. The author builds the theoretical model of "subdivision, contact, and matching" to make an overall arrangement of breastfeeding facilities in six public places, and proposes to strengthen the program planning and implementation at levels of government, society, laws and regulations in order to provide a reference for other cities of urban civilization.

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