

The Research on Utilization and Influencing Factors of Community Health Management Services for the Elderly in Nanning of China

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Abstract

This research aim was 1) To study the current health situation and health literacy of older adults in the community of Nanning, China, 2) To analyses the current utilization of community health management services and explore the influencing factors, and to provide a reference basis for formulating strategies, 3) To improve the utilization efficiency of community health management services for older adults in Nanning.

Methods: A random sampling method was employed to collect survey data from 1,166 individuals aged 60 years or older across six communities in Nanning. Questionnaire surveys were conducted, along with structured interviews with managers from four community health service organizations. Data analysis was performed using chi-square tests and multilevel logistic regression with SPSS 26.0 software.

Results: Among the 1,049 elderly respondents, 60% had utilized community health management services. There was a high utilization rate for health check-ups, assessments, guidance, and record establishment (50-60%), while rehabilitation treatment, regular reviews, chronic disease management, and follow-up services were used less frequently (<28%). Most elderly individuals preferred major county and city hospitals for their first medical consultation (38.99%), compared to 20.81% who chose community healthcare organizations. Key factors influencing service utilization included age (70-74 years: OR=0.613, P=0.002; 75-79 years: OR=0.542, P=0.002; 80 years and older: OR=0.538, P=0.011), living arrangements, chronic diseases, and financial considerations.

Conclusion: Elderly residents in Nanning exhibit low health literacy and satisfaction levels, coupled with a reluctance to utilize community health management services. Recommendations include increased investment in community medical resources, enhanced training for primary health management personnel, and strengthened community health education and chronic disease management initiatives.

Keywords: The elderly; health management; health management service utilization; influencing factors

Introduction

With the increasing human lifespan and the evolving disease spectrum, population aging and chronic non-communicable diseases have emerged as significant global challenges. The World Health Organization identifies these issues as critical, as they affect not only individual health outcomes but also healthcare systems worldwide (Xie, 2019). In China, the elderly population is particularly impacted; it ranks first globally, with over 180 million individuals aged 60 and above, of whom approximately 75% suffer from one or more chronic diseases (Zhao, 2019). This growing demographic presents unique challenges in managing complex health conditions, underscoring the urgent need for effective health management strategies targeted at the elderly.

Chronic diseases such as diabetes, hypertension, and heart disease are characterized by high morbidity and mortality, resulting in a considerable economic burden on both families and the healthcare system. For instance, the direct and indirect costs associated with treating chronic illnesses can severely strain financial resources, making comprehensive health management essential for improving the quality of life for older adults (Wang, 2016; Ying, 2019). Effective health management is pivotal in enhancing health outcomes, preventing disease progression, and reducing overall healthcare expenditures among the elderly, thus presenting a vital area of focus for public health initiatives.

In response to these challenges, the Chinese government has prioritized the development of health management services through various collaborative efforts aimed at enhancing care delivery for older adults. The "Outline of the Healthy China 2030 Plan," for example, emphasizes the importance of health management by setting ambitious goals for chronic disease management across all age groups and throughout the life cycle (PRC, 2016). This initiative reflects a strategic shift in how elderly care is approached in China, moving towards a "family + community" model that places a strong emphasis on community-centered health management systems (Xu, 2022).

Despite these advancements, there remains a gap in understanding the current utilization of community health management services among the elderly, particularly in cities like Nanning. Assessing this utilization, along with the factors influencing engagement with these services, is crucial for informing policy decisions and optimizing health resources. This research seeks to address this knowledge gap, aiming to identify barriers to service utilization and develop strategic recommendations for enhancing community health management practices for older adults in Nanning.

Research Objective

- 1) To study the current health situation and health literacy of older adults in the community of Nanning, China,
- 2) To analyse the current utilization of community health management services and explore the influencing factors, and to provide a reference basis for formulating strategies
- 3) To improve the utilization efficiency of community health management services for older adults in Nanning.

regarding their health situations, service utilization, and health literacy.

