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Empirical Research on the Life Satisfaction and Influencing Factors of Users of Community-Embedded Elderly Care Facilities

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Abstract: Amid global and China's accelerating aging, the demand for elderly care services is urgent. The "aging in place" concept encourages community-embedded elderly care facilities (CEECFs), and China has launched a pilot project. But there is limited empirical research on the correlations among users, staff, living space, life satisfaction (LS), and influencing factors. This study focuses on Tianjin's community-embedded elderly care facility users. Data were collected via questionnaires, interviews, and field measurements. SPSS 26.0 and SEM 24.0 were used to analyze and build models. The research results clarify the current situation of user LS, as well as the characteristics of users, staff, and living spaces in CEECFs. It was confirmed that there are significant correlations between user LS and the characteristics of users, staff, and living spaces. A structural equation model of user LS and its influencing factors was constructed. Social relationship satisfaction and living environment satisfaction are the main determinants of user LS. Based on these results, we propose an optimization strategy to enhance the space design and services of these facilities, aiming to improve the LS of facility users and thus promote the development of healthy aging.

Keywords: community-embedded elderly care facilities; registered users; life satisfaction; key factor analysis

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1. Introduction

Healthy aging has become a crucial global issue [1–3] as the aging process is accelerating, and the elderly population will exceed 1.6 billion by 2050 [4]. In China, a populous country with "deep aging", the demand for elderly care services is urgent [5,6]. Against this background, the concept of "aging in place" has gained attention [7]. It emphasizes the mental and physical health benefits of aging in familiar environments, providing theoretical support for the development of community-embedded elderly care facilities (CEECFs). This model combines daycare, residential care, and home-based care in communities to help the elderly live independently and improve their quality of life [8]. In 2023, the Chinese government piloted the development of these facilities in about 50 cities, seeing them as an important part of the elderly care system [9]. This type of facility has received a great deal of attention from the government and society as an emerging elderly care facility, and the experience gained through the pilot study can provide a basis for subsequent wider promotion or policy adjustments.

Life satisfaction (LS) is a key indicator of the elderly's quality of life. It is usually measured by tools like the Satisfaction with Life Scale (SWLS), which is important for promoting healthy aging [10,11]. Research on the elderly's LS is attracting more attention,

especially across different care models, such as institutional [12,13], home-based [14,15], and community care [16,17]. However, CEECFs, a new model, have only been widely implemented recently. Existing studies show the need to find ways to meet various elderly care needs and provide effective services [18]. Meeting the elderly's basic needs should be the top priority in promoting this model [19]. But research on satisfaction with these facilities is still limited, especially regarding the relationships between user characteristics, staff characteristics, living space characteristics, and LS. Empirical and structural studies on these factors are scarce [20,21].

This study focuses on Tianjin, a city with high-level aging, heavy urban social care burdens, and serious elderly care challenges. It empirically studies the LS of residents in CEECFs. The key is to explore the relationships between user characteristics, staff characteristics, living space characteristics, and LS and identify influencing factors. This study not only supplements the shortcomings of the current community-embedded elderly care model in the research of user LS but also provides reliable theoretical support and practical suggestions for policymakers and design practitioners and provides practical references for the construction of an elderly care service system in an aging society.

This paper makes the following main contributions:

- It clarifies the LS of users of community-embedded elderly care service facilities, as well as the characteristics of users, staff, and living spaces.
- It confirms a significant correlation between user LS and the characteristics of users, staff, and living spaces.
- It constructs a model of structural equations of user satisfaction with life and its influencing factors.
- Based on these findings, optimization strategies are proposed to improve facility space and service design, improving user LS.

2. Related Works

This section presents a literature review of the influencing factors related to LS, as well as a review of studies related to community-embedded elderly care, aiming to construct a link between LS and satisfaction with the living environment, health status, social relationships, and pace of life and identifying items related to LS (Table 1).

2.1. Research on LS Impact

In the context of various factors influencing LS, satisfaction with the living environment of elderly care facilities significantly impacts users' overall LS [22,23]. Surveys indicate that improvements are necessary in the size of bedrooms, toilets, and bathrooms. Cleanliness and lighting should also be prioritized in both indoor and outdoor living spaces. Additionally, enhancing accessibility to internal facilities is essential for optimizing user experience. The surrounding environment and housing layout can further influence users' mood, potentially diminishing satisfaction with the provided services and facilities [23,24]. Access to outdoor spaces is particularly crucial, as exposure to nature and outdoor environments has been shown to promote comfort and well-being [25–27].

Beyond the living environment, health status and psychological conditions, including anxiety and depression, are also key determinants of LS [28–31]. Furthermore, findings suggest that sleep quality has a positive correlation with LS, with health status serving as a mediating factor [32].

Table 1. Four dimensions and sixteen items related to LS in related works (summary of research on the impact of LS).

	Living Environment Satisfaction						Health Status Satisfaction				Social Relationship Satisfaction				Life-Rhythm Satisfaction	
	Daily Life Space	Accessi Bility	Lighting and Ventilation	Outdoor Activities	Toilet and Bathroom	Medical Rehabilitation Equipment	Self-Evaluated Health Status	Physical Health Status	Mental Health Status	Sleep	With Family	With Other Users	With Staff	Social Activities	Quality of Service	Activity Status
Sa, Young-Haw et al. [22]	◯					◯			△							
Noor Rosly Hanif et al. [23]	◯	◯	◯		◯											
Anna Bengtsson et al. [24]				◯												
Junko SATO et al. [25]				◯												
Sor Tho Ng et al. [26]							△	△	△							
Artur Ziółkowski et al. [27]							△	△	△							
Andrew Steptoe [28]							△	△								
Soonyoung Park et al. [29]							△	△	△		□					
Zhu, Change et al. [30]										△						
Pan, Y. et al. [31]												□		□		
Kim, Myeong-Su et al. [32]											□					▲
Xuan Chen et al. [33]											□					
Aygül YANIK et al. [34]													□	□		▲
Tey, N.P et al. [35]															▲	▲

Note: ◯ Research on the satisfaction of living environment; △ Research on health status satisfaction; □ Research on social relationship satisfaction; ▲ Research on life-rhythm satisfaction.

Moreover, social relationships play a fundamental role in determining LS. A strong sense of friendship and a supportive social network significantly contribute to user well-being [33]. The frequency of contact with family and friends, along with family support, is also critical [21,34,35]. Moreover, relationships with other residents and staff members exert a substantial influence on LS, underscoring the importance of positive interpersonal interactions within elderly care facilities [36].

In addition, LS varies based on participants' daily activities, willingness to engage in such activities, and overall satisfaction with the nursing home environment [36]. Both productive and consumptive recreational activities have been found to positively affect LS [34]. Leisure activities, service quality, and the structure of daily routines further highlight that enhancing the quality of services and activities can improve the LS of nursing home residents [37,38].

