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The Effect of Nursing Quality And Peer Interaction on Life Quality of Nursing Home Residents: Mediated by Resident Satisfaction

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ABSTRACT

China's aging population has boosted the development of the elderly care industry. The increase in China's per capita income and the transformation of consumption structure have led to an increase in demand for elderly care services. The Chinese government has introduced a number of policies to support the development of the elderly care industry, including measures to relax market access, provide financial subsidies and tax incentives. This study mainly aims to understand what factors are related to the quality of life of nursing home residents, in particular to verify the relationship between nursing quality, peer interaction, as well as residents' satisfaction and quality of life, and to verify the mediating relationship of residents' satisfaction. The residents of Baishanyuan KangYang Nursing Home in Shanxi Province were taken as the research object. Data were collected through questionnaire survey, SPSS and Amos were used for data analysis to demonstrate the relationship between them.
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KEYWORDS

Nursing quality, Community and interaction, Resident satisfaction, Life quality, Nursing home.

1. Introduction

Aging is a serious problem in China and around the world. According to the World Health Organization, by 2030, one in six of the world's population will be over 60 years old, and by 2050, that number will rise to 2.1 billion. By the end of 2022, the number of people over the age of 60 in China will reach 280 million, accounting for 19.8 percent of the total population, according to the Statistical Communique on Civil Affairs Development 2022 issued by the Ministry of Civil Affairs. The growing number of older persons living longer poses new challenges to health, long-term care and welfare systems, and long-term care costs are expected to increase substantially (Fang et al., 2020). At present, the rapid growth of the elderly population means a large increase in the number of empty nesters, elderly people living alone, and elderly people with illnesses. This will bring many problems, such as elderly people falling at home, and an increasing number of disabled and mentally disabled elderly people, which will bring high medical costs and care costs (Kalseth and Halvorsen, 2020). Therefore, the elderly care industry needs to develop rapidly to adapt to the current situation of elderly care. Among them, the quality of life of nursing home residents is the most concerned issue of the entire pension industry, and it is also the core issue of the pension industry (Lou et al., 2022). Based on the above reasons, this study studied the factors affecting the quality of life of nursing home residents.

2. Objectives

The purpose of this study was to investigate the relationship between nursing quality, peer interaction and nursing home residents' life quality, and to test whether residents' satisfaction played a mediating role. The specific objectives of the study are as follows: (1) To analyze the impact of nursing quality and peer interaction on residents' satisfaction through statistical data. (2) Statistical data were used to analyze the effects of quality of care and peer interaction on quality of life. (3) Analyze the impact of residents' satisfaction on quality of life through statistical data. (4) Analyze the

mediating role of residents' satisfaction through statistical data.

3. Scope and Methodology

3.1 Scope of study

In this study, nursing quality and peer interaction were used as independent variables, residents' satisfaction as mediating variables, and residents' quality of life as dependent variables. This study takes the residents of Kangyang Nursing home in Shanxi Baishan Garden as the research object. Through the design of the life satisfaction questionnaire, the data were collected and the factors affecting the residents' life satisfaction were analyzed.

3.2 Methodology

The current study involved using quantitative methods to create a questionnaire to investigate factors that affect the quality of life of nursing home residents. This is done by using questionnaires collected from appropriate reference sources. The data was collected using a five-point Likert scale, which includes five complete levels of choice ranging from "strongly disagree" to "strongly agree." Further, the research hypotheses were evaluated and the questionnaire data were analyzed in detail using SPSS and AMOS. This study sought to establish a link between quality of care, peer interaction, and resident satisfaction and quality of life. Each survey includes a quantitative comparison. Random sampling was used in this study. In order to recruit respondents to participate in the questionnaire before collecting key data, several strategies were used, including Posting nursing home announcements on Wechat and over the phone as well as offline.

3.3 Instrument and measurement

This research questionnaire consists of five parts. The first section includes the demographic characteristics of the respondent (gender, age, family members, length of residence, institution). The second part is Nursing Quality (NQ). The six projects in this part draw on Triemstra et al., (2021). The third part is evaluation of Peer Interaction (PI). Peer Interaction (PI) has 7 entries, see Kwame & Petrucka (2021) and Iwashita (2021). The fourth part is Resident Satisfaction(RS) evaluation. The six projects in this part refer to Ghadrdoost et al. (2021). The fifth part is Life Quality (LQ). The six projects in this part refer to Kane et al. (2003) and Stamm, (2010). After the first draft of the questionnaire was completed, relevant experts were invited to review the applicability and accuracy of the questionnaire items. The questionnaire was modified according to the opinions. Sections 2, 3, 4, and 5 were measured using a Likert 1-5 scale, ranging from "1= strongly disagree" to "5= strongly agree."