Population and Sampling

The target population for this study consisted of older adults aged 60 and above residing in Nanning, China. A stratified sampling technique was utilized to ensure representation across various demographic characteristics such as age, gender, socioeconomic

status, and health conditions. This method aimed to include a diverse sample that reflects the broader elderly population in the community.

Data Collection

Data collection involved two key components:

Qualitative Interviews: In-depth interviews with select participants provided rich qualitative insights into their experiences, perceptions, and challenges related to health management services. These interviews were semi-structured, allowing for flexibility in responses while ensuring comprehensive coverage of essential themes.

Questionnaire Surveys: A structured questionnaire was administered to a larger sample of older adults. The survey included questions designed to assess health literacy, willingness to seek medical treatment, and utilization of community health management services.

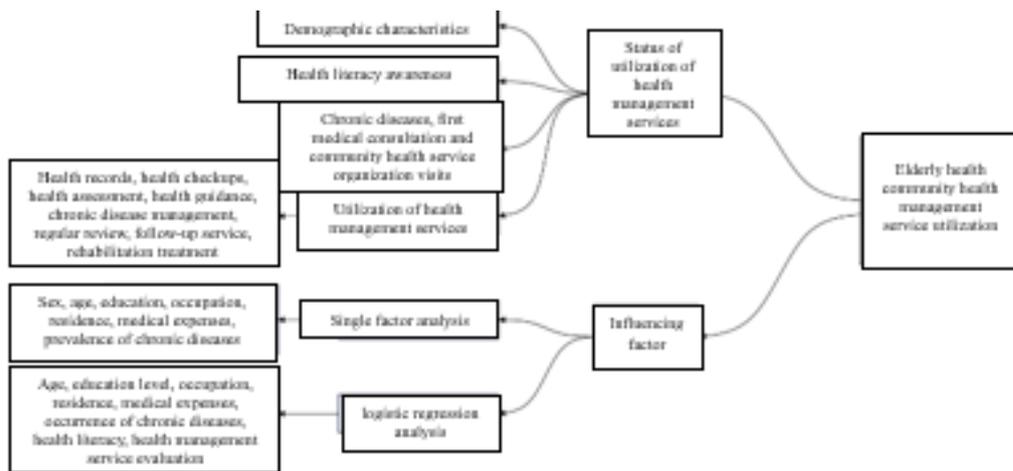
Data Analysis

The analysis of collected data followed a systematic approach:

Qualitative Analysis: Thematic analysis was used to interpret the qualitative data from interviews, identifying common themes and patterns that emerged regarding health management experiences and perceptions.

Quantitative Analysis: The quantitative data obtained from the surveys were analyzed using SPSS26.0 software. Descriptive statistics provided an overview of respondents' basic demographics and health situations. Furthermore, chi-square tests were conducted to evaluate the statistical significance of differences observed among groups ($\alpha = 0.05$). Logistic regression analysis was performed to identify and test the factors influencing the utilization of health management services, providing insights into the relationships between various variables.

Research Conceptual Framework



Picture 1 Research Conceptual Framework

Research Results

1) To study the current health situation and health literacy of older adults in the community of Nanning, China,

Basic Information from Questionnaire Survey

The survey collected a total of 1166 samples, yielding 1049 valid responses and 117 invalid ones, resulting in a valid questionnaire recovery rate of approximately 90%. Among the 1049 participants, 473 (45.09%) were male and 576 (54.91%) were female. The largest age groups were the young elderly (60-69 years) with 455 respondents (43.37%) and the middle elderly (70-79 years) with 490 respondents (46.71%). Educational attainment showed that 568 respondents (54.15%) had completed high school or lower levels of education. In terms of occupation, 563 individuals (53.67%) were retired from various enterprises or units, while 486 (46.33%) identified as farmers or freelancers. Regarding living arrangements, 104 elderly individuals (9.91%) lived alone, while the majority, 936 (89.23%), resided with spouses or children. Concerning medical insurance, 982 respondents (85.46%) were enrolled in public medical programs such as rural health insurance or employee health insurance, while 184 (14.54%) opted for commercial or other insurance types, indicating an enrollment rate of about 98%. Furthermore, 406 participants (38.71%) reported annual medical expenses of less than 1,000 yuan, 567 (54.05%) spent between 1,000 and 10,000 yuan, and 76 (7.24%) incurred expenses over 10,000 yuan.