2.2. Research on Community-Embedded Elderly Care

Most of the current research on CEECFs focuses on the exploration of the needs of those who utilize the facilities and service optimization strategies. Some scholars have utilized the KANO demand model for assessment and found that the demand for healthcare-type service items is high [39,40]. Some scholars refer to the experience of Japan's elderly care service model to put forward optimization ideas for developing China's community-embedded elderly care model [41,42], and some scholars analyze the model in the four dimensions of strengths, weaknesses, opportunities, and threats [43,44] through SWOT analysis. Other scholars have used the SERVQUAL scale to study the LS of facility users at three levels—government, community, and individual—and found that the degree of policy support, informational facilities, the content of services and professionalism, the degree of disability of the elderly, the level of literacy, and the level of old-age pensions are elements affecting LS [18].

In summary, despite the contributions of previous studies, no single study has comprehensively addressed the complex interplay of factors influencing user LS. Prior research has predominantly focused on specific aspects, often neglecting the interactions and synergistic effects among various determinants. Meanwhile, research on community-based embedded elderly care service organizations in China is still in the preliminary stage [45,46], most of which focus on the development of elderly care services [47], mostly descriptive studies, lacking quantitative analysis and empirical studies using statistical methods [48]. Moreover, the exploration and implementation of community-scale embedded elderly care in large cities has better demonstration significance [49]. This study is the first to conduct a comprehensive analysis of CEECFs. This research integrates the major factors affecting LS and employs SEM to evaluate their impact. Through this approach, we identify the key priority areas for facility development, which is crucial for the advancement of community-embedded elderly care services. By addressing existing research gaps, this study provides a novel and comprehensive perspective on this field.

3. Materials and Methods

3.1. Research Area

This study focuses on six central urban districts in Tianjin: Heping, Hedong, Hexi, Nankai, Hebei, and Hongqiao. According to data from the seventh national census in 2020, 21.7% of Tianjin's population was aged 60 or above, ranking fifth among large and medium-sized cities in China in terms of aging [50]. The central city covers only 178.7 km^2 (1.5% of the city's total area), and, as shown in Table 1, the proportion of the elderly population in all districts in the center of Tianjin exceeds the city average, and the average proportion of elderly people in the six districts in the center of the city is 28.12%, which is significantly

higher than the average aging rate of the other districts in the city [50,51] (Table 2). Based on the characteristics of the large and concentrated elderly population in the center of Tianjin, this study focused on these six districts (Figure 1).

Table 2. Data of elderly population in Tianjin [50,51].

	Region	Population (Persons)	Percentage of Population Aged 60 (%)	Average Aging Rate (%)
	Tianjin	13,866,009	21.66	21.66 (±0)
Six central urban districts	Heping	355,000	22.11	28.12 (+6.46)
	Hedong	858,787	28.84	
	Hexi	822,174	28.00	
	Nankai	890,422	28.07	
	Hebei	647,702	30.98	
	Hongqiao	483,130	30.73	
Surrounding 4 districts	Dongli	857,027	18.31	19.42 (−2.24)
	Xiqing	1,195,124	16.47	
	Jinnan	928,066	15.90	
	Beichen	909,643	20.53	
Suburban 5 districts	Wuqing	1,151,313	19.86	21.53 (−0.13)
	Baodi	722,367	21.96	
	Ninghe	395,314	22.58	
	Jingha	787,106	18.66	
	Jingha	795,516	22.78	
Binhai New District		2,067,318	17.15	17.15 (−4.51)

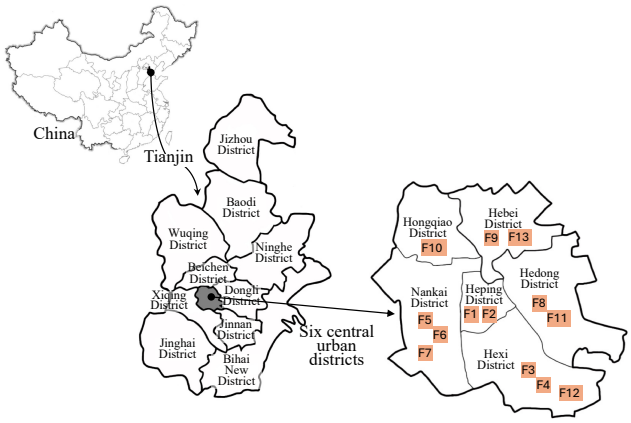

Figure 1. Research area. The map includes a map of Tianjin, one of the four municipalities directly under the central government in China, and a map of Heping, Hedong, Hexi, Nankai, Hebei, and Hongqiao, six districts in Tianjin, with CEECFs in the six districts as the target respondents. The location of the facility is shown for the six districts of the city, as indicated by orange squares. (Image source: drawn by the author).

Between January 2019 and July 2021, the Tianjin Civil Affairs Bureau registered 134 community-based elderly care facilities [52]. This study examines CEECFs, which provide a range of services, including full-day care, daycare, home-based care, meal assistance, intelligent elderly care, medical services, long-term care, and family care bed services. These facilities typically cover an area of 500–1000 m^2, accommodate at least 10 beds, and feature full-day care areas, daycare spaces, and multifunctional zones to meet daily living needs [53].

This study investigates the key factors affecting users' LS by analyzing the characteristics of users, staff, and the spatial environment. To understand comprehensively, data

were collected through surveys, interviews, and field measurements. Pearson's correlation analysis was conducted using SPSS to discover variable relationships, and structural equation modeling (SEM) was used to reveal key influences and their interactions.The specific research framework is shown in Figure 2. As shown in Table 1, this study synthesized 14 existing related studies [22–38] to identify items related to satisfaction. The related studies were divided into four main dimensions, and these were subdivided into sixteen items. Therefore, after referencing, this study identified the survey items (L1–11, H1–4, S1–5, R1–7) to be analyzed according to the above four dimensions to explore user satisfaction and its influencing factors in CEECFs (Table 3).

