RESEARCH

Preferences for home-based care services during China's long-term care market transition: evidence from a discrete choice experiment

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Abstract

Background With population aging and the weakening of traditional family caregiving, home-based care services are becoming more important in China. However, little is known about residents' service preferences during the transition from informal to formal care systems in the context of the long-term care insurance system.

Objective This study examines the preferences of Chinese residents aged 25 or above for home-based care services, focusing on the relative importance of key service attributes, willingness to pay, and preference heterogeneity across demographic groups.

Methods A discrete choice experiment (DCE) was conducted from September 2024 to January 2025, with 680 valid responses from 21 provinces in China we're included for analysis. Five attributes were identified through literature review, expert consultations, and focus group interviews: nursing program, service attitude of nursing staff, professional competence of nursing staff, type of service organization and monthly cost. A mixed logit model analyzed preference patterns and heterogeneity.

Results For respondents, the service attitude of nursing staff (relative importance 29.59%), and the nursing program (29.30%) are of almost equal importance, followed by the monthly cost (20.62%). Respondents showed the highest willingness to pay for a good service attitude. Unmarried individuals, those without children, and non-public sector employees had stronger preferences for service quality and brand reputation, reflecting the role of social support networks and welfare systems in shaping formal care preferences.

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Conclusion Findings reveal that home-based care preferences in China are shaped by the dynamic interplay between formal care systems and informal support networks. While the availability of informal support influences individuals' reliance on formal services, the design, quality, and institutional credibility of formal care options also play a key role in shaping preferences. Together, these factors jointly shape how people evaluate and choose home-based care services during China's long-term care market transformation. The observed heterogeneity underscores the need for differentiated service models and policy responses tailored to diverse levels of social and institutional support.

Keywords Home-based care services, Long-term care insurance, Stated preferences, Discrete choice experiments

Introduction

Population aging has become one of the most significant demographic challenges of the 21 st century, placing immense pressure on global healthcare systems and long-term care services [1]. This challenge is particularly prominent in China. As one of the largest countries by population, China is experiencing an unprecedented demographic transformation at a rate far exceeding most developed nations. By the end of 2023, the population aged 60 and above accounted for 21.1% of the total population [2], and it is projected to surpass 34% by 2050 [3]. More concerning is that the number of disabled and semi-disabled older adults has surpassed 40 million, accounting for 18.3% of the aging population [4]. The rapid aging process, coupled with urbanization and changes in family structure, has weakened the traditional family caregiving system [5, 6]. This underscores the urgent need to develop formal care services that can effectively meet the diverse healthcare and support needs of the aging population.

To address these challenges, China has been actively advancing long-term care system reform in response to its rapidly aging population and increasing demand for care services [7]. In 2016, the government launched a national pilot program for long-term care insurance (LTCI) in 15 cities, with an additional 14 cities and regions added in 2020 [8]. The LTCI pilots aim to provide financial support and essential care services for older adults and individuals with functional impairments [9]. However, the implementation of LTCI has revealed significant variation across regions in terms of coverage scope, financing mechanisms, service eligibility criteria, and administrative capacity across regions [10, 11]. These differences have rasults in uneven access to services and inconsistent user experiences, which may in turn influence public expectations and service preferences. Home-based care services, which have become a key component of the LTCI pilots [12], refer to the continuous provision of medical care, social support, and daily life care services to individuals with chronic illnesses or disabilities. These services are delivered in the home environment through the combined efforts of healthcare professionals and family caregivers [13]. As an important supplement to the existing healthcare system and a community-based alternative to institutional care [14], home-based care services are designed not only to reduce the burden on medical institutions and nursing homes, but also to reflect cultural preferences for aging in place. However, the development of home-based care services faces significant challenges in both service design and utilization. Understanding user preferences is crucial at this stage, as it can inform service providers in designing appropriate service packages and guide policymakers in optimizing insurance coverage and subsidy standards. In China, where the formal care market is still in its early stages and service standards are still developing, this understanding is particularly important [15].

Theoretically, this study is grounded in three interconnected theoretical frameworks to construct a systematic understanding of the mechanisms behind home-based care service preferences. Firstly, the life course theory emphasizes systematic differences in individual needs and decision-making patterns at different stages of life [16, 17]. This perspective encourages us to focus on individuals aged 25 and above, as they play the dual roles of current caregivers and future service users [18]. Their preference choices reflect the evolving patterns of caregiving arrangements across generations, offering a unique perspective on the dynamic evolution of care preferences. By recognizing the temporal and role-based diversity across different stages of life, this theory provides a conceptual foundation for analyzing how care preferences evolve in relation to individuals' positions within the caregiving cycle. Secondly, social support theory provides an analytical framework for understanding the relationship between formal and informal care. This theory posits that individual's care needs are met through the interaction of formal support networks (such as professional care services) and informal support networks (such as family care) [19, 20]. In the context of rapid urbanization and the shrinking family structure in China, this framework helps explain why groups with different family structures and social network characteristics may exhibit different care preferences. This theoretical lens highlights the uneven distribution of informal support in the population and offers an explanatory basis for the observed heterogeneity in preferences—particularly among individuals who lack stable family caregiving resources. Finally, institutional change theory provides a macro perspective for analyzing the evolution of the

care market in developing countries. This theory suggests that during the transition from a planned economy to a market economy, both the service provision model and user preferences undergo significant changes [21]. This perspective helps understand the uniqueness of China's home-based care service market, which must adapt to the requirements of market-oriented reforms while also considering the influence of traditional cultural values and existing institutional arrangements. In this context, individuals' preferences are not solely shaped by personal or familial factors, but also by broader institutional reforms — such as the introduction of long-term care insurance and the diversification of provider types. This theory therefore provides a crucial lens for understanding how shifting policy environments and emerging care models influence residents' willingness to pay and their prioritization of service attributes.