Table1. Instrument

NO	Variables	Item	Measurement
1	Nursing Quality (NQ)	1.Caregivers use care-related information resources during nursing.	Triemstra et al., (2021)
		2.Your nursing home caregivers continue to learn and improve quality.	
		3. Nursing staff to provide you with daily life care services.	
		4.Nursing staff have professional nursing knowledge.	
		5.The nursing staff is proficient in nursing techniques.	
		6.The caregiver will respect and protect your privacy while caring for you.	
2	Peer Interaction (PI)	7. Your interpersonal relationships in the nursing home are good.	Kwame & Petrucka (2021); Iwashita, (2021)
		8.You feel good cooperation with others while participating in activities organized by the nursing home.	
		9.Maintain boundaries when interacting with peers.	
		10.You are patient when communicating with your peers	
		11.Peer interaction is about having a good interaction environment	
		12.Peers can respect your self esteem during peer interactions.	
		13.You have no trouble communicating with your peers in the nursing home.	
3	Resident Satisfaction(RS)	14.I am satisfied with the diet of the nursing home	Ghadrdoost et al. (2021)
		15.I am satisfied with the living environment of the nursing home	
		16.I am satisfied with the medical care at the nursing home	
		17.I was pleased with the activities and entertainment at the nursing home	
		18.I am satisfied with the service response of the nursing home	
		19.I am satisfied with the overall service and management of the nursing home	
4	Life Quality(LQ)	20.You think you're comfortable living in a nursing home.	Kane et al. (2003); Stamm, (2010)
		21.Living in a nursing home feels dignified.	
		22.You are happy living in a nursing home.	
		23.You are satisfied with your material living conditions.	
		24.You think the living environment and community environment of the nursing home are good.	
		25.You think the social relationships in a nursing home are good.	

3.4 Survey

The data for the study was collected from only three nursing homes in Shanxi Baishan Yuan Kangyang Nursing Home from October to November 2024, reflecting the nursing home residents' feelings about the current quality of life. A total of 332 questionnaires were sent out through star design questionnaire and questionnaire distribution, and 272 questionnaires were received with a recovery rate of 81.9%. After data cleaning and outlier analysis, 262 respondents were validated, and further analysis was conducted.

3.5 Data analysis

After the questionnaires were collected, the valid questionnaires were recorded into SPSS 23.0. Firstly, exploratory factor analysis was carried out, and the reliability and validity of the questionnaires were analyzed. Finally, the

structural equation model (SEM) is used for confirmatory factor analysis, path analysis and hypothesis testing. The relationship between nursing quality, peer assistance, resident satisfaction and quality of life was examined.

4. Literature Review

4.1 Definition of Life Quality and Dimensions

According to Aqtam et al. (2023), the dimensions of quality of life include six aspects: comfort, security, relationships, enjoyment, dignity and spiritual well-being.

Comfort of nursing home refers to the comfort and suitability of the living environment provided for the elderly, including safety, convenience, health and pleasure. (Tan and Lee, 2022). According to Engelen et al., (2022), nursing homes should provide a variety of services and facilities for the elderly to ensure the quality of life and health of their residents.

4.2 Definition of Nursing Quality and Dimensions

According to Baker (2022), the dimensions of nursing quality include provide resident-centered care, Provide professional back team, apply quality improvement, utilize informatics, timeliness these five aspects .

Resident-centered care, also known as community care, is a type of community-based care. It emphasizes the centrality of population health in the community (Davies et al. 2023).

Professional support teams are usually made up of medical staff from different areas of expertise. Within a professional medical team, there may be multiple roles, including surgeons, anesthesiologists, nurses, etc. (Dang et al., 2021).

Applied quality improvement refers to the methods and strategies to improve the quality and efficiency of nursing service in nursing practice. Continuous quality improvement is a dynamic process that requires the healthcare team to continuously learn, adapt, and improve to meet the needs of patients and improve the overall quality of care (Zamboni et al., 2020).

In applied informatics, professionals use technology to design, develop, and evaluate information systems to support and improve decision making and business processes in nursing homes, improve the level and quality of care, and make life easier for nursing home residents (Chernenko, 2021).

4.3 Definition of Peer Interaction and Dimensions

Peer interaction refers to the process of mutual communication, cooperation and influence between two or more individuals of the same age (Tenenbaum et al. 2020). Peer interaction refers to the interaction among children, adolescents or adults with similar ages, similar social status or common interests (Tentama and Nur, 2021).

Peer interaction is not only the transmission and exchange of information, but also the communication of emotion and cognition. In interactions, individuals share their feelings, thoughts, and experiences, thereby increasing mutual understanding and trust. This kind of communication helps to promote the emotional development of the individual, so that he learns to care, compassion and respect others (Chen et al. 2021).