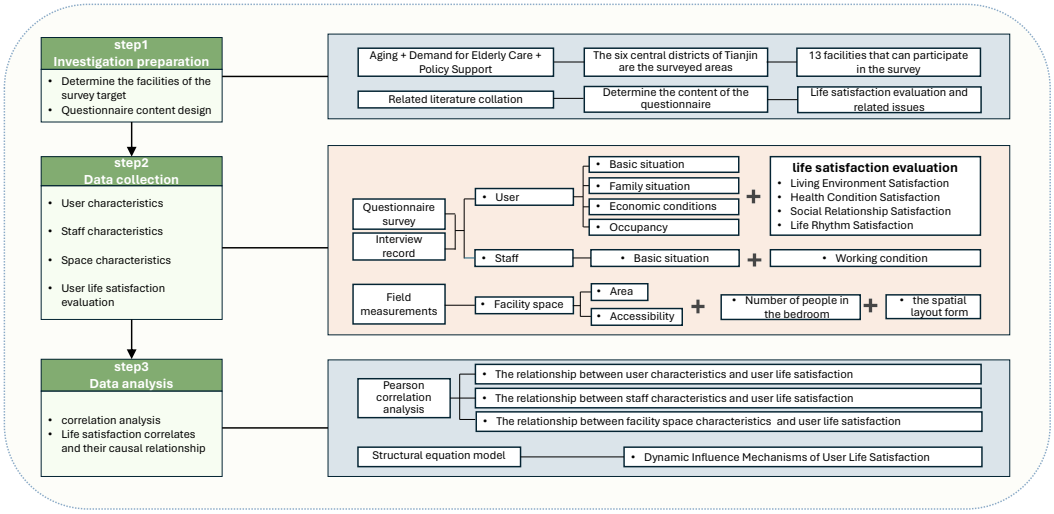

Figure 2. Research framework. This figure covers the steps, methodology, and specifics of the study. (Image source: drawn by the author).

The research objectives are as follows (Figure 3):

1. Identify user characteristics, staff characteristics, and living space characteristics affecting LS.
2. Analyze the relationships among these characteristics and LS.
3. Validate the correlates of LS and the structural relationships among them using exploratory factor analysis and structural equation modeling (SEM).

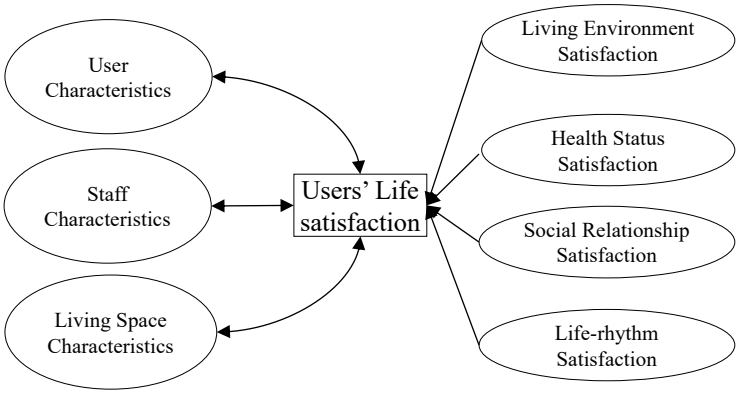

Figure 3. Setting up the structure of LS-related items. This figure mainly illustrates that the study consists of 2 parts: a. correlation study of users, staff, living space characteristics and users' LS; b. analysis of factors influencing LS (image source: drawn by the author).

Table 3. Items related to LS (summary of research on the impact of LS [22–38]).

	Survey Items
Living Environment Satisfaction	L1. Comfort and spaciousness of the shared activity space L2. Comfort and spaciousness of the bedroom L3. The quietness of the bedroom L4. Ease of access from the bedroom to the LD (living/dining room) L5. Diversity of room choices for shared activity space L6. Satisfaction with lighting and ventilation L7. Ease of use and spaciousness of outdoor activities L8. Cleanliness of the living environment L9. Ease of use and spaciousness of toilets and bathrooms L10.Ease of use of barrier-free facilities L11.Ease of use of medical rehabilitation equipment
Health Status Satisfaction	H1. Changes in health status after moving H2. Frequency of body pain H3. Frequency of stress H4. Sleep status
Social Relationship Satisfaction	S1. Family Relationship Status S2. Relationship status with other users S3. Relationship status with staff S4. Frequency of use of shared activity spaces S5. Participation in social activities
Life-rhythm Satisfaction	R1. Timeliness of needs being met R2. Expertise in receiving services R3. Satisfaction with the response to the sudden situation R4. Satisfaction with the implementation of care type activities R5. Satisfaction with the implementation of health type activities R6. Satisfaction with the implementation of leisure type activities R7. Satisfaction with the implementation status of free activity type activities

3.2. Procedures and Data Collection

The sample selection was based on a random sample of 30 community-embedded elderly care facilities that opened between January 2019 and July 2021. Initial contact was made via telephone, and facilities that could not be reached or declined to participate were excluded. Among them, 13 facilities agreed to participate, each with an occupancy rate exceeding 50%, ensuring a sufficient sample size. Therefore, the study focused on these 13 facilities and their residents. The total occupancy across these facilities was 231 residents, with an actual resident count of 196, leading to the distribution of 196 questionnaires. Since the study required respondents to provide clear self-assessments, 31 residents requiring Level 4 or 5 care were excluded. Additionally, 7 residents declined to participate. Ultimately, 158 valid responses (80.6%) were included in the analysis. For users physically unable to complete the questionnaire independently, responses were recorded through interviews conducted by the investigator. Regarding staff, questionnaires were distributed sequentially to all staff at the 13 facilities based on their working hours. A total of 84 staff members participated, resulting in a 100% response rate (Table 4). The questionnaire survey was conducted with the prior consent of the respondents. Questionnaires were distributed within the facilities, completed on-site, collected locally, and subsequently entered and recorded systematically.

Table 4. Survey sample summary.

Facility Number	Number of Beds	Number of Resident Users	Participants (%)	Number of Staff	Participants (%)
1	22	20	18	9	9
2	12 + 2	10	7	6	6
3	12 + 2	12	10	7	7
4	13	11	11	6	8
5	12	11	7	5	5
6	24	21	18	8	8
7	27 + 2	23	18	9	9
8	23 + 2	16	14	8	8
9	17	14	12	5	5
10	10 + 2	8	6	4	4
11	30	24	19	6	6
12	15	13	10	5	5
13	14	13	8	6	6
Total	231 + 10	196	158 (80.6%)	84	84 (100%)

Note: number of beds: resident beds + day care beds

As shown in Table 5, we collected data through surveys, interviews, and on-site measurements. Questionnaires for residents and staff covered demographics, LS, and work status. Face-to-face interviews provided details not in the questionnaires. Professional tools and techniques measured living space characteristics.

Table 5. Survey summary.