Existing studies primarily focus on preference analysis in the mature care markets of developed countries, and these findings may not be directly applicable to developing country contexts [22–24], as care preferences are influenced by different cultural norms, economic constraints, and institutional arrangements. While some studies have started to focus on care preferences in China, they mainly rely on traditional regression methods, which are insufficient to reveal the complex trade-offs individuals make when choosing care services [25–28]. Discrete choice experiments (DCEs), based on random utility theory [29], offer a more refined approach by simulating real decision-making scenarios. In the healthcare field, DCEs have been widely used to understand preferences in different contexts, including chronic disease patients' preferences for family doctor services [30], cancer patients' preferences for pain management [31], and long-term care insurance [32, 33]. This method effectively quantifies decision-making trade-offs and predicts choice behaviors, making it particularly suitable for understanding the complex decision-making process in selecting home-based care service choices, especially in emerging care markets where formal service standards are still developing.

Based on the above theoretical frameworks, this study aims to: (1) identify the key attributes influencing Chinese residents' preferences for home-based care services and their relative importance; (2) estimate the willingness to pay for different service characteristics; and (3) examine the heterogeneity of care preferences across various demographic groups. The findings of this study will contribute to three key areas: first, providing empirical evidence on the formation mechanisms of care preferences in transitional societies; second, demonstrating the application value of the DCE method in the study of emerging care markets; and third, offering policy recommendations

for developing countries facing similar demographic and healthcare challenges.

Methods
Study design
This study employed the DCE method to investigate the preferences of Chinese residents for home-based care services. The experimental design followed the established guidelines for DCE research in the healthcare field, carried out through three phases: literature review, qualitative research, and experimental optimization. This study was a questionnaire survey involving preferences for home-based care services among Chinese residents aged 25 years and above. All participants signed an informed consent form, and the research data was used solely for analysis purposes, with no sensitive personal information or commercial interests involved. In accordance with the ethical review requirements of the institution, this study was classified as an interview survey research under educational and training settings, and it did not cause harm to participants, thus it was granted exemption from ethical review approval. The study strictly adhered to data privacy protection regulations, and all participants' personal information was anonymized to ensure privacy and security.

Identification of attributes and levels
The identification of attributes and levels for this study followed a three-phase process [34]. Firstly, a systematic literature review was conducted to identify the key attributes and levels from previous studies, including: nursing program, monthly cost, service attitude of nursing staff, professional competence of nursing staff, service frequency, nursing staff age, and service form. Secondly, the study conducted three rounds of expert consultations, involving eight experts (including four nursing experts, two long-term care insurance policy experts, and two DCE methodology experts). Based on these consultations, attributes such as "service frequency", "nursing staff age", and "service form" were removed. Additionally, the consultations further refined the levels of each attribute, including determining the scope of nursing programs and setting the monthly cost range between 3,000 and 8,000 CNY. Finally, 20 potential service users participated in focus group interviews, and a new attribute, "type of service organization", was introduced. To ensure the representativeness and relevance of the discussion, participants were purposively selected based on key sociodemographic characteristics, including gender, age, marital status, occupation, parental status, living arrangement, and household income. Efforts were made to ensure that each major category within these characteristics was represented—for example, by including both younger and older adults, individuals with and without

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Table 1 Attributes and levels for the discrete choice experiment

	Attributes	Specific definition	Attribute levels
1	Nursing program	Services provided to the care recipient	Daily life care
			Daily household chores
			Medical care
			Psychological and social support
			Emergency response and safety monitoring
2	Monthly cost	Total monthly care service expenditure for the care recipient's family	3000
			4500
			6000
			8000
3	Service attitude of nursing staff	Behavioral performance of nursing staff (e.g., respect, patience, attention to detail)	Poor
			Average
			Good
4	Professional competence of nursing staff	Professional competence of nursing staff (e.g., clinical skills, medical knowledge, ability to handle complex situations). Levels: High (Level 3), Medium (Level 2), Low (Level 1)	Level 1
			Level 2
			Level 3
5	Type of service organization	The level of the service organization	No brand
			Local brand
			National chain brand

Table 2 Example of choice set

Attributes	Care project 1	Care project 2	☐ Neither
Nursing program	Emergency response and safety monitoring	Medical care	
Monthly cost	8000	6000	
Service attitude of nursing staff	Average	Good	
Professional competence of nursing staff	Level 3	Level 1	
Type of service organization	Local brand	No brand	
Which one do you choose?	☐	☐	

children, public and non-public sector employees, and participants from various income groups. This purposive sampling strategy facilitated the inclusion of individuals from diverse social and economic backgrounds, thereby enhancing the credibility, richness, and potential transferability of the identified service attributes. Through this systematic process, the study ultimately identified five core attributes and levels: nursing program (5 levels), monthly cost (4 levels), service attitude of nursing staff (3 levels), professional competence of nursing staff (3 levels), and type of service organization (3 levels). The setting of attribute levels was based on the current market conditions and policy parameters (Table 1). Detailed outlines for expert consultations, focus group interviews, and the research questionnaire can be found in Additional File 1.

Experimental design

Theoretically, based on the identified attributes and levels, 540 different attribute/level combinations ($5 \times 4 \times 3 \times 3 \times 3$) and 145,530 choice sets ((540×539)/2) could be generated. To ensure the efficiency of the experimental design, the study used Stata software to perform D-efficiency optimization, ultimately selecting 14 choice sets (relative D-Efficiency: 87.1%). Considering the cognitive burden on respondents, these choice sets were evenly distributed across two versions of the questionnaire, with each version containing 7 choice sets. To test the consistency of responses, a choice set was repeated within each version for quality control. Each choice set contained two service options. To avoid forcing respondents to make artificial choices, a "neither" option was included in each choice set. This design choice more accurately reflects real-world decision contexts and provides participants with the option to opt out when none of the alternatives are acceptable, thereby improving the realism and overall validity of the experiment [35]. A sample of the choice sets from the questionnaire is shown in Table 2.