4.4 Definition of Resident Satisfaction and Dimensions

The dimensions of resident satisfaction included the time the nurses spent with the residents, the attitude of the nursing home staff towards the residents, the fact that nursing home life made you feel at home, the freedom of the nursing home, access to professional medical services, and the nurses' response to your requests (Bhattacharyya et al., 2022).

According to the Centers for Medicare & Medicaid Services (CMS) in the United States, the framework for assessing and improving residents' satisfaction is provided. The components of residents' satisfaction involve multiple aspects. It covers quality of care, living facilities, dining services, social interaction, safety and security, health management, autonomy, and family satisfaction.

4.5 Justifying Relationship between Nursing Quality and Resident Satisfaction.

Will et al. (2019) explored the relationship between team care quality, patient satisfaction, and other care outcomes as part of a study that showed, through a literature review approach, that team care had a positive impact on patient satisfaction. Team composition and the type of team intervention appear to influence the strength of this relationship. Spangler et al. (2019) found that the size of a nursing home was the most important predictor of resident satisfaction, followed by the services and facilities provided by the nursing home. Nursing quality, staffing ratio and nursing education level are also related to residents' satisfaction. Hefele et al. (2019) studied the relationship between nursing quality and residents' satisfaction through data integration

and analysis, and found a moderate correlation between nursing quality and residents' satisfaction. Both were weakly negatively associated with any quality of care and any quality of life deficits. The purpose of the Materla et al. (2019) study was to identify a variety of complex patient needs and communicate their potential use in continuously improving health care. The results show that the quality of nursing services can affect patients' expectations, which in turn affects patients' satisfaction.

4.6 Justifying Relationship between Peer Interaction and Resident Satisfaction.

Forsgren et al. (2016) used interviews and questionnaires to explore how registered nurses interact with nursing home residents on a daily basis, with a special focus on the interaction with residents with communication difficulties. Research has shown that registered nurses have a good understanding of support strategies and are aware of the importance of developing personal relationships with residents to facilitate interaction. Allenbaugh et al. (2019) identified doctor-patient and nurse-patient communication as a mode of intervention that can increase suboptimal patient satisfaction in inpatient care and significantly improve the knowledge and attitudes of residents and nurses. Höglander et al. (2020) found through home visit records that more social emotions included in nursing communication contributed to the improvement of residents' satisfaction. Lood et al. (2020) evaluated the impact of human-centered nursing on the satisfaction degree of relatives' nursing quality and summarized the important factors of the difference in the satisfaction degree of relatives' nursing quality. The results showed that families in both the intervention group and the control group were satisfied with the quality of care. In terms of safety and hospitality, a people-centred environment was identified as an important factor in relatives' satisfaction with the quality of care.

4.7 Justifying Relationship between Nursing Quality and Life Quality

Backhaus et al. (2018) found that nursing home employees were positively correlated with residents' quality of life. Cho et al. (2020) studied the impact of registered nurse staffing in nursing homes on nursing quality and hospitalization outcomes, and found that the level of registered nurse staffing in nursing homes affected residents' health management and nursing quality. Hoek et al. (2021) adopted the method of semi-structured interviews and data reflecting the three themes of "communication", "trust and dependence" and "engagement" to shape the cooperation with employees from the perspective of family. Good communication seems to be a necessary condition for trusting employees and participating in the quality of life of residents.

4.8 Justifying Relationship between peer interaction and Life Quality

Wren (2016) studied the impact of peer interaction on daily activities, social participation, outlook on life, life satisfaction and quality of life of older adults. The results showed that all participants had increased engagement in activities such as daily living, socializing, outlook on life and nursing home life. Rivett et al. (2019) showed a significant increase in competence and self-confidence after an intervention, although many studies did not perform a statistical analysis of the data. Increased competence and confidence also benefit care services and staff well-being. Roberts and Ishler (2018) mainly explored the relationship between family participation and family perception of nursing home residents' quality of life. Using a hierarchical linear model to support the study, the results show that although changes in family members' perception of residents' quality of life mainly occur at the individual level (residents and families), facility features are also significantly related to residents' perception of quality of life. Sion et al. (2020) conducted a qualitative study to understand how the quality of experiential care in nursing homes could be assessed from the client's perspective, using routine content analytics to analyze the data. The results show that experienced quality responsibility occurs primarily in interactions between customers, families, and employees, highlighting the impact of relationships. Experience in high quality care, including client, family and employee perspectives, aligned with the principles of relationship-centered care. McCabe et al. (2021) found that nursing home staff play a key role in supporting residents' autonomy, and communication is a means of building the social relationships that residents choose, thereby contributing to improved quality of life.