	Survey of Residents
Content (Questions)	User characteristics survey: age, gender, level of care, marital status, child status, income status, usage time, willingness to stay. LS survey: Table 1 presents 27 questions related to four dimensions—life satisfaction, health satisfaction, social relationship satisfaction, and life rhythm satisfaction—as well as overall life satisfaction.
Method	Surveys, interviews
	Survey of Staff
Content (Questions)	Staff characteristics survey: age, gender, household registration, qualification certificate, training participation status, working years
Method	Surveys
	Survey of Facilities
Content (Questions)	Data on the built environment of the 13 facilities: per capita shared-space area, per capita bedroom area, number of people in the bedroom, the positional relationship between the bedroom and LD, the distance between the bedroom door and LD, the space layout form, bedroom window status, LD window status, the number of available shared-space rooms, outdoor space status, bedroom toilet status
Method	Field measurements

3.3. Data Analysis

IBM SPSS 26.0 and AMOS 24.0 were used for data analysis, including path diagram modeling, correlation analysis, and SEM. The reliability of the questionnaire was assessed using Cronbach's α coefficient, with values greater than 0.7 considered acceptable [54]. Exploratory factor analysis was conducted to validate the structural integrity of the questionnaire. The Kaiser–Meyer–Olkin (KMO) measure exceeded 0.5, and the Bartlett's test of sphericity yielded a significance level of $p < 0.05$, indicating satisfactory construct validity [55]. The questionnaire demonstrated good internal consistency and structural validity, confirming the reliability of the data (Tables 6 and 7). Pearson correlation analysis was performed to examine the relationships between continuous variables and measure their linear associations, including correlation coefficients and significance levels [56]. The study

analyzed the relationships between user characteristics, staff characteristics, facility living space characteristics, and LS [57].

Table 6. Reliability statistics.

Cronbach's α	N of Items
0.949	27

Table 7. KMO and Bartlett's test.

KMO		0.919
Bartlett's Test of Sphericity	Approx. Chi-Square	3739.333
	df	351
	sig.	0.000

To further investigate the causal relationships among these factors, SEM was employed. As a statistical method for examining variable relationships, SEM is widely used to assess causal links between latent variables [58]. Composite reliability (CR) was used to evaluate internal consistency, while average variance extracted (AVE) was used to assess convergent validity [59]. This model was applied to validate the dynamic influence mechanisms affecting LS among users of CEECFs.

4. Results

4.1. Descriptive Statistical Analysis of Data Sets

The descriptive characteristics of users were obtained from the questionnaire, as presented in Table 8. Men accounted for 43.2% and women for 56.8%. The age was concentrated in the 80–89-year-old group (61.9%). In terms of the nursing level, level 2 accounted for 45.8% (the highest proportion). Regarding marital status, 76.1% were married but living alone. Most users had more than two children, and the monthly income was mainly CNY 3000–5000 (58.7%). Most residents had stayed for 2–3 years (32.9%), and 63.2% made the decision to stay with their families.

The descriptive characteristics of the staff were derived from the questionnaire and interviews, as shown in Table 9. Men accounted for 23.8% and women for 76.2%. The age was mainly concentrated in the 40–59-year-old group (79.8%), with an average age of 47.5 years. Regarding educational qualifications, junior high school graduates accounted for 45.2%. In terms of household registration, 64.3% of the staff were non-Tianjin residents. More than 50% had qualification certificates and training experience. Over 50% had more than 5 years of work experience.

The characteristics of the facility space were obtained from the field survey, as shown in Table 10. The building area ranged from 220 to 699 m^2. There were five first-floor composite buildings, two first-floor independent buildings, five second-floor composite buildings, and one second-floor independent building. The per-capita shared activity space area was 2.1–11.8 m^2, and the per-capita living area was 6.1–13.2 m^2. The number of rooms for shared activity space was 3–12. There were nine windowed LD rooms, three non-windowed LD rooms, and one facility with both windowed and non-windowed LD rooms. Three facilities had outdoor activity space.

Figure 4 shows the users' LS. In terms of personal attributes, men's satisfaction was generally lower than women's. The 80–90-year-old group had higher satisfaction, while those with nursing level 3 had lower satisfaction. Analyzing family conditions, married users living together most often had a satisfaction score of 3 points, while married but living-alone users mostly scored 3–4 points, and unmarried users had lower satisfaction. Most

childless users had a satisfaction score of only 2 points. Considering economic situation, users with an income of less than CNY 3000 had low satisfaction, while most users with an income of more than CNY 5000 were relatively satisfied. Regarding occupancy, users whose stay was decided solely by their families had lower LS, while those who made the decision together with their families reported higher satisfaction. Most users who had moved in for less than 2 years had low LS.

Table 8. User characteristics (N = 158).

		Frequency	**Percentage%**
Gender	Male	67	43.2
	Female	88	56.8
Age	60–69	5	3.2
	70–79	38	24.5
	80–89	99	62.7
	90–	16	10.3
Degree of nursing care	Support 2	2	1.3
	Nursing care 1	39	24.7
	Nursing care 2	74	46.8
	Nursing care 3	30	27.2
Marriage status	Married (couple)	30	19.0
	Married (now living alone)	121	76.6
	Unmarried	7	4.4
Child status	None	8	5.1
	1	8	5.1
	2	73	46.2
	3	51	32.3
	More than 4	18	11.4
Income status	–3000	2	1.3
	3001–5000	94	59.5
	5001–8000	49	31.0
	More than 8001	13	8.2
Usage time	Less than 1 year	28	17.7
	1–2 years	47	29.7
	2–3 years	51	32.3
	3–4 years	25	15.8
	More than 4 years	7	4.4
Willingness to stay	Self-determination	12	7.6
	Decision with family	98	62.0
	Decision by family	48	30.4

Table 9. Staff characteristics (N = 84).

		Frequency	Percentage%
Gender	Male	20	23.8
	Female	62	76.2
Age	20–	5	6.0
	30–	8	9.5
	40–	33	39.3
	50–	34	40.5
	60–	4	4.8
Education	Elementary school	11	13.1
	Junior High School	38	45.2
	High school (vocational school)	22	26.2
	University	13	15.5
Household registration	Local residents	30	35.7
	Non-local residents	54	64.3
Qualification certificate	Have	52	61.9
	Do not have	32	38.1
Training status	Participation	46	54.8
	Non-participation	38	45.2
Average length of service	Less than 1 year	5	6.0
	1–3 years	18	21.4
	3–5 years	18	21.4
	More than 5 years	43	51.2