2) To analyses the current utilization of community health management services and explore the influencing factors, and to provide a reference basis for formulating strategies

Analysis of Health Literacy Awareness Among the Elderly

To assess health literacy, the questionnaire included questions related to common geriatric chronic diseases and general health knowledge. Findings revealed that only 177 individuals (16.87%) accurately identified normal blood pressure and blood sugar values, while approximately 77% of participants indicated they did not know these values. Only about 100 respondents (9.53%) knew the recommended daily intake levels for salt, sugar, and oil, and a mere 71 (6.77%) understood the differences between prescription and over-the-counter medications for common ailments. Among the elderly, 187 individuals (17.54%) were aware of various portable health monitors, such as smart bracelets, and only 103 (9.82%) reported using such devices.

Chronic Diseases and First Choice of Medical Care Organization

Regarding physical health, 497 respondents (47.38%) reported having chronic diseases, while 463 (44.14%) stated they did not, and 89 (8.48%) were uncertain about their health status. Of those with chronic conditions, 84 individuals (8.01%) required assistance with daily activities, while approximately 92% expressed confidence in their ability to care for themselves. As for preferences regarding initial medical consultation, county and municipal hospitals were favored by 409 individuals (38.99%), 328 (31.27%) preferred community health service organizations, and 211 (20.11%) chose provincial A-class tertiary hospitals. Within the last six months, 131 participants (12.49%) visited community health organizations 1-2 times, 231 (22.02%) visited 3-5 times, and 657 (62.63%) had not sought care at these facilities. When asked why they did not visit community health centers, 44.71% cited available at nearby A-class tertiary hospitals.

4Utilization of Health Management Services and Single Factor Analysis

As shown in Table 2, about 60% of elderly respondents accessed community health management services in the past two years. Notably, the utilization rates for "health check-ups," "health assessments," "health guidance," and "establishment of health records" exceeded 50%. Conversely, services such as "rehabilitation treatment," "regular reviews," and "chronic disease management" had lower utilization rates, below 28%. Approximately 424 individuals (40.42%) did not engage with health management services.

Table 3 highlights that single-factor analysis indicated significant variations in health record utilization based on demographic factors such as gender, age, education level, past occupation, residence status, annual medical expenses, and chronic disease prevalence ($p < 0.05$). However, no statistically significant differences were observed in the utilization of health assessments among these characteristics ($p > 0.05$). There were significant differences in the utilization of health check-ups among different age groups, past occupations, residential situations, and chronic disease status ($p < 0.05$). Differences in the utilization of health guidance and chronic disease management services were also present based on age, occupation, residence status, medical expenses, and prevalence of chronic diseases ($p < 0.05$). Significant differences were noted in the utilization of regular reviews, follow-up, and rehabilitation treatment across different genders, residence statuses, medical expenses, and chronic disease occurrences ($p < 0.05$).

Table 1. Illnesses, willingness for first medical consultation, and number of visits to community health facilities and reasons for such visits among community elderly people (n, %)

Item		Number	Composition ratio (%)	Item	Frequency	Composition ratio (%)	
Chronic illnesses	Yes	497	47.38	Number of visits to community health centers/stations in the last six months	0 time	657	62.63
	No	463	44.14		1-2 times	131	12.49
	Not clear	89	8.48		3-5 times	231	22.02
Self-care ability	Yes	965	91.99		More than 5 times	30	2.86
	No	84	8.01	Poor quality of medical care	469	44.71	
Selection of first medical institution in case of illness	Community health center	328	31.27	Reasons for not going to community health centers/stations	Far away and inconvenient	124	11.82
	County/city hospitals	409	38.99		Fewer types of medications	141	13.44
	Provincial A-class tertiary hospitals	211	20.11		Poor medical attitude	61	5.82
	Self-care without going to hospital	101	9.63		Poor efficacy of treatment	198	18.88