Data collection

The research team conducted the survey using the Sojump platform (https://www.wjx.cn/) from September 2024 to January 2025 and employed a snowball sampling strategy to expand the sample coverage. The target

participants were Chinese residents aged 25 and above. Respondents were randomly assigned to one of the two versions of the questionnaire. A total of 944 questionnaires were collected through the online survey, with problematic questionnaires and those failing the DCE consistency checks excluded, resulting in 680 valid samples. These samples covered 21 provincial-level administrative regions, with a valid response rate of 72.03%. The sample size met the minimum required for DCE studies ($n > 500c/(t×a)$), where c is the maximum number of levels, t is the number of choice sets per questionnaire, and a is the number of options per choice set.

Statistical analysis
Data analysis was conducted using Stata 18.0. Firstly, descriptive analysis was performed on the demographic data to illustrate the basic characteristics of the respondents, including frequencies and percentages for categorical variables. Secondly, for the analysis of DCE data, we employed both Conditional Logit and Mixed Logit models. Model selection was based on the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) [36]. The signs of the model coefficients reflect the positive or negative influence of the respective attributes on utility, while the magnitude of the coefficients indicates the relative importance of each attribute based on overall relative utility. During model building, monthly cost was treated as a continuous variable, while other attribute variables were coded as dummy variables.

Notably, treating the monthly cost attribute as continuous facilitated the calculation of marginal willingness to pay (mWTP). This calculation involved assessing the ratio between the preference weights of other attributes and the preference weight of costs. Additionally, to quantify the impact of each attribute on home-based care service preferences, we calculated the relative importance (RI) of each attribute. The relative importance reflects the weight of each attribute in the overall preference and is calculated by the difference between the maximum and minimum utility levels for each attribute. Thirdly, subgroup analysis was performed based on marital status and occupation. Fourthly, the study also developed an uptake rate model to predict the choice probabilities under different service scenarios. The analysis is of significant value for policymakers as it reveals how the probability of selecting specific service options varies under different attribute levels.

Results
Descriptive statistics
This study ultimately obtained 680 valid questionnaires from 21 provinces in mainland China. The characteristics of these respondents are presented in Table 3. Among the respondents, 58.82% were female, with the majority (70.88%) falling within the age range of 35–59 years. Respondents under 35 years old and those aged 60 or above accounted for 18.82% and 10.29%, respectively. In terms of occupation, 60.15% of the respondents were

Table 3 Descriptive statistics of the sample (*N* = 680)

Variables		Frequency (*N*)	Composition Ratio (%)
Gender	Male	280	41.18%
	Female	400	58.82%
Age	< 35 years	128	18.82%
	35–59 years	482	70.88%
	≥ 60 years	70	10.29%
Occupation	Public sector	409	60.15%
	Enterprise	160	23.53%
	Other (including Farmers, service industry workers, self-employed individuals, unemployed individuals, retirees, etc.)	111	16.32%
Marital status	Unmarried	99	14.56%
	Married	581	85.44%
Parental status	Without Children	112	16.47%
	With Children	568	83.53%
Living arrangement	Living alone	100	14.71%
	Living with Others	580	85.29%
Annual household income (CNY)	< 100,000	131	19.26%
	100,000–299,999	384	56.47%
	300,000–499,999	111	16.32%
	≥ 500,000	54	7.94%

employed in the public sector, 23.53% worked in enterprises, and the remaining 16.32% were in other professions. Most respondents were married (85.44%) and had children (83.53%), with 85.29% living with their family members. Regarding annual household income, 56.47% of the respondents had an annual income between 100,000 and 299,900 CNY, 19.26% earned less than 100,000 CNY, and 24.26% had an income of 300,000 CNY or more.

Home-Based care services preferences analysis

In selecting the optimal regression model, this study conducted regression analyses on the respondent group using both conditional logit model (CLM) and mixed logit model (MIXL) [37]. Based on the comparison of the Akaike information criterion (AIC: 9631.753 vs. 7016.997) and the Bayesian information criterion (BIC: 9722.553 vs. 7107.796), the MIXL was chosen for analysis [38]. The results are presented in Table 4, with the estimates for the CLM shown in Additional file 2: Table

S1. The results showed that all five attributes are significant predictors of the service choice. Some estimated standard deviations were significant, indicating the existence of preference heterogeneity. Among the nursing programs, emergency response and safety monitoring was the most preferred, followed by daily life care, while psychological and social support was the least preferred program. In terms of the service attitude of nursing staff, respondents exhibited a strong preference for good service attitude ($\beta = 1.798$, $p < 0.001$), far outweighing the preference for average service attitude ($\beta = 0.744$, $p < 0.001$). Notably, respondents exhibited a slight negative preference for higher professional competence of nursing staff, but this effect was only marginally significant. Compared to non-branded service organizations, respondents preferred local brands ($\beta = 0.457$, $p < 0.001$) and national chain brands ($\beta = 0.413$, $p < 0.001$). As expected, the monthly cost had a significant negative effect on utility ($\beta = -0.0003$, $p < 0.001$).

Table 4 Results of mixed logit regression model ($n = 680$)

Attributes	Levels	Total observations (14,280)			
		Coefficient (SE)	P	SD (SE)	P
ASC (opt-out)		−1.313*** (0.252)	< 0.001	4.088*** (0.252)	< 0.001
Nursing program	Emergency response and safety monitoring	Ref			
	Daily life care	−0.351*** (0.104)	0.001	0.016 (0.178)	0.928
	Daily household chores	−0.994*** (0.121)	< 0.001	1.377*** (0.156)	< 0.001
	Medical care	−0.462*** (0.093)	< 0.001	0.001 (0.109)	0.994
	Psychological and social support	−1.199*** (0.105)	< 0.001	0.002 (0.218)	0.994
Service attitude of nursing staff	Poor	Ref			
	Average	0.744*** (0.089)	< 0.001	0.009 (0.138)	0.945
	Good	1.798*** (0.094)	< 0.001	0.611*** (0.121)	< 0.001
Professional competence of nursing staff	Level 1	Ref			
	Level 2	−0.300** (0.123)	0.015	0.017 (0.099)	0.863
	Level 3	−0.190 (0.118)	0.107	0.020 (0.093)	0.832
Type of service organization	No brand	Ref			
	Local brand	0.457*** (0.077)	< 0.001	0.008 (0.159)	0.958
	National chain brand	0.413*** (0.073)	< 0.001	0.007 (0.122)	0.952
Monthly cost		−0.0003*** (0.00003)	< 0.001		
Log Likelihood	−3496.498				
AIC	7016.997				
BIC	7107.796				