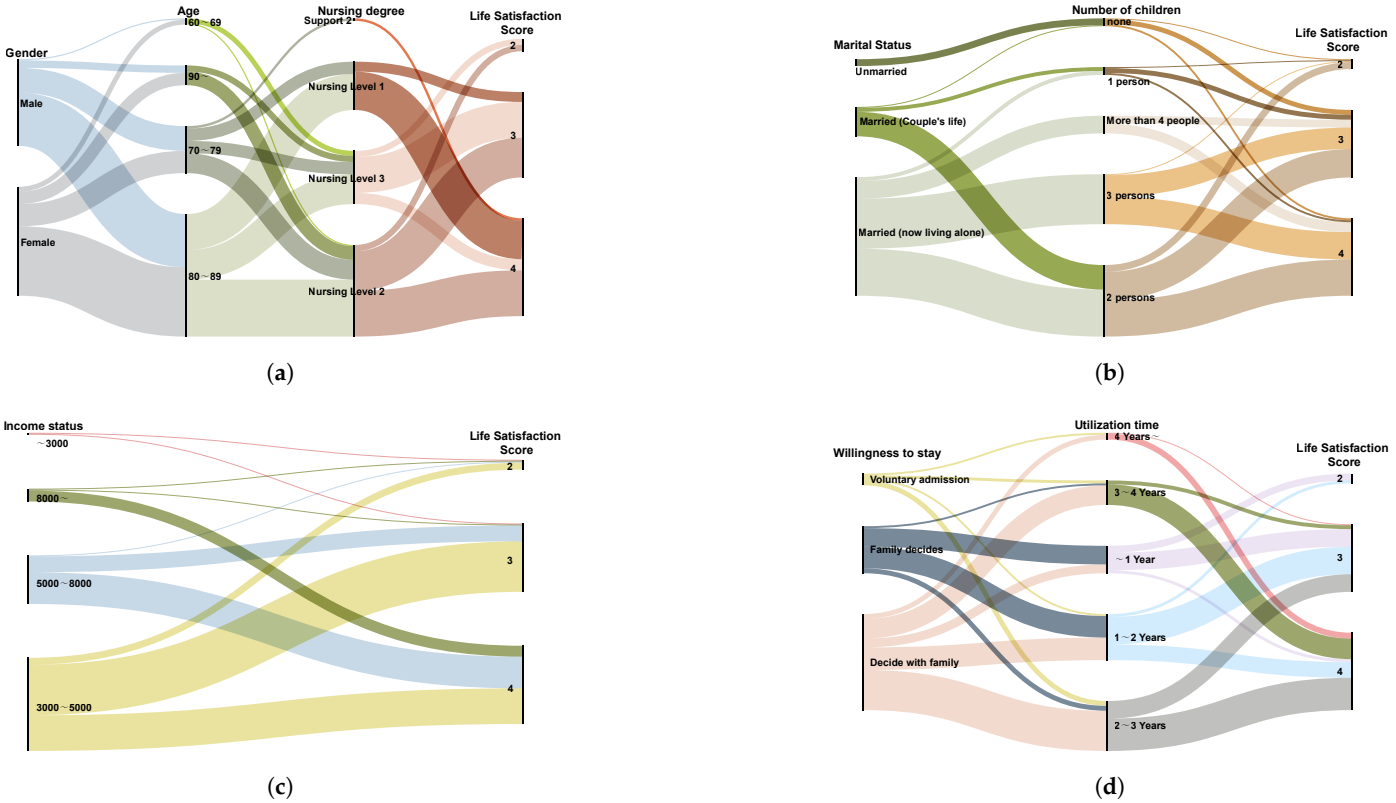

Figure 4. Status of LS: (**a**) status of user LS based on different demographic characteristics; (**b**) status of LS of users with different family characteristics; (**c**) status of LS of users with different income characteristics; (**d**) status of LS of users in different occupancy situations the width of the line in the figure represents the number of samples, and the same color represents a sample with simultaneous attributes. From the figure, the LS of each attribute can be clearly seen.

Table 10. Living space characteristics (N = 13).

No	Floor Area	Architectural Form	Shared-Space Area/Person	Bedroom Area/Person	The Number of Rooms for Shared Space	LD Windows	Outdoor Space
1	585 m^2	second-floor independent	9.0 m^2	7.2 m^2	12	◯×	◯
2	298 m^2	first-floor composite	6.6 m^2	7.5 m^2	6	×	×
3	597 m^2	second-floor composite	11.8 m^2	13.2 m^2	9	◯	×
4	630 m^2	second-floor composite	7.1 m^2	12.1 m^2	3	×	×
5	220 m^2	first-floor independent	2.1 m^2	9.7 m^2	3	◯	×
6	699 m^2	second-floor composite	10.5 m^2	9.4 m^2	5	◯	×
7	618 m^2	second-floor composite	9.5 m^2	8.6 m^2	9	◯	◯
8	547 m^2	first-floor composite	9.1 m^2	8.0 m^2	6	◯	×
9	309 m^2	first-floor independent	7.1 m^2	7.0 m^2	4	◯	◯
10	296 m^2	first-floor composite	9.7 m^2	9.4 m^2	4	◯	×
11	430 m^2	first-floor composite	5.2 m^2	6.1 m^2	6	◯	×
12	276 m^2	first-floor composite	5.1 m^2	6.3 m^2	3	×	×
13	228 m^2	second-floor composite	9.1 m^2	7.1 m^2	8	◯	×

◯ Yes, × No.

4.2. Correlation Analysis

The preliminary correlation analysis visually presents the associations between user characteristics, staff characteristics, living space characteristics, and LS. As shown in Figure 5, darker colors represent stronger correlations, with yellow indicating positive correlations and blue indicating negative correlations.

- User characteristics: income status (0.59) and usage time (0.84) showed a strong positive correlation with LS, while level of care (−0.63) was strongly negatively correlated. Age (0.36), child status (0.31), willingness to stay (0.36), and LS showed a moderate positive correlation. Marital status (−0.29) showed a slight correlation. Interestingly, no correlation was found at all between gender and LS.
- Staff characteristics: The retention rate of qualification certificates (0.56) shows a strong positive correlation with LS, and the percentage of household registration in Tianjin (−0.56) shows a strong negative correlation. The average age of staff (−0.19) shows a slight negative correlation with LS, and the proportion of male staff (0.19), percentage of participation in training (0.16), and the average working years (0.21) show a slight positive correlation.
- Living space characteristics:The bedroom window status (−0.51) and outdoor space status (−0.65) showed a strong negative correlation with LS, indicating that a lack of windows in a bedroom and a lack of outdoor space in the facility would greatly reduce the LS of the users. The positional relationship between the bedroom and LD (−0.38), bedroom toilet status (−0.37), the number of available shared-space rooms (0.42), and LS showed moderate correlations. A slight correlation was presented between the per capita shared-space area (0.26), the per capita bedroom area (0.26), the number of people in the bedroom (−0.14), and LS.The correlation between the distance between the bedroom door and LD (−0.01), the space layout form (−0.05), LD window status (0.03), and LS were very low.

4.3. Structural Model

Based on the preliminary results of Pearson's correlation analysis, SEM was employed to delve deeper into the relationships between variables. SEM was employed to examine the underlying structure of factors influencing LS. The principal component rotation method was used, assuming correlations among factors. Factors were selected based on an initial eigenvalue greater than 1 and a factor loading above 0.60, resulting in four primary factors (Table 11):

- Factor 1 consisted of four factors (L2, L4, L6, L9) related to living environment satisfaction;
- Factor 2 consisted of three factors (H2, H3, H4) related to health status satisfaction;
- Factor 3 consisted of four factors (S1, S2, S3, S5) related to social relationship satisfaction;
- Factor 4 consisted of three factors (R1, R4, R5) related to life-rhythm satisfaction.