Table 2 Utilization of community health management services by the elderly

Utilization of community health services	Frequency of utilization	Utilization rate (%)	Utilization of community health services	Frequency of utilization	Utilization rate (%)
Establish health records	544	51.86	Periodic review	167	15.92
Health checkups	625	59.58	Follow-up services	292	27.84
Health assessment	614	58.53	Rehabilitation	152	14.49
Health guidance	552	52.62	No health management service	424	40.42
Chronic disease management	253	24.12			

Table 3 Single factor analysis of the utilization of community health management services for the elderly

Variables	Gender		Age		Education		Occupation before retirement		Residence		Medical expenses		Chronic illness	
	χ^2	<i>P</i>	χ^2	<i>P</i>	χ^2	<i>P</i>	χ^2	<i>P</i>	χ^2	<i>P</i>	χ^2	<i>P</i>	χ^2	<i>P</i>
Establish health records	4.836	0.028	15.185	0.002	6.743	0.018	45.33	<0.001	35.085	<0.001	74.997	<0.001	22.086	<0.001
Health checkups	0.28	0.597	30.281	<0.001	0.739	0.864	32.289	<0.001	19.631	<0.001	6.821	0.146	30.041	<0.001
Health assessment	1.442	0.23	1.373	0.712	2.444	0.486	3.652	0.455	7.154	0.064	4.697	0.32	2.286	0.319
Health guidance	1.575	0.209	15.162	0.002	1.281	0.734	25.611	<0.001	29.353	<0.001	39.857	<0.001	7.073	0.029
Chronic disease management	0.323	0.57	30.444	<0.001	0.55	0.908	24.185	<0.001	10.291	0.016	43.34	<0.001	192.542	<0.001
Periodic review	3.937	0.047	7.249	0.0064	6.916	0.075	9.198	0.056	10.769	0.013	23.776	<0.001	32.986	<0.001
Follow-up service	6.444	0.011	33.871	<0.001	3.964	0.256	8.078	0.089	10.84	0.013	71.244	<0.001	3.991	0.136
Rehabilitation	4.826	0.028	5.941	0.15	3.162	0.367	2.11	0.716	29.894	<0.001	13.905	0.008	13.642	0.001

3) To improve the utilization efficiency of community health management services for older adults in Nanning.

Factors Influencing Health Management Service Utilization

In our analysis, health management utilization was treated as a dependent variable (with a value of 1 assigned to those utilizing any service and a value of 2 assigned to those who did not utilize any). Independent variables included demographic characteristics (gender, age, education, occupation, residence, medical expenses, and health insurance), health status (presence of chronic diseases and self-care ability), health literacy, and evaluations of community health management services. The findings indicated that age, residence status, chronic disease status, medical expenses, service evaluation, and health literacy significantly impacted the utilization of community health management services among the elderly ($p < 0.05$). See Table 4.

Table 4 Logistic regression analysis of the utilization of community health management services for the elderly