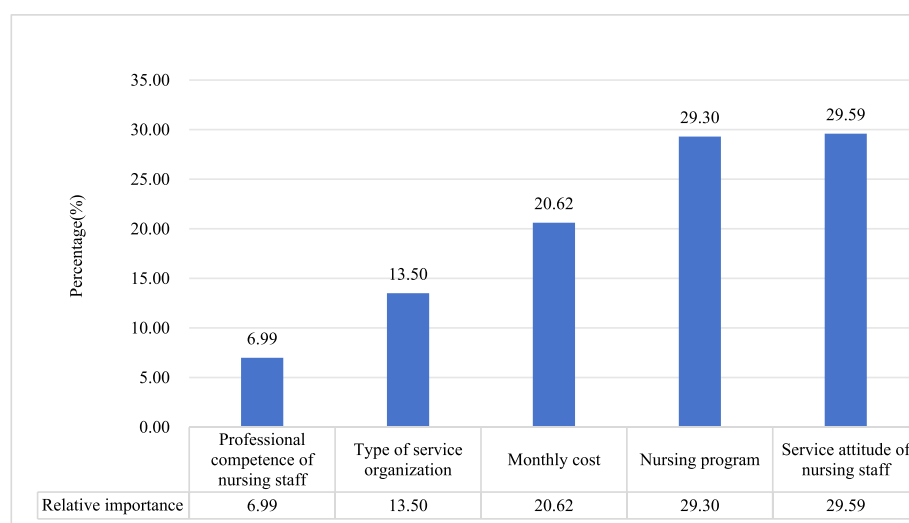**p < 0.05, ***p < 0.01

Fig. 1 The evaluation results of respondents' relative importance of each attribute

Table 5 Marginal WTP for mixed logit regression results

Attributes	Levels	mWTP	95% CI
Nursing program	Emergency response and safety monitoring	Ref	
	Daily life care	−1190.246	(−1911.740, −468.752)
	Daily household chores	−3369.684	(−4366.556, −2372.811)
	Medical care	−1565.830	(−2261.771, −869.889)
	Psychological and social support	−4065.847	(−5072.769, −3058.926)
Service attitude of nursing staff	Poor	Ref	
	Average	2523.503	(1840.984, 3206.022)
	Good	6095.666	(4901.363, 7289.968)
Professional competence of nursing staff	Level 1	Ref	
	Level 2	−1018.741	(−1832.834, −204.649)
	Level 3	−643.747	(−1412.989, 125.495)
Type of service organization	No brand	Ref	
	Local brand	1548.557	(994.961, 2102.153)
	National chain brand	1400.267	(850.369, 1950.166)

Comparison of the relative importance of each attribute

The analysis of attribute relative importance (Fig. 1) indicates that the service attitude of nursing staff (29.59%) and nursing program (29.30%) had the greatest relative importance, making them the most critical factors influencing respondents' choices. Monthly cost ranked third in importance (20.62%), followed by the type of service organization (13.50%). The relative importance of the professional level of nursing staff was the lowest (6.99%), suggesting that respondents exhibited a lower preference for formal qualifications compared to other service characteristics.

Marginal willingness to pay

The marginal willingness to pay (mWTP) estimation results show significant differences among the attributes (Table 5). Respondents were willing to pay the highest premium (6,095.67 CNY) for good service attitude compared to poor service attitude. Regarding nursing

programs, the WTP for daily household chores was −3,396.684 CNY, indicating that policymakers need to provide some compensation to residents for this option. The WTP for branded services was relatively moderate. Compared to non-branded organizations, respondents were willing to pay an additional 1,548.56 CNY for local brands and 1,400.27 CNY for national chain brands.

Subgroup analysis based on the respondents' characteristic

Subgroup analysis reveals significant preference heterogeneity across different demographic groups, with detailed results provided in Additional file 2: Table S2-Table S8, Figs. 2, 3 and 4. Based on the mWTP estimates, the unmarried group demonstrated a strong preference for both the service attitude of nursing staff and the type of service organization. Specifically, their willingness to pay for a high-quality service attitude was 3,785.521 CNY higher than that of the married group,
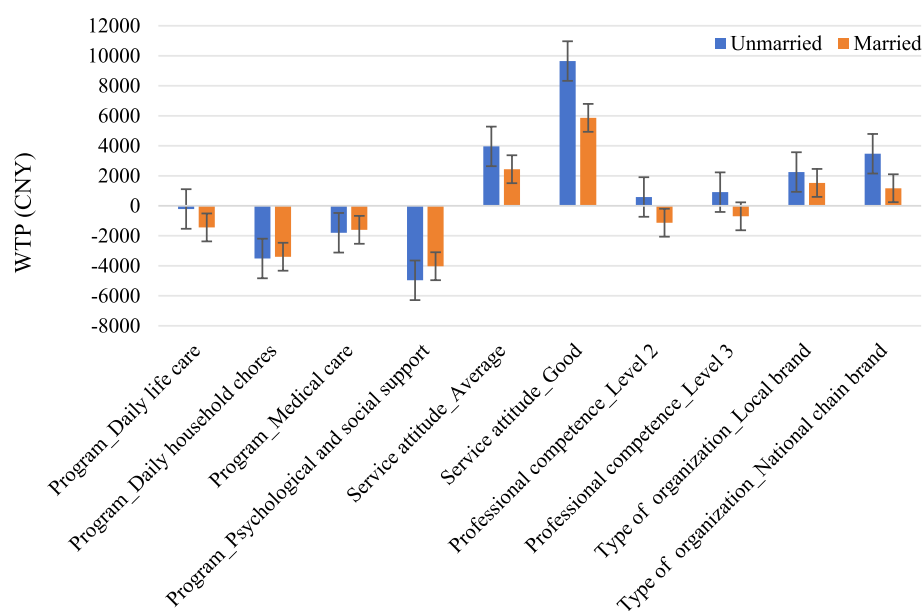
Fig. 2 Willingness-to-pay differences by marital status
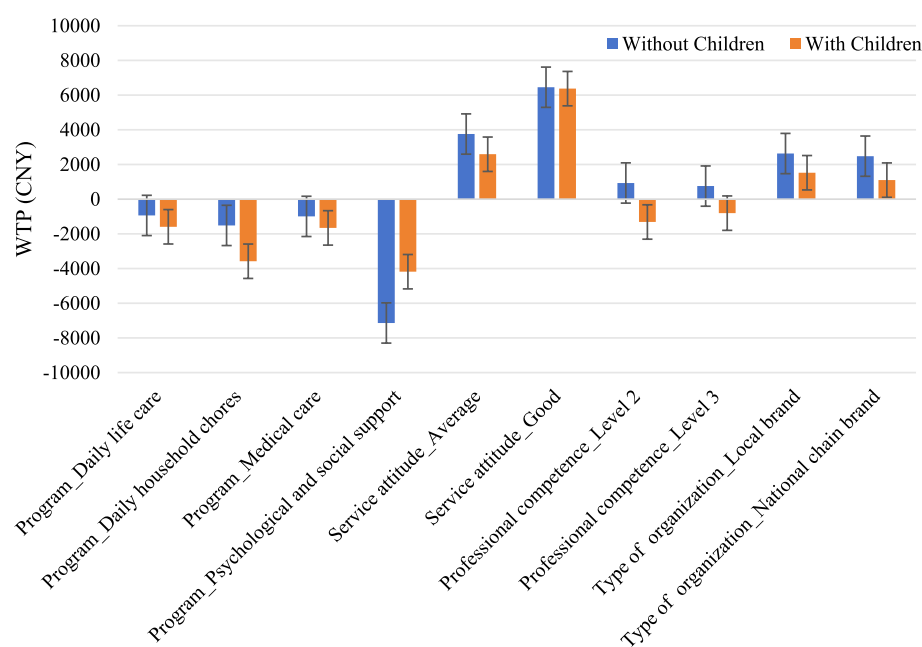