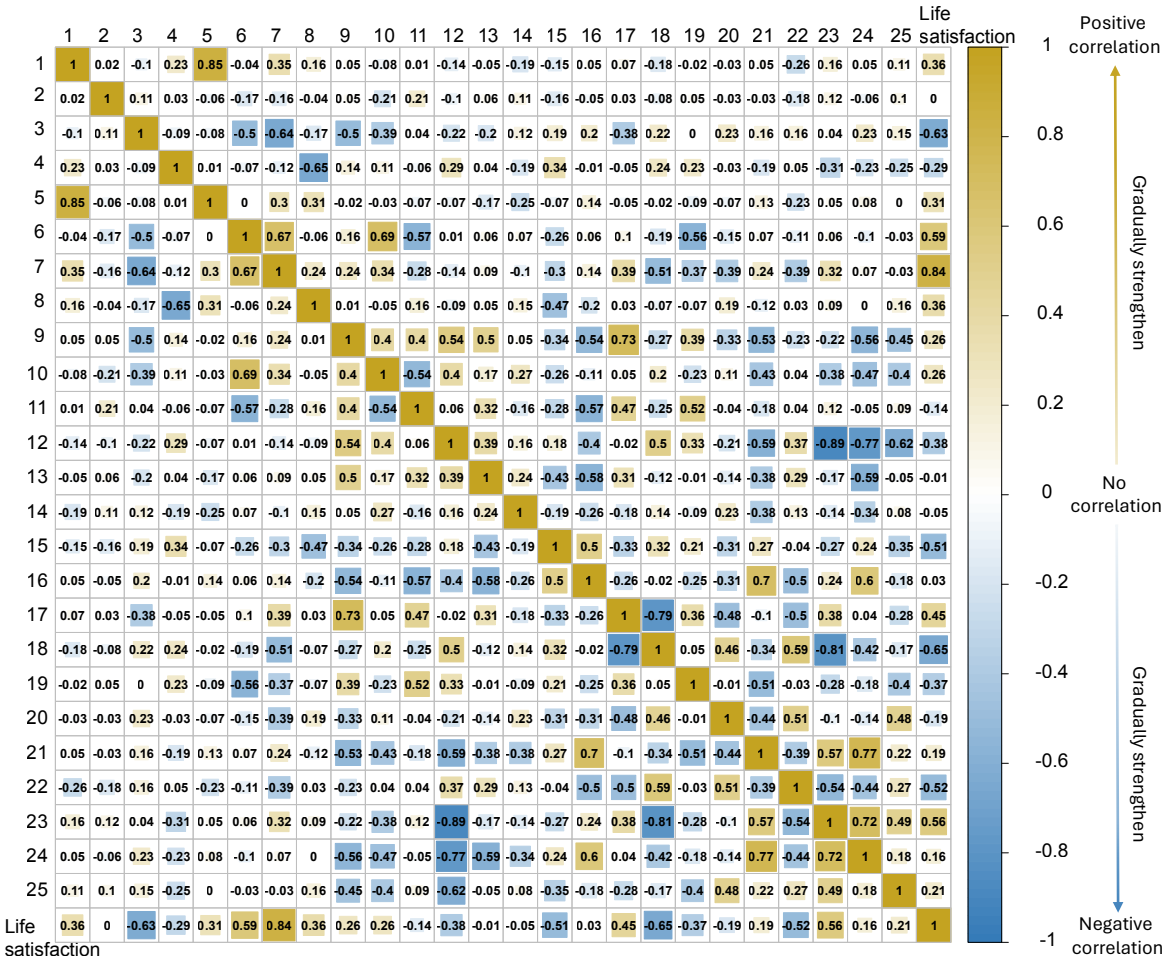

Figure 5. Correlation analysis of user characteristics, staff characteristics, living space characteristics, and user LS. The numbers in this figure are survey items for users, staff, and living spaces. The numbers in the figure indicate (1) age, (2) gender, (3) level of care, (4) marital status, (5) child status, (6) income status, (7) usage time, (8) willingness to stay, (9) per capita shared-space area, (10) per capita bedroom area, (11) number of people in the bedroom, (12) the positional relationship between the bedroom and LD, (13) the distance between the bedroom door and LD, (14) the space layout form, (15) bedroom window status, (16) LD window status, (17) the number of available shared-space rooms, (18) outdoor spaces status, (19) bedroom toilet status, (20) average age of staff, (21) proportion of male staff, (22) percentage of household registration in Tianjin, (23) percentage of certificates of eligibility, (24) percentage of participation in training, and (25) average working years (image source: drawn by the author).

The internal consistency of each factor's sub-scale was confirmed through the Cronbach α coefficient. The values were as follows: living environment satisfaction (0.890), health status satisfaction (0.852), social relationship satisfaction (0.911), and life-rhythm satisfaction (0.871). All Cronbach α coefficients exceeded 0.8, indicating high data reliability for further analysis.

Table 11. Factor analysis.

	Factor 1	Factor 2	Factor 3	Factor 4	Cronbach's Alpha Coefficient
L9	0.865				0.890
L2	0.859				
L6	0.859				
L4	0.743				
H2		0.853			0.852
H4		0.801			
H3		0.780			
S2			0.853		0.911
S3			0.812		
S1			0.810		
S5			0.760		
R4				0.877	0.871
R1				0.844	
R5				0.810	

Maximum likelihood method; Promax rotation.

Based on the factor measurement model from exploratory factor analysis, confirmatory factor analysis was conducted to validate the model's robustness. As shown in Table 12, convergent validity was confirmed through composite reliability (CR) and average variance extracted (AVE). According to Bagozzi and Yi (1988), the CR should exceed 0.6, and the AVE should exceed 0.5 [60]. These criteria were met, confirming the model's convergent validity.

Table 12. Model AVE and CR indicator results.

	Mean Variance Extracted AVE Value	Composite Reliability CR
Factor 1	0.677	0.893
Factor 2	0.664	0.855
Factor 3	0.742	0.919
Factor 4	0.706	0.877

A structural equation analysis was performed to investigate the relationships among users' LS and its influencing factors. The model fit results are presented in Table 13. The fit indices were CFI = 0.955, RMR = 0.029, GFI = 0.865, NFI = 0.921, and TLI = 0.942, all within acceptable ranges, indicating a well-fitting model. (Table 14) presents the hypothesis assessment results.

Table 13. Model fitting result.