Influencing factors	Assignment	B	S.E.	Wald	P	OR	95% CI for OR	
							Lower	Upper
Age	60-69 years = 1*							
	70-74 years = 2	-0.49	0.156	9.815	0.002	0.613	0.451	0.832
	75-79 years = 3	-0.613	0.201	9.352	0.002	0.542	0.366	0.802
	80 and over = 4	-0.62	0.243	6.533	0.011	0.538	0.334	0.865
Residence	Living alone = 1*							
	Living with spouse = 2	-0.827	0.251	10.881	<0.001	0.438	0.268	0.715
	Living with children=3	-0.56	0.221	6.441	0.011	0.571	0.37	0.88
Whether suffering from chronic diseases	No = 1*							
	Yes = 3	0.554	0.14	15.541	<0.001	0.575	0.437	0.757
Payment of medical expenses per year	Below 1000 = 1*							
	1001-3000=2	-0.814	0.169	23.133	<0.001	0.443	0.318	0.617
	3001-5000=3	-1.064	0.19	31.299	<0.001	0.345	0.238	0.501
	5001-10000=4	-0.971	0.258	14.157	<0.001	0.379	0.228	0.628
	More than 10,000 yuan = 5	-0.581	0.265	4.823	0.028	0.559	0.333	0.939
Health literacy	Don't know = 0*							
	Wrong answer=1	-0.881	0.449	3.844	<0.050	0.414	0.172	1.000
	Right answer=2	1.182	0.182	42.37	<0.001	3.259	2.284	4.652
Evaluation of community	Not satisfied=1*							

health management services	Generally satisfied=2	1.549	0.194	63.847	<0.001	4.707	3.219	6.883
	Satisfied=3	2.69	0.235	131.075	<0.001	14.727	9.293	23.339

Discussion

Low level of health literacy among the elderly and health awareness to be raised

This survey showed that the average correct rate of health literacy among the elderly in the community was 11.06%. According to the health literacy test results of Chinese residents in 2022, the health literacy level of Chinese residents reached 27.78%, and Su Ying et al. found that the health literacy level of elderly people in Heilongjiang Province, China, was 14.0% in 2019 (Health Commission, 2023: 01). It can be seen that the health literacy level of the elderly in Nanning is much lower than the national average and other regions in the east, which may be related to the current status of regional economic development. Nanning is located in the western region of China, which is characterized by “growing old before getting rich” and economic development lagging behind that of the eastern coastal regions of China, and the lack of funding for health education and health promotion at the grass-roots level has slowed down the work progress, resulting in poor results. Community geriatric health education is the most critical means of improving health literacy among the elderly (Shi, 2022 : 266). It is suggested that it is important and urgent to increase efforts to promote health education and health literacy among the elderly.

Overall poor and inefficient utilization of community health services for the elderly

The utilization rate of community health services for the elderly was 60%, which was lower than the findings of the 2020 census data from Beijing, China (70.6%), which is still far from the health management rate of 73% for the elderly aged 65 years and above in 2025 as required by the *Fourteenth Five-Year Plan for Development of the Elderly Career in Guangxi* (Guangxi, 2022 : 01). This indicates that the utilization rate of community health management services by urban elderly in Nanning is low. Among the elderly who have received services, the utilization rate of health check-ups was the highest, thanks mainly to China's basic public health services, which provide free medical check-ups once a year for the elderly aged 65 or older. In contrast, the utilization rate of follow-up services and chronic disease management is less than 30%, with 68.2% of elderly chronic disease patients participating in both services. This shows that the coverage of chronic disease management in the community was poor, and the main cause is the limited nature of medical conditions in the community. Previous studies have shown that primary healthcare resources are insufficient in China (He, 2022: 183), and follow-up and chronic disease management require a large number of healthcare professionals to conduct long-term dynamic tracking, and to maintain and update health records and databases on a regular basis. Healthcare organizations are trying to save manpower and material resources primary healthcare organizations only follow up by telephone, which is far from the effect of door-to-door follow up. Meanwhile, the elderly who received rehabilitation and regular checkups reported that they mainly participated in TCM physical therapy and acupuncture rehabilitation, which were more recognized than other medical services. Primary Chinese medicine service is a key component of health service in China (Cheng, 2022: 96), and its concept of “treat before disease attack” is an important guidance for realizing health management.

The first medical institutions for the elderly in the community are mainly county and city general hospitals, and differences exist in the content of health management services received by the elderly of different genders, ages and occupations.