4.9 Justifying Relationship between Resident Satisfaction and Life Quality

Dewitte et al. (2021) aimed to explore the

sources of well-being that older adults find meaningful in residential care and how they relate to existential meaning and life satisfaction, using two cross-sectional questionnaires tested using a structural equation model. The survey found that the source of happiness is directly related to life satisfaction, and the happiness of nursing home residents also reflects the improvement of life quality of nursing home residents. Wammes et al. (2020) investigated the views of relatives of nursing home residents on restricted visits during COVID-19 and found that restrictions on home visits affected the satisfaction of nursing home residents. The study, conducted through a cross-sectional online survey, shows that the reduced satisfaction of residents resulting from restricted visits may adversely affect the health of Rches residents and their family members.

4.10 Justifying the mediating Role of Residents Satisfaction between Nursing Quality, Peer Interaction and Life Quality

Li-Hsing and Chia-Chan (2020) analyzed the hierarchical linear regression model through descriptive statistics, testing and ANOVA, and found that life satisfaction was positively correlated with functional ability and autonomy, and resident autonomy did not mediate the relationship between functional ability and life satisfaction of the elderly. Park & Sok (2020) thought that life satisfaction was affected by nursing quality, residents' adaptation and emotion, and relatives' support. At the same time, it is found that these factors affect residents' life quality through the intermediary of life satisfaction. Armijo-Olivo et al. (2020) believed that most literatures believe that nursing time is positively correlated with nursing quality, and nursing quality is positively correlated with residents' life quality. Some literatures also show that residents' satisfaction has a partial mediating effect on nursing quality and quality of life.

Sion et al. (2020) Assess the quality of nursing home care from the perspective of residents. The results showed that individual thank you conversations between the nursing home respondents and the resident-family caregiver triad were feasible. Jin et al. (2022) aimed to explore the social service system needed to promote the sustainable development of smart communities, establish a community service residents' satisfaction model, and use Amos for data analysis. The results show that service quality, infrastructure and service quality have positive effects on residents' satisfaction.

5. Theory Application and Justification

5.1 The Hierarchical Needs Theory

Maslow's hierarchy of needs theory plays an important role in the application of nursing level and life quality of nursing home residents. In a nursing home setting, this theory can help staff identify and meet the needs of residents at different levels, thereby improving their quality of life. At the care level, understanding the hierarchy of residents' needs helps caregivers provide personalized care, ensuring that each resident receives services that meet their specific needs. The quality of care belongs to the safety needs in Maslow's hierarchy of needs. Safety needs refer to people's needs for the protection of life, health and property. In nursing homes, the elderly are in desperate need of high quality and safe care. Residents of nursing homes expect professional, reliable medical and nursing services to ensure good health and quality of life. Peer interaction is a need for love and belonging. Love and belonging needs include the desire to connect, communicate, and interact with others. Elderly people in nursing homes are eager to build friendships with other residents, share experiences and participate in social activities to meet their social needs. This interaction is essential for mental health and well-being. Life satisfaction is the need for self-esteem. Self-esteem needs involve individuals' cognition of their own value, dignity and social status. In nursing homes, residents expect to be respected, understood and valued. Satisfaction is closely related to self-worth, dignity and social acceptance. The quality of life belongs to the need of self-realization. Self-actualization needs refer to the highest level needs of individuals to pursue their own potential. In addition to their basic material needs, elderly people in nursing homes are also concerned with their psychological, emotional and spiritual satisfaction. Quality of life includes physical health, mental health, social interaction, hobbies and other aspects.

5.2 The Total Quality Management Theory

Total quality management (TQM) plays a vital role in improving residents' satisfaction and nursing quality, which is mainly reflected in improving medical quality, strengthening quality and safety management, and

continuous improvement. TQM improves resident satisfaction and quality of care by improving the overall quality of healthcare delivery and ensuring a better patient experience. In previous studies, many researchers applied the theory of total quality management to the study of nursing home, especially to the study of nursing home quality and residents' quality of life. Nursing homes can refer to the relevant national standards and industry norms, combined with the actual situation of nursing homes, develop detailed nursing service standards, covering daily care, health management, disease prevention and response, and establish a sound quality management system. According to the inspection results and feedback from the elderly, timely adjust the nursing plan, optimize the service process, and achieve continuous improvement of nursing quality. Regularly organize nursing staff to participate in professional skills training, including nursing technology, communication skills, psychological counseling, etc., to improve the comprehensive quality and service ability of nursing staff. In terms of strengthening peer interaction, nursing homes can adopt open layout design to make the public space more transparent and accessible, facilitating observation and communication between the elderly. Multi-functional areas such as rest areas, reading areas and entertainment areas are set up to provide rich and colorful activities for the elderly and promote communication and interaction between the elderly. Nursing homes can also organize group activities and encourage volunteering to enhance peer interaction. Nursing homes should continue to deepen the practice and application of total quality management, and constantly explore more scientific and effective management methods and service models.