Index Name	Meaning	Value	Standard	Result
CMIN/df	Chi-square degree of freedom ratio	2.174	<3.0	Acceptable
CFI	Comparative fit index	0.955	>0.9	Acceptable
RMR	Root mean square residual	0.029	<0.1	Acceptable
GFI	Goodness of fit index	0.865	>0.8	Acceptable
NFI	Normative fit index	0.921	>0.9	Acceptable
TLI	Tucker–Lewis index	0.942	>0.9	Acceptable

As shown in Figure 6, the factors affecting users' LS were analyzed. The key influencing factors of users' LS were social relationship satisfaction (path coefficient 0.37), living environment satisfaction (path coefficient 0.35), health status satisfaction (path coefficient 0.30), and life-rhythm satisfaction (path coefficient 0.26), all having a significant positive impact on LS. There was a significant positive correlation between these four latent variables, especially between health status satisfaction and social relationship satisfaction

(path coefficient 0.67) and life-rhythm satisfaction (path coefficient 0.50). In addition, there were significant positive correlations between living environment satisfaction and social relationship satisfaction (path coefficient 0.54) and between social relationship satisfaction and life-rhythm satisfaction (path coefficient 0.50).

Table 14. Hypothesis assessment of the impact path of LS.

Variable Relationship	Value	*p* Value	Test Result
LS<—LE	0.283	***	Acceptable
LS<—SR	0.325	***	Acceptable
LS<—LR	0.244	***	Acceptable
LS<—HS	0.272	***	Acceptable
LE<–>HS	0.134	***	Acceptable
LE<–>SR	0.221	***	Acceptable
LE<–>LR	0.158	***	Acceptable
HS<–>SR	0.245	***	Acceptable
HS<–>LR	0.189	***	Acceptable
SR<–>LR	0.179	***	Acceptable

*** represents *p* value < 0.001. Explanation of abbreviations in the table. (LS, LE) living environment satisfaction; (HS) health status satisfaction; (LR) life-rhythm satisfaction.

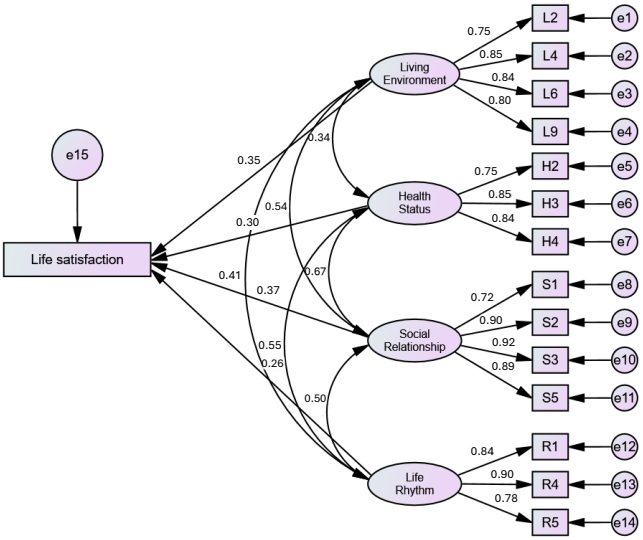

Figure 6. Structural equation model of LS and influencing factors. (Image source: drawn by the author).

The main factors influencing each latent variable were as follows:

- Living environment satisfaction was affected by ease of access from the bedroom to the LD (L4: 0.85), satisfaction with lighting and ventilation (L6: 0.84), ease of use and spaciousness of toilets and bathrooms (L9: 0.80), and comfort and spaciousness of the bedroom (L2: 0.75).
- Health status satisfaction was affected by frequency of stress (H3: 0.85), sleep quality (H4: 0.84), and frequency of body pain (H2: 0.72).
- Social relationship satisfaction was mainly influenced by relationship status with staff (S3: 0.92), relationship status with other users (S2: 0.90), participation in social activities (S5: 0.89), and family relationship status (S1: 0.72).
- Life-rhythm satisfaction was affected by satisfaction with the implementation of care-type activities (R4: 0.90), timeliness of needs being met (R1: 0.84), and satisfaction with the implementation of health-type activities (R5: 0.78).

5. Discussion

The findings underscore the necessity of comprehensively considering user, staff, and living space characteristics to optimize service provision. Our results indicate that social relationships and living environment satisfaction are the most critical determinants of LS. Based on these findings, we developed a structural equation model to examine the underlying influencing factors.

5.1. Correlations Between User, Staff, Living Space Characteristics, and User LS

Our research shows a significant correlation between user characteristics and satisfaction. An interesting finding is that as users age, their LS increases, contrary to many previous research conclusions [61–63]. However, some studies [64,65] support our conclusion. This discrepancy suggests that although age is an influential factor in LS, the way it is influenced may also be influenced by other factors such as facility environment and services. There is a significant positive correlation between health status and satisfaction [66,67]. Several studies have also emphasized the importance of health in life [68]. Therefore, improving the health of users may play an important role in improving overall satisfaction. Meanwhile, we found that the higher the users' income, the higher their LS, consistent with relevant research in the US [69] and Turkey [70]. This correlation may be because high-income people have stronger capabilities and resources to meet their needs and access better goods and services [71], a finding that emphasizes the importance of finances in ensuring quality of life for older people. We also found that the duration of stay and the willingness to move into the facility are significantly associated with LS. Specifically, longer stays correlate with higher satisfaction levels, potentially because long-term residents become more familiar with their environment and social networks [72]. Moreover, subjective participation in the decision-making process or independently choosing to move into the facility enhances users' acceptance of their new living arrangement; higher autonomy is linked to greater LS [73,74]. This finding suggests that promoting autonomy for users to participate in decision-making and living in a familiar, adaptive environment for an extended period of time have a positive effect on enhancing overall LS.

The findings indicate a positive correlation between the proportion of professionally qualified staff and user satisfaction, likely due to enhanced care quality [75]. This indicates that improving care may promote better physical health and reduce discomfort, thereby enhancing LS. This aligns with the SEM structural equation model results, which highlight the impact of care implementation on user satisfaction. These findings emphasize that the professionalism of staff is crucial to user satisfaction. Interestingly, a higher proportion of local household staff was associated with lower satisfaction. However, no relevant research has been found, and further research is needed to explore the underlying causes. While staff aged, the gender ratio, training participation, and years of experience did not show significant effects, but these factors should still be considered in staffing decisions.

The significance of the living environment in user satisfaction is well supported [23]. The most influential factors are bedroom window and outdoor space conditions. Windows provide natural light and ventilation to improve comfort. However, it is interesting that users' satisfaction is basically not affected by LD windows, which shows that users may pay more attention to their own relatively private space. Outdoor spaces serve as essential communal areas for fostering an age-friendly environment [76]. However, the survey revealed a lack of outdoor activity spaces, highlighting the need for new or renovated facilities. Having the bedroom and living–dining (LD) area on the same floor facilitates mobility, especially for elderly residents, most of whom are over 80 years old. Having the bathroom in the bedroom enhances convenience and privacy, while a greater variety of shared activity rooms increases LS by promoting autonomy and diverse engagement opportunities. Addi-

tionally, larger usable areas improve mobility, particularly for wheelchair users and those with assistive devices. Too many people in the bedroom may cause minor disruptions, but its overall impact on satisfaction remains limited. Overall, comfort, lighting, ventilation, accessibility, and spatial variety are crucial determinants of user satisfaction.