The study results showed that the elderly had the strongest willingness to make their first medical consultation at county and city hospitals or higher, and more than 60% of the elderly had not visited a community health service organization within six months. There are two main reasons why the elderly have a higher preference for county, city and provincial A-class tertiary public hospitals than for community health organizations. One is the perception that the quality of treatment in community institutions varies, coupled with the lack of a full range of medicines, which is the main reason for the elderly in general not having a high level of trust and satisfaction with primary health care organizations; the second is that the elderly think that it is more cost-effective to choose a hospital with good medical standards when the A-class tertiary hospital is within their reach. Liu Meilin believed that most patients with common diseases visit the primary medical center, but for all chronic diseases and patients with incapacity and dementia, the first visit should not be at the primary level, but at the higher-level hospitals to clarify the diagnosis and treatment plan, and to decide whether to refer or not according to the condition (Liu, 2024: 01). In the single factor analysis, the utilization of health records, regular review and follow-up services was higher among male elderly than among female elderly; the utilization of health records, health checkups and guidance, chronic disease management and follow-up services by middle-aged elderly, people who were retired from official units, and those who suffered from chronic diseases was lower than that of the young elderly, freelancers, and farmers. This is basically consistent with the findings of Hu Yue (Hu, 2023: 56).

Age, residence, illness, medical expenses, evaluation of services and health literacy as influencing factors on the utilization of health management services for the elderly

Research results show that the older the elderly, the worse the health management utilization, which is basically consistent with the findings of Yu Na (Yu, 2014:12). The main reason may be the high probability of illness and complications with increasing age, and the choice of general hospitals due to the inability of community healthcare organizations to meet the health management needs of the elderly due to their limited resources. The higher the annual medical expenses paid by the elderly group, the less effective the utilization of community health management, which is directly related to their traditional health care preferences. Those who tend to choose hospitals with high level of medical services spend more on medical expenses and recognize health management services in general hospitals more than those in the community. Meanwhile, the health management utilization effect of the elderly living alone is better than that of living with their children or spouses; the health management utilization effect of the elderly suffering from chronic diseases is better than that of those not suffering from chronic diseases; and the higher the health literacy and the higher the satisfaction with the health services, the better the utilization effect of the health management services of the elderly is.

Recommendations

General Recommendations

First, policies should be designed to realize the shift of medical resources to the grass-roots level and to increase the investment in grass-roots health personnel and financial resources. We should strictly implement the construction of the family doctor team in accordance with the Guiding Opinions on Promoting the High-Quality Development of Contracted Family Doctor Services (P. R. China, 2022: 01), and carry out full-cycle follow-up services and chronic disease management for the elderly. Meanwhile, building a medical big data platform to achieve visualized dynamic monitoring and promote equalization of health services. Information sharing platform can realize the sharing and optimal allocation of medical resources, achieve comprehensive cooperation between community and primary medical institutions and higher-level hospitals, further improve the mechanism of hierarchical medical care and referral, and improve the accessibility and continuity of medical services for the elderly. The second is to improve the system of detailed and specialized training for primary medical care personnel, strengthen the construction of chronic disease medical personnel to increase the strength of chronic disease management at the primary level, and provide a solid foundation for improving the level of primary health management services, enhancing the adherence and satisfaction of the elderly with primary medical care services, and thus promoting the realization of primary care first aid. Thirdly, in view of the physiological and age-related characteristics of the elderly, we should expand community- and family-oriented health promotion activities and promote intelligent health monitoring equipment. Fourthly, we should give full play to the distinctive advantages of Chinese medicine in primary health care services and promote the quality development of Chinese medicine health management services.

Recommendation for future research

This is a cross-sectional study, and due to the limitation of time and resources, the survey was conducted only for the elderly in Nanning City, and the sample could not effectively represent the situation of the whole group. In future studies, in order to improve the representativeness and generalizability of the sample, we may consider enlarging the sample size and improving the questionnaire content, as well as conducting long-term follow-up studies to explore more relevant factors in depth.

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