Fig. 3 Willingness-to-pay differences by parental status

and they also showed a pronounced preference for services provided by national chain brands.

Similarly, the heterogeneity analysis based on parental status revealed that individuals without children exhibited a clear preference for the service attitude of nursing staff and the type of service organization. To obtain a average level of service attitude, this group was willing to pay 3756.546 CNY, which is 1166.12 CNY more than their counterparts with children. In addition, respondents without children showed a stronger inclination toward services provided by local brands and national

chain organizations, with corresponding willingness to pay values of 2631.034 CNY and 2479.496 CNY, respectively. These figures represent an additional premium of 1106.828 CNY and 1381.113 CNY compared to those reported by respondents with children.

The multi-group comparison based on occupation categories shows no significant difference in preferences for daily life care between public sector and enterprise respondents. However, respondents in the "other" category exhibited significantly higher preferences for the service attitude of nursing staff and the type of service
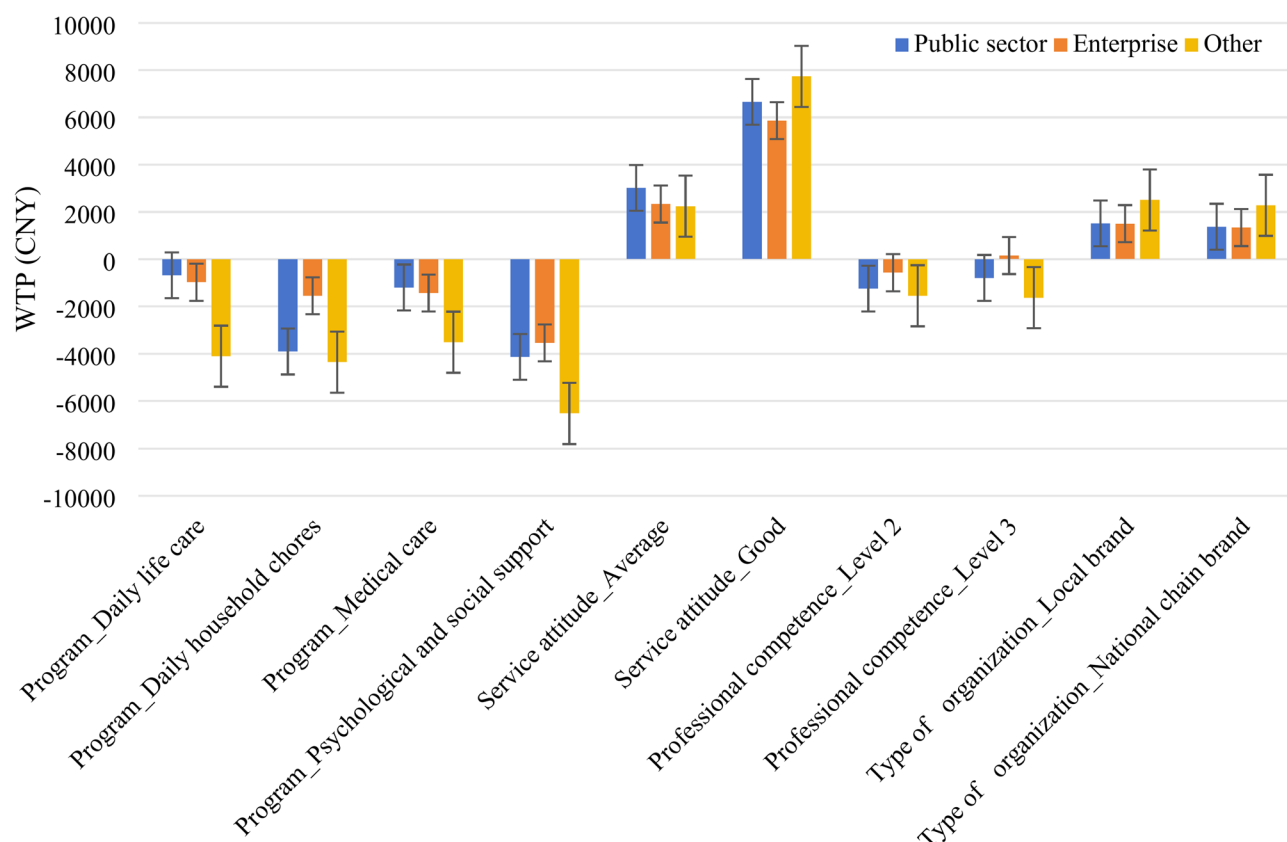
Fig. 4 Willingness-to-pay differences by different occupations