5.3 Transaction Analysis Theory

The application of transaction analysis theory in nursing homes can help staff and residents establish more effective ways of communication, improve residents' satisfaction and quality of life, and staff can better understand residents' needs and emotions by identifying the state of residents' communication (parents, adults or children), so as to make appropriate responses. When conflicts arise between employees and residents or between residents, transaction analysis theory can help identify the communication patterns behind them and find ways to resolve the problem. Transaction analysis theory is widely used in the field of nursing home. Nurses should strive to build trusting relationships with residents, similar to the "reciprocity principle" in transaction analysis or social exchange theory. When nursing homes focus on improving the quality of care and enhancing peer interaction as key strategies to increase resident satisfaction, significant results can be expected. Although transaction analysis theory is not a tool directly applied to nursing home management, we can draw on some principles of transaction analysis theory and social exchange theory to guide nursing homes how to improve residents' satisfaction by improving nursing quality and strengthening peer interaction. In the context of nursing homes improving the quality of care, management and regulations in this case can be likened to the role of "parents". They set standards, processes and policies for the delivery of care, provide guidance and support to carers, and ensure the quality and safety of services. Nurses play the role of "adults" here. They have the expertise and skills to think independently, solve problems, and remain rational and objective in their care. From the perspective of care services, residents may exhibit a state of relative dependence in situations where care and care are needed. The "child" role here refers more to a certain vulnerability or dependency that the resident exhibits in the course of his or her care than to a literal age or identity. But for the sake of consistency in the analogy, we can think of this dependence that residents exhibit in their care as a state of being "cared for," similar to how a child needs a parent's love and care. "Parents" should not only make clear and reasonable rules and regulations, provide clear guidance on the work of caregivers, but also pay attention to the needs and feedback of residents, and adjust policies and services in a timely manner. "Adults" should maintain a professional and responsible attitude, actively communicate with residents and managers, timely feedback on problems and suggestions in the nursing process, and jointly improve the quality of nursing. The residents should be fully respected and cared for, and the nursing staff should pay attention to their individual needs, provide warm and meticulous care services, and let them feel the warmth of home.

6. Result and Discussion

6.1 Respondents demographic profile

Among the 262 respondents (Table 2), there were more women (55.4%) than men (44.6%). 66-70 years old accounted for the largest proportion (31.3%), followed by 76-80 years old (23.7%), 71-75 years old (18.3%), 60-65 years old (17.2%). 9.5% of the population had no family, 71.8% had only spouses, and 18.7% had only children. The largest proportion of years of residence is 7-10 years (42.4%), followed by 4-6 years (38.4%), 1-3 years (11.9%) and 11-20 years (7.3%). Of these, 32.1% live in Baishanyuan Kangyang nursing home - Jianshe Road Nursing Home, 37.8 people live in Baishanyuan Kangyang nursing home - North Central Nursing Home, 30.1% live in Baishanyuan Kangyang nursing home - Mencius Mother Nursing Home.

Table 2 Respondents demographic profile

Characteristics		Frequency	Percentage
Gender	Male	139	44.6%
	Female	173	55.4%
Age	60-65 years	45	17.2%
	66-70 years	82	31.3%
	71-75 years	48	18.3%
	76-80 years	62	23.7%
	More than 80 years	25	9.5%
Member of family	No family	25	9.5%
	Only mate	188	71.8%
	Only children	49	18.7%
	A whole family	0	0%
Length of residence	1-3	49	11.9%
	4-6	83	38.4%
	7-10	111	42.4%
	11-20	19	7.3%
Residential institution	Baishanyuan Kangyang nursing home - Jianshe Road Nursing Home	84	32.1%
	Baishanyuan Kangyang nursing home - North Central Nursing Home	99	37.8%
	Baishanyuan Kangyang nursing home - Mencius Mother Nursing Home	79	30.1%

6.2 Assessment of the measurement model

6.2.1 Reliability of the measurement model

SPSS was used for reliability analysis. As can be seen from Table 3, CITC value of NQ2 =0.392, Cronbach's Alpha if Item Deleted=0.869. A value greater than Cronbach's α. Therefore, NQ2 can be considered for deletion. The Cronbach's Alpha if Item Deleted value of PI5 is equal to 0.862, which is greater than the Cronbach's alpha value, so PI5 can be considered for deletion. The CITC value of LQ6 is equal to 0.368, Cronbach's Alpha if Item Deleted=0.851>0.834, so LQ6 can be considered for deletion.