5.2. Factors Influencing Life Satisfaction

5.2.1. Impact of Social Relationship Satisfaction on LS

Among various dimensions of LS, social relationship satisfaction emerges as the most influential factor. Studies have shown a positive correlation between social relationships and LS [77–79]. Specifically, relationships with staff and other residents are key determinants. Residents' perceptions of staff play a crucial role in their overall satisfaction [80–82], underscoring the importance of friendships in senior living facilities. Although family relationships impact LS, their influence is significantly weaker than that of relationships with staff and other residents. Supporting evidence suggests that forming friendships within the facility has a more pronounced effect on LS than visits from family, relatives, or acquaintances [36,83]. This may be because residents interact with staff and fellow residents on a daily basis, making these relationships more relevant to their overall well-being. Additionally, participation in social activities enriches daily life, provides meaningful engagement, and helps residents maintain external connections. This aligns with the collectivist values of Chinese culture [84] and further confirms this study's findings that the frequency of social engagement significantly affects LS.

5.2.2. Impact of Living Environment Satisfaction on LS

The second-most important factor is the living environment. The elderly's satisfaction with the physical characteristics and resources of the family and living environment significantly affects their mental health and LS [85]. Creating a safe and accessible environment, and hence increasing mobility freedom, can make it more comfortable and pleasant for users and caregivers. Among the related variables, "ease of access from the bedroom to the LD", "lighting and ventilation", "ease of use and spaciousness of toilets and bathrooms", and "comfort and spaciousness of the bedroom" have a great impact on living environment satisfaction.

5.2.3. Impact of Health Status Satisfaction on LS

While health status influences LS, it is not the most dominant factor. The correlation analysis indicates a significant association between the level of care required and LS; however, the SEM results suggest that satisfaction with health status is not a primary determinant. This discrepancy may arise because nursing levels objectively reflect actual health conditions, whereas satisfaction assessments are subjective and influenced by individual psychological states. Good sleep quality is a key factor in enhancing satisfaction with health status. Previous studies show that older adults with better sleep quality in care facilities tend to exhibit better physical health, higher subjective well-being, and improved emotional regulation and social interactions, ultimately contributing to greater LS [86]. In contrast, poor sleep quality is associated with adverse psychological effects, including anger, depression, anxiety, and fatigue [87]. Furthermore, this study finds that users experiencing chronic stress or physical pain report lower satisfaction levels. Mental health and mobility also play a crucial role, as residents with poorer psychological well-being and reduced physical activity levels tend to have lower LS [88]. These findings highlight the need to prioritize both physical and mental health while ensuring a supportive environment conducive to high-quality sleep.

5.2.4. Impact of Life-Rhythm Satisfaction on LS

Satisfaction with lifestyle rhythm is primarily influenced by the effectiveness of nursing activities, the timeliness of care delivery, and the implementation of health-related activities. Consistent with previous research, well-structured daily routines are positively associated with higher LS [89,90]. These findings underscore the critical role of facility staff in shaping users' satisfaction, particularly in areas such as activity coordination, caregiving, and time management. The results align with correlation analysis, emphasizing the need for highly skilled professionals. Therefore, recruitment efforts should focus on attracting qualified personnel to enhance service quality and user experience.

5.3. Potential Applications of Life Satisfaction Research in the Actual Operation of CEECFs

To enhance facility operations, improve service quality, and increase user life satisfaction, the following specific optimization strategies are proposed: User-related: enhance professional rehabilitation and nursing services, support resident decision-making, and offer financial assistance to low-income users. Staff-related: increase the proportion of qualified staff and improve professional training. Living space-related: equip rooms with windows and independent bathrooms, expand outdoor and shared spaces, and ensure rooms and shared areas are on the same floor.

Policy recommendations include the development of professional talent cultivation plans, the introduction of relevant courses, and the implementation of tuition incentives to attract skilled professionals, thereby enhancing the quality of the elderly care service workforce. Additionally, facility construction standards should be optimized, focusing on lighting, ventilation, toilet accessibility, and spatial diversity to ensure user comfort and convenience. Theoretical support for spatial design should be integrated into the planning of new facilities to improve resident satisfaction with the living environment. During facility operation, services should be personalized according to user characteristics, with a focus on sleep quality, stress management, and regular health check-ups. Psychological support and timely personalized nursing care should be provided to reduce stress and improve satisfaction. Furthermore, organizing social activities is essential to foster communication and interaction among residents and staff, thereby reducing loneliness and promoting a positive social environment. Accurate assessment of nursing needs is crucial for delivering tailored care to enhance LS.

5.4. Limitations and Future Research Directions

There are several limitations to this study that require further investigation and research. First, a significant limitation of this study is its focus on residential users of CEECFs, excluding daycare and home-care users. Furthermore, this study was conducted in a single city, which limits the generalizability of the findings. Future research should expand its scope to multiple cities to enhance the robustness of the results. Additionally, a comparative study incorporating relevant research from Japan could further broaden the applicability of the findings. Given the relatively recent focus on community-embedded elderly care, there may be insufficient theoretical support at the early stage. Future research should broaden the scope to include daycare and home-care users and increase the sample size to gain a more comprehensive understanding.

6. Conclusions

This study evaluates LS among users of CEECFs through correlation analysis and SEM, identifying relationships between satisfaction and various user, staff, and spatial factors. The key findings are as follows:

LS correlates positively with age, health, income, and autonomy in decision-making, underscoring the importance of a user-centered approach. Higher proportions of professionally qualified staff and lower proportions of locally registered staff are linked to greater LS, emphasizing the role of professional services. Spatial factors significantly impact user satisfaction, with optimal design features such as bedroom windows, outdoor spaces, and floor-level arrangement of bedrooms and living areas contributing to a more positive user experience. The study identified several weakly correlated factors. Although their direct impact on LS is relatively small, they may indirectly influence LS through interactions with other factors. Therefore, these factors should not be overlooked, even after prioritizing the more significant ones.

The factor analysis reveals four latent variables influencing LS: living environment, health, social relationships, and lifestyle. SEM indicates that all these factors positively affect overall satisfaction, with social relationships—particularly those with staff and co-residents—having the strongest impact. The living environment and health status also contribute substantially to satisfaction. Daily activities and timely service provision further enhance satisfaction, highlighting the importance of professional care in maintaining quality of life.

This study investigates the relationship between life satisfaction among users of CEECFs and its influencing factors. The findings highlight the importance of increasing user socialization, optimizing facility environments, enhancing service quality, and addressing user needs. These insights provide valuable guidance for the design of elderly care facilities, the formulation of aging policies, and the management and operation of such facilities. Ultimately, this research contributes to improving the well-being of elderly users and the development of elderly care services tailored to diverse user needs.

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