organization. To obtain good service attitude, the WTP among this group reached 7736.378 CNY, which was substantially higher than that of respondents from the public sector (6661.577 CNY) and enterprise employees (5864.125 CNY). Compared to these two groups, they were willing to pay an additional 1,074.801 CNY and 1,872.253 CNY, respectively. In terms of services provided by local brand organizations, their WTP stood at 2509.073 CNY, exceeding that of public sector participants (1512.827 CNY) and enterprise respondents (1506.947 CNY). This indicates a relative premium of 996.246 CNY and 1,002.126 CNY, respectively. Similarly, when considering services from national chain brands, this group expressed a WTP of 2,279.985 CNY, which was higher than the corresponding values for public sector respondents (1,376.067 CNY) and those in the enterprise sector (1,337.056 CNY). The additional amount they were willing to pay was 903.918 CNY and 942.929 CNY, respectively.

Scenario analysis

The simulation results are shown in Fig. 5. The baseline scenario was set as "emergency response and safety monitoring," with a monthly cost of 3,000 CNY; poor service attitude; professional competence of nursing

staff at level 1; and a non-branded service organization. The study estimated the changes in choice probabilities under different service scenarios. Compared to the baseline, if the monthly cost increases to 4,500 CNY, 6,000 CNY, and 8,000 CNY, the predicted probability of selection for respondents will decrease by 0.109, 0.218, and 0.346, respectively. However, if the service attitude of the nursing staff improves to good or the professional competence of nursing staff is upgraded to level 3, the respondents' choice probabilities will increase by 0.352 and 0.149. Additionally, if the nursing program change to daily life care or medical care, the choice probability is expected to increase by 0.118 and 0.095. If the type of service organization transforms to a national chain brand, the predicted probability of selection will rise by 0.243.

Furthermore, the study predicted the choice probabilities for several different home-based care service combinations. The positive impact of the optimal service configuration (combining high-quality service attributes) on choice probability shows a diminishing marginal trend, suggesting the possibility of a threshold effect in service improvements. Specifically, compared to the baseline, if the service configuration changes to "monthly cost of 4,500 CNY + daily life care + good service attitude
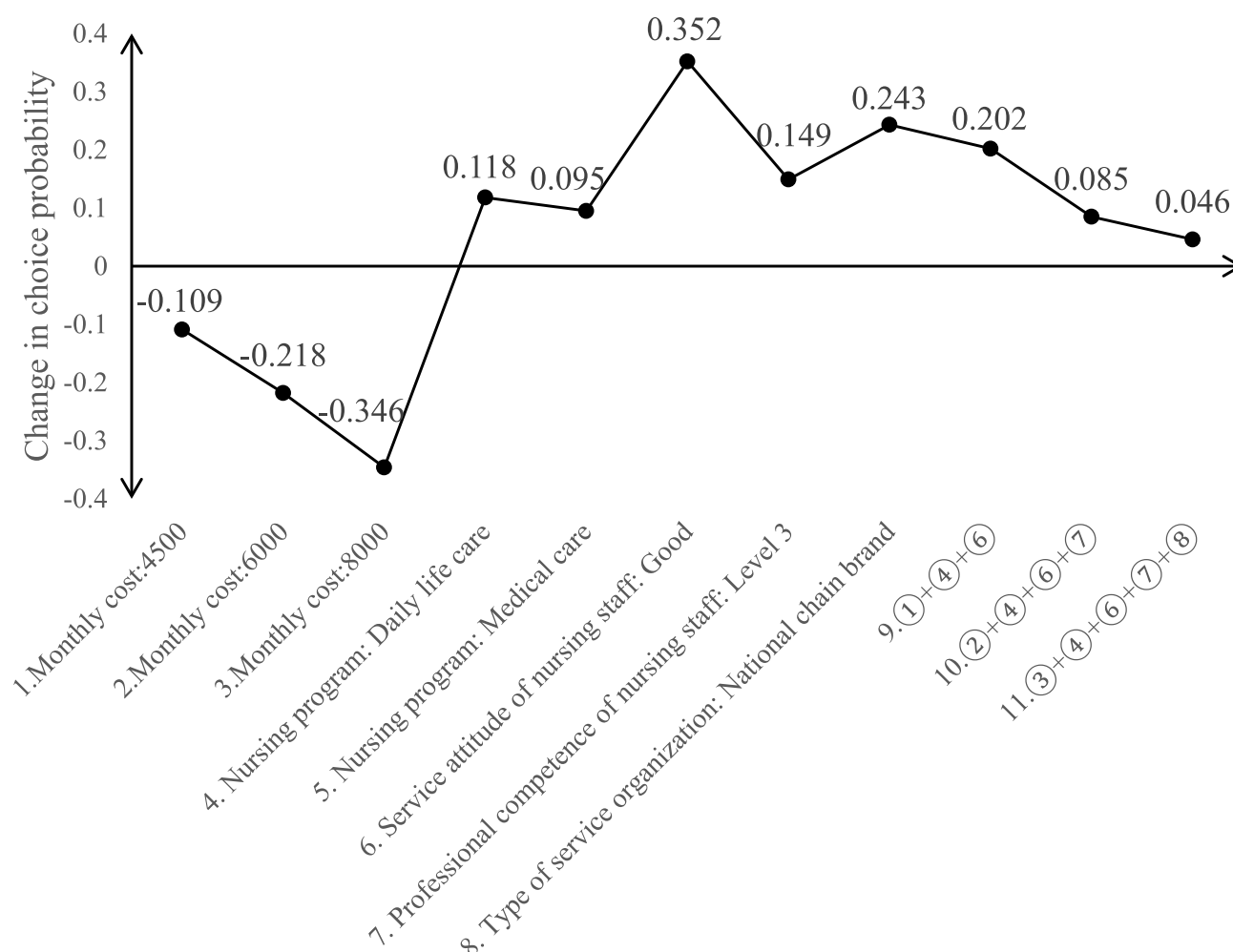
Fig. 5 Choice probability changes under different scenarios