Table 3. The Reliability Tests for Each Item Within the Variables in The Structure

Reliability Analysis				
Variable	Item	CITC	Cronbach's Alpha if Item Deleted	Cronbach's α
NQ	NQ1	.672	.820	0.852
	NQ3	.683	.819	
	NQ4	.725	.811	
	NQ5	.678	.820	
	NQ6	.680	.819	
	NQ2	.392	.869	
PI	PI1	.677	.832	0.859
	PI2	.623	.840	
	PI3	.685	.831	
	PI4	.668	.833	
	PI6	.641	.837	
	PI7	.635	.838	
	PI5	.459	.862	
RS	RS1	.777	.863	0.892
	RS2	.605	.890	
	RS3	.754	.867	
	RS4	.746	.868	
	RS5	.720	.872	
	RS6	.675	.879	
LQ	LQ1	.699	.790	0.834
	LQ2	.626	.804	
	LQ3	.599	.808	
	LQ4	.692	.790	
	LQ5	.678	.792	
	LQ6	.368	.851	

Table 4 shows that the standardized factor load of nursing quality (NQ) ranges from 0.675 to 0.938, that of peer interaction (PI) ranges from 0.672 to 0.751, and that of resident satisfaction (RS) ranges from 0.652 to 0.829. The standardized factor load of quality of life (LQ) ranged from 0.661 to 0.797. The base variable of each item is greater than 0.5, and it is considered that the factor loading value of each item is high and significant, and has convergence. In addition, the AVE value extracted from the mean variance of each variable was: quality of care (NQ) 0.5487, peer interaction (PI) 0.5252, resident satisfaction (RS) 0.6008, and quality of life (LQ) 0.5436. It can be seen that the AVE value extracted from the mean variance of each variable ranges from 0.5436 to 0.6008, all of which are greater than the standard of 0.5, indicating good structural validity. Third, the construction reliability value of the combination reliability ranges from 0.858 to 0.913, all of which are greater than 0.7, indicating that the construction reliability is reliable. The results provide evidence of an acceptable level of reliability for the scale used.

Table 4. the measurement of reliability in Amos

Validity				
Variable	Item	Loading (Convergent Validity)	Construct Reliability	AVE (Construct Validity)
NQ	NQ1	0.924	0.8582	0.5487
	NQ3	0.938		
	NQ4	0.737		
	NQ5	0.703		
	NQ6	0.675		
PI	PI1	0.731	0.8859	0.5252
	PI2	0.679		
	PI3	0.749		
	PI4	0.751		
	PI6	0.711		
	PI7	0.672		
RS	RS1	0.829	0.9131	0.6008
	RS2	0.652		
	RS3	0.801		
	RS4	0.805		
	RS5	0.776		
	RS6	0.716		
LQ	LQ1	0.774	0.8942	0.5436
	LQ2	0.661		
	LQ3	0.668		
	LQ4	0.797		
	LQ5	0.775		

Note: NQ=Nursing Quality, PI=Peer Interaction, RS=Resident Satisfaction, LQ=Life Quality.

6.2.2 Validity ofthe measurement mode

The criterion of discriminant validity is that the square root value of each factor AVE is greater than the correlation coefficient between the factor and other factors. Fornell & Larcker (1981) proposed the traditional metric that the AVE (internal variance) of each construct should be compared with the inter-construct correlation (as a measure of the inter-construct common variance) of the same construct and all other reflection-measurement construct models, and that the inter-construct common variance between all constructs should not be greater than their AVE. As can be seen from Table 4.22, the square root of AVE of each construction is greater than the structure of the correlation between the construction. Therefore, the differential validity of all constructs is sufficient. The correlation coefficients of potential variables ranged from 0.222 to 0.327. These values are all lower than the threshold value of 0.582, and the square correlation of each indicator is less than the square root of AVE, which explains the good discriminant validity among these constructs. Therefore, the model can be used for further analysis and testing of hypotheses.

Table 5. Discriminant validity

Variable	NQ	PI	RS	LQ
NQ	**0.571**			
PI	0.222	**0.512**		
RS	0.302	0.284	**0.582**	
LQ	0.307	0.265	0.327	**0.540**

6.3 Structural Equation Modelling (SEM)

6.3.1 Integrated Measurement Model

The internal consistency reliability, index reliability, convergence validity and discriminant validity of the comprehensive measurement model were evaluated based on each variable and dimension. The measurement model consists of four structures, as shown in Figure 1. The Integrated Measurement Model shows that CMIN =236.506, p=0.048, x2/df=1.171<5, GFI=0.924, AGFI=0.905, NFI=0.923, CMIN =236.506, P =0.048, x2/df=1.171<5, GFI=0.924, AGFI=0.905, NFI=0.923. RMSEA=0.026<0.08. It can be seen that the obtained values are all between the standard values, indicating that the measured model of the structure fits well.

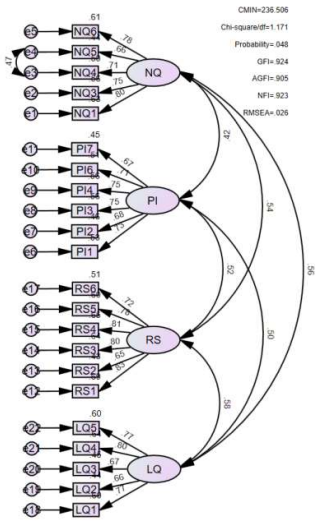

Figure 1 Integrated Measurement Model

6.3.2 Structural Models

The measurement model consists of 22 items related to CFA final results (NQ=5 items, PI=6 items, RS=6 items, LQ=5 items). The related construction items are shown in Figure 4.12. As shown in FIG. 4.12, measurement model fitting x2(df-233) =236.506; P = 0.048; X2 / df = 1.171; Gfi = 0.924; Agfi = 0.905; Nfi = 0.923; RMSEA = 0.026. The equivalent values of GFI, AGFI, NFI and RMSEA meet the standard values. Therefore, the calculated results show that the obtained structural model values fit well with the standard values.

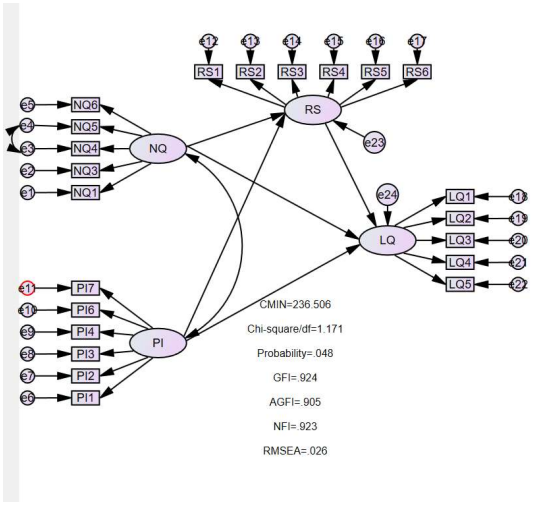

Figure 2 Structural Models

6.3.3 Conceptual Framework and Hypothesis Testing

As can be seen from the figure below, the independent variables of this study are nursing quality, peer interaction, the intermediary variable is resident satisfaction, and the dependent variable is life quality. This research was designed to measure the impact of nursing quality, peer interaction on life quality, while examining the mediating role of life satisfaction.

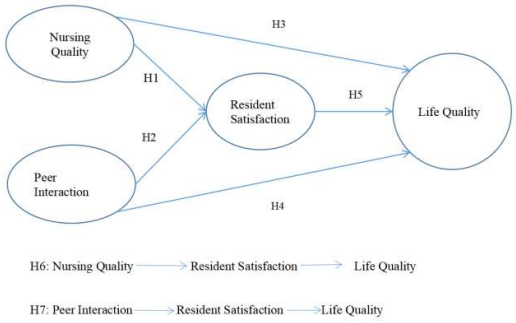

Figure 3 Conceptual Framework

According to Kline (2015), the standardized path coefficient of 0.10 to 0.30 indicates that the influence of the path relationship is weak. The path coefficient in this range indicates that there is some influence between the variables, but this influence is more limited. A standardized path coefficient of 0.30 to 0.50 indicates a moderate impact on path relationships. The path coefficient in this range shows that the influence between variables is more significant, and the explanatory power of the research model is also strong. If the standardized path coefficient is greater than 0.50, the influence of path relationship is strong. The path coefficient in this range indicates a strong correlation between the variables, and the explanatory power of the research model is very significant. As shown in Table 4.23, the P values of H1-H7 are all less than 0.05, so H1-H5 is effective and significantly correlated, in which H3,H4 and H5 have a weak influence, and H1 and H2 have a moderate influence.