of nursing staff," the probability of selection will increase by 0.202. If the service configuration changes to "monthly cost of 6,000 CNY + daily life care + good service attitude of nursing staff + professional competence of nursing staff at level 3," the selection probability will increase by 0.085. In the optimal service scenario—"monthly cost of 8,000 CNY + daily life care + good service attitude of nursing staff + professional competence of nursing staff at level 3 + national chain brand service organization"—the selection probability will rise by 0.046.

Discussion
Main findings
This study utilized a DCE to examine the preferences of Chinese residents aged 25 and above for home-based care services. The findings revealed four key insights that not only enhance the understanding of the decision-making mechanisms behind care service choices but also provide a new perspective on the application of related theories in the context of developing countries.

Firstly, the service attitude of nursing staff was the most important factor influencing residents' choices. This finding enriches the understanding of the interpersonal dimension in healthcare service quality theory [39], reflecting the central role of interpersonal interaction quality in care services. This preference stems from the unique nature of care services, as aging individuals face physical decline and an increased risk of chronic diseases [40–42], leading to functional deterioration and decreased daily living abilities [43]. Meanwhile, the shrinking and nuclear family structure in China has weakened the traditional family caregiving role [44], making professional nursing services a necessary choice. In this context, nursing staff are not only service providers but also important caregivers and agents for older adults [45]. A good service attitude can enhance care effectiveness and adherence [46], which is especially important when dealing with sensitive personal issues. Furthermore, due to the widespread risk of social isolation among older adults [47], emotional support from nursing staff can alleviate anxiety and depression, enhancing feelings

of security and belonging [48]. In traditional healthcare service quality evaluation frameworks, professional competence is often regarded as the core element. However, this study indicates that in the context of home-based care service, the attitude and emotional support provided by caregivers may be more important than professional skills. This preference reflects the uniqueness of home-based care services, which are not only medical services but also comprehensive services that combine emotional support and daily living assistance.

Secondly, the strong preference for emergency response and safety monitoring services reflects the unique characteristics of the care market in developing countries. These services include emergency call systems, fall prevention devices, and physiological parameter monitoring [49, 50], which help older individuals live more safely and stably at home [51], delay or avoid institutional care, and reduce long-term medical costs. Additionally, these services also provide reassurance for family members, reducing their psychological stress [52]. This finding has dual theoretical implications. From the perspective of demand theory, it reflects that in the early stages of the development of formal care systems, people tend to choose services that compensate for the shortcomings of family caregiving. From the perspective of risk perception theory, this preference indicates that, under resource constraints, security guarantees hold a higher utility weight compared to other service attributes. This provides important insights into understanding the development paths of the care service market in transitional societies.

Thirdly, the impact of cost burden and institutional reputation reveals the development characteristics of the care service market. Despite economic growth, differences in household income and payment capacity remain significant [53, 54]. Cost considerations involve a trade-off between quality of life and long-term economic burdens [55]. The choice of institution reflects considerations of service standardization and accessibility, with national chain brands gaining trust through economies of scale and standardization, while local brands are favored for their flexibility and localized services. Interestingly, the study found that respondents had relatively low demands regarding the professional competence of nursing staff. This may be related to the actual needs and service positioning of home-based care services [56]. Home-based care services focus more on daily living and emotional support [57], tasks that typically do not require high levels of professional skills or the involvement of medical or nursing experts, but rather depend on the service attitude of caregivers and their ability to handle emergencies.

The study also found significant group differences. Unmarried individuals placed more emphasis on service attitude and institutional brand, which may stem from their relatively weaker family support network [58]. Their core needs are focused on basic services and emotional communication and service quality in care services [59, 60]. Similarly, individuals without children also exhibited a strong preference for these attributes, which may be explained by the absence of reciprocal caregiving relationships and emotional exchanges typically embedded in parent — child dynamics [61, 62]. Without the expectation of intergenerational support, they may rely more heavily on formal care to fulfill both practical assistance and a sense of emotional security. The impact of occupational characteristics reflects the moderating role of social security levels in service preferences [63–65]. Public sector employees, with more comprehensive security, focused more on cost-effectiveness, while other groups placed greater importance on service quality and institutional reliability. These heterogeneous findings not only support the moderating effect of informal caregiving networks on formal care demand in social support theory but also provide new evidence for the application of intergenerational relationship theory in care service choices. Specifically, the heightened emphasis on service attitude and institutional brand observed among both unmarried individuals and those without children reflects that, in the absence of strong family support networks, these groups are more reliant on formal care systems to fulfill both emotional needs and expectations for service reliability.

Strengths and implications

This study makes three important contributions to the field of health services research. Firstly, by focusing on the preferences of individuals aged 25 and above, it expands the application of life cycle theory in the study of care services. The research confirms that, as current or potential care decision-makers, this group takes both short-term needs and long-term planning into account when making choices. This dual perspective not only enriches our understanding of the mechanisms behind care decision-making but also provides valuable insights for predicting future care needs.

Secondly, this study enriches the observation boundaries of healthcare service utilization behavior theory by using DCE. Compared to traditional regression methods [66], DCE can more effectively simulate real decision-making scenarios, quantify the preference weights of key attributes, and capture individual heterogeneity in preferences [67]. The findings indicate that, in the context of developing countries, the choice of care services is influenced not only by traditional factors such as accessibility and affordability but also by the quality of service and institutional reputation. This multidimensional consideration mechanism provides a new perspective on understanding healthcare service utilization patterns in transitional societies.