Table 6 Hypotheses Results of Direct Relationships

Structural equation path test results

Hypothesis	Path	Estimate	S.E.	C.R.	P	RESULT
H1	NQ →RS	.356	.065	5.463	***	Supported
H2	PI →RS	.383	.076	5.064	***	Supported
H3	NQ →LQ	.263	.064	4.104	***	Supported
H4	PI →LQ	.210	.071	2.947	.003	Supported
H5	RS →LQ	.278	.072	3.865	***	Supported

Table 7 shows the results of the deviation-corrected percentile association. In the relationship between nursing quality, residents' satisfaction and quality of life, the value of direct effect is 0.299, the lower bound confidence interval is 0.177, and the upper bound confidence interval is 0.431. Therefore, the total effect is 0.477 with a lower bound confidence interval of 0.361 and an upper bound confidence interval of 0.607. At the intersection of quality of care and quality of life, P-value equal to 0 was a two-tailed significance, less than 0.05. Therefore, we can conclude that residents' satisfaction plays an intermediary role between nursing quality and life quality. In the relationship between peer assistance, resident satisfaction and quality of life, the value of direct effect is 0.282, the lower bound confidence interval is 0.135, and the upper bound confidence interval is 0.477. Therefore, the total effect is 0.518 with a lower bound confidence interval of 0.353 and an upper bound confidence interval of 0.717. A P-value equal to 0 is a two-tailed significance, less than 0.05. Therefore, we can conclude that resident satisfaction plays a mediating role between peer interaction and quality of life. Therefore, H6,H7 are supported in this study.

Table 7 The Mediating Effect of Resident Satisfaction

Relationship	NQ→RS→LQ			
Effect	Estimate	Confidence Interval		P value	Conclusion
		Lower Bound	Upper Bound		
Indirect Effect	.178	.109	.276	.000	
Direct Effect	.299	.177	.431	.000	Partial Mediation
Total Effect	.477	.361	.607	.000	

Note: NQ= Nursing Quality; RS= Resident Satisfaction; LQ= Life Quality

Relationship	PI→RS→LQ			
Effect	Estimate	Confidence Interval		P value	Conclusion
		Lower Bound	Upper Bound		
Indirect Effect	.236	.145	.374	.000	
Direct Effect	.282	.135	.477	.001	Partial Mediation
Total Effect	.518	.353	.717	.000	

Note: PI= Peer Interaction; RS= Resident S action; LQ= Life Quality

7. Findings

The statistical results of the relationship between nursing quality and residents' satisfaction in this study showed that $p<0.05$ and β was 0.356. Statistically speaking, when nursing quality increased by 1, residents' satisfaction level would increase by 0.356. The statistical results of the relationship between peer interaction and residents' satisfaction show that $p=0$ and β is 0.383. Statistically speaking, when peer interaction increases by 1, residents' satisfaction level will increase by 0.383. The statistical results of the relationship between nursing quality and quality of life showed that $p<0.05$, β was 0.263, statistically speaking, every increase of nursing quality 1, quality of life level will increase by 0.263. The statistical results of the relationship between peer interaction and quality of life showed that $p=.003<0.05$ and β was 0.21. Statistically speaking, every 1 increase in quality of care would increase the quality of life by 0.21. The statistical results of the relationship between resident satisfaction and quality of life showed that $p=0$ and β was 0.278. Statistically speaking, every 1 increase in nursing quality would increase the quality of life by 0.278. Residents' satisfaction partially mediates the relationship between nursing quality and quality of life, and its direct effect is 0.299, $p=0<0.05$, its indirect effect is 0.178, $p=0$, and its total effect is 0.477, $p=0$. Residents' satisfaction partially mediates the relationship between peer interaction and quality of life, and its direct effect is 0.282, $p=0$; its indirect effect is 0.135, $p=0.01$; its total effect is 0.518, $p=0$. Therefore, we can conclude that nursing quality and peer interaction have a positive impact on residents' satisfaction, and nursing quality, peer interaction and residents' satisfaction have a positive impact on quality of life, and residents' satisfaction partially mediates the relationship between nursing quality, peer interaction and quality of life.

8. Limitations and Further Research Recommendations

The sample size of elderly residents selected for nursing homes in this study may not be representative of the broader elderly population. This may limit the generality of the findings. Demographic characteristics such as age, sex, socioeconomic status and health status of the older adults who participated in the survey were unevenly distributed, which could have skewed the results. The study used a cross-sectional design to capture data in only November 2024. Therefore, it cannot establish a causal relationship between quality of care, peer interaction, resident satisfaction, and quality of life. Longitudinal studies could be conducted in the future to track changes in quality of care, peer interaction, resident satisfaction and quality of life over time.

The study relied on self-reported questionnaires, which can be influenced by social expectation bias and inaccurate reporting. Participants may exaggerate their satisfaction or quality of life, compromising the validity of the survey results. Future studies could incorporate qualitative methods, such as interviews and focus groups, to supplement quantitative data. The study was conducted in a specific cultural and geographical context, and the results may not be directly applicable to nursing homes in different cultural contexts. While the study focused on quality of care, peer interaction, and resident satisfaction, other potentially influential factors such as family involvement, physical environment, and specific health interventions were not taken into account.

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