Thirdly, the study supports the applicability of intergenerational relationship theory in care service choices. In particular, the high importance placed by unmarried individuals on service attitude and institutional brand reflects that, in the absence of a strong family support network, people are more reliant on formal care systems to provide emotional support and service guarantees. This finding not only validates the core assumptions of intergenerational relationship theory but also provides empirical evidence for understanding how care preferences are influenced by changes in family structure.

Policy implications

Based on the research findings, we propose the following policy recommendations to enhance the accessibility, quality, and equity of home-based care services.

Initially, there should be an emphasis on the training and evaluation of nursing staff's service attitude. Governments and service institutions could establish a systematic training system [39, 68], incorporate service attitude into performance evaluation indicators, and develop corresponding incentive mechanisms. Training programs should go beyond technical skills and include modules on empathy, respectful communication, cultural sensitivity, and emotional engagement. Performance evaluations should integrate feedback from both care recipients and their families to ensure multi-dimensional assessments of service attitude. Special attention should be given to enhancing the professional skills of nursing staff, particularly in handling sensitive issues and providing emotional support [48]. Targeted workshops, scenario-based simulations, and ongoing mentorship mechanisms can help build competencies in areas such as end-of-life conversations, mental health awareness, and conflict resolution, ultimately improving care experience and outcomes for vulnerable older adults.

Secondly, priority should be given to the development of emergency response and safety monitoring services. The government could support the popularization and maintenance of related facilities through subsidies and tax incentives [69, 70]. Subsidies can be allocated to support the purchase and installation of in-home emergency call systems, wearable health monitors, and sensor-based fall detection devices. At the same time, tax relief and innovation grants can be employed to encourage private-sector engagement in developing user-friendly, cost-effective smart monitoring solutions tailored to the needs of older adults. In parallel, technological innovation should also be promoted to improve the accessibility, adaptability, and affordability of such services. This includes expanding the integration of telecare platforms, AI-assisted alert systems, and remote care coordination tools into the basic service package, thereby enhancing

the safety of older adults living at home and reducing the caregiving burden on family members.

Thirdly, the subsidy policy for care costs needs to be improved. The study finds that cost burden remains a significant factor influencing service choice, and it is recommended to implement differentiated subsidies based on household economic conditions, care dependency level, and regional cost of living, to ensure that public resources are directed toward those with the greatest need [71], while exploring the complementary role of commercial insurance alongside social insurance. Additionally, the establishment of a long-term care fund [72] at the provincial or national level could offer additional support to economically disadvantaged families, especially in cases of catastrophic care needs or when informal care resources are insufficient.

Lastly, the standardization of service institutions should be promoted to ensure consistency and accountability across providers. It is suggested that a unified service quality assessment system be established to standardize care processes, staff qualifications, safety protocols, and user feedback mechanisms, thus enhancing transparency and comparability [73]. For different types of service institutions, differentiated regulatory policies could be formulated to ensure service quality while maintaining market diversity.

Limitations

This study has several limitations that should be acknowledged, as they may have implications for the interpretation of the findings. Firstly, the DCE method inherently limits the number of attributes that can be included in the choice sets to avoid cognitive overload among respondents. As a result, some potentially relevant attributes were not considered. The exclusion of these attributes may have constrained the comprehensiveness of the preference profiles and potentially underestimated the complexity of user decision-making in real-world care contexts. Secondly, data were collected through an online survey, which may introduce sampling bias. While efforts were made to ensure regional and demographic diversity, the sample may still underrepresent certain populations, such as older adults with limited internet access or rural residents with lower digital literacy. This bias may affect the generalizability of the results, particularly for populations who are most dependent on home-based care services. Thirdly, like all stated preference methods, DCE captures hypothetical choices, which may not fully reflect actual decision-making behaviors in real-world scenarios. The gap between stated and revealed preferences could be influenced by factors such as cost constraints, family opinions, or sudden changes in health conditions. As such, the external validity of the estimated WTP should be interpreted with caution.

Given these limitations, future research could explore several directions. Initially, combining DCE data with revealed preference data — such as administrative records or real service utilization data — could enhance the robustness of preference estimations. Besides, longitudinal studies are needed to track how individual preferences evolve over time, especially in the context of changing family structures, health conditions, and long-term care policy reforms. Moreover, expanding the sample size and geographic scope — particularly in underrepresented regions or among vulnerable groups — would improve representativeness and allow for more nuanced subgroup analyses. Finally, future research could further investigate intergenerational or cultural differences in care preferences, using mixed methods to enrich the interpretation of preference heterogeneity and its underlying motivations.

Conclusions

This study used a DCE to analyze the preferences of Chinese residents aged 25 and above regarding home-based care services. The findings indicated that the choice of home-based care services was primarily influenced by the service attitude of nursing staff, and this influence was empirically validated through the DCE. Service attitude and emergency response and safety monitoring emerged as key factors driving care service choices. Specifically, the service attitude of nursing staff was the most important attribute influencing residents' choices, with respondents showing the highest willingness to pay for good service attitude. The predictive power of service attitude on choice behavior was indirectly confirmed by respondents' emphasis on service experience and emotional support. Additionally, marital status and socioeconomic status played a significant moderating role in the formation of home-based care preferences. The study found that both unmarried individuals and those without children exhibited stronger preferences for service attitude and institutional brand, with this difference being particularly pronounced among non-public sector employees. These findings provide important theoretical and empirical support for understanding the mechanisms behind the formation of care service preferences, especially in a rapidly aging transitional society. Future policy interventions should prioritize the development of nursing staff's capabilities while accelerating the popularization of emergency response and safety monitoring services. Such targeted policy support is crucial for improving the quality of home-based care services, particularly in helping the most vulnerable groups access the necessary care.

Abbreviations
DCEs   Discrete choice experiments
LTCI   Long-term care insurance
AIC   Akaike Information Criterion
BIC   Bayesian Information Criterion
mWTP   Marginal willingness to pay

Supplementary Information

Declarations

Ethics approval and consent to participate
Approval was exempted from the ethics committee of Nanjing University of Chinese Medicine. The study meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The procedures used in this study adhere to the tents of the declaration of Helsinki.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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