

Factors Influencing the Selection of Long-term Care Services for Hospitalized Disabled Patients

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ABSTRACT

This study explores the factors that affect the choice of long-term care services for hospitalized patients with disabilities. The data were systematically analyzed to examine the patient's severity, family support, and economic status. Practical and psychological factors were identified through in-depth interviews with hospitalized disabled patients. An extensive survey assessed how different factors affect patients' choices. The results show that numerous factors, including individual characteristics such as severity of illness and quality of life and societal and family factors such as family support and economic status, influence the choice of long-term care services. Understanding these factors contributes to providing more effective long-term care services, meeting the needs of patients, and enhancing their overall quality of life.

Keywords: Long-term care, Life quality, Medical care

1. Introduction

The growing aging population is a global trend affecting developed and developing nations. Taiwan, like other Asian nations, is experiencing a rapid increase in the number of older people. While only 2.4% of the population was over 65 in the 50s, this doubled by the 80s and exceeded the World Health Organization benchmark of 7% for older people in 1993. Over the past 50 years, life expectancies in Taiwan have increased significantly, with the average age of the male population being 71.9 and the average age of the female population being 77.8 [1, 2].

The growing elderly population increases the need for personal care and assistance with daily tasks, which is a significant challenge for families, doctors, the government, and society in adapting to the changing demographic scenario in Taiwan [1]. The country's successful industrialization and the emergence of the service sector have restructured its economic framework and changed its social dynamics. Although there is still traditional family support for the care of the elderly in Taiwan, a survey conducted in 1996 found that 73% of the elderly preferred to live with their children, and 16%

preferred to live only with their spouses. Less than 3% of the elderly preferred long-term care institutions, while 1.4% chose senior apartments. These preferences reflect practical choices and highlight that living with family is still the most prevalent and helpful option for most elderly individuals in Taiwan [1, 3].

Due to the increasing demand for long-term care services and the formulation of long-term care policies in Taiwan, the country's long-term care strategy requires a comprehensive. In the last two decades, the development of long-term care facilities has encountered challenges within the social and healthcare framework and a supply-demand mismatch. Several institutions necessitate assistance in adapting to current policies, resulting in policy obstacles [4]. However, the central government's Ministry of Health and Welfare has gradually recognized the importance of long-term care [5]. Local long-term care centers have synergized their resources, and the formulation and enactment of the Long-term Care Services Act and the Long-term Care Insurance Act manifest Taiwan's dedication to advancing the long-term care industry. This indicates a movement towards a more inclusive and practical integration with principles of fairness and equity [4].

Chang et al. [6] applied the Decision-Making Trial and Evaluation Laboratory method to identify determinants in a health cloud system, considering the perspectives, objectives, and criteria of different stakeholders [1]. However, these criteria are linked and interrelated contrary to the Analytic Hierarchy Process's premise that measures are independent and uncorrelated. Therefore, this study employed the DEMATEL method to identify interdependencies among three project dimensions: market, technology, and benefits to select key projects. Subsequently, the Analytic Network Process (ANP) was used to determine the weights among the critical evaluation criteria in scoring service selection projects [7].

The main motivation for this study is the growing importance of long-term care services for hospitalized disabled patients. Therefore, this study aimed to fully comprehend and summarize the various factors influencing patients' choices of long-term care services to address potential knowledge gaps in this field. The study objective was to provide a more comprehensive nursing service. Furthermore, understanding the criteria patients employ in selecting long-term care services enhances the efficient allocation of healthcare resources. For example, customizing medical resources for critically ill patients and offering family support and community resources for comparatively less severe cases.

Field surveys and a literature review were conducted to examine the primary factors impacting long-term service utilization. The survey data were analyzed to determine individuals' primary criteria for selecting long-term care services and then identify essential elements and establish them as evaluation indicators for government agencies and long-term care managers.

The findings suggest that patient characteristics, including illness severity and quality of life, play a significant role in determining the selection of long-term care services. There are complex interactions among these factors, suggesting that patient choices result from multiple influences, therefore, individual characteristics as well as social and familial factors need to be considered to gain a comprehensive understanding of how patients need and choose care services.

This study's primary contribution lies in systematically collecting and analyzing various factors influencing patients with disabilities' choices of long-term care services. It provides a comprehensive perspective by examining the severity of patients' illnesses, family support, and economic status, improving our understanding of patients' complex situations in making these choices. The study findings underscore the importance of understanding these factors to provide more effective long-term care services. It is necessary to comprehend patients' needs, including their illness severity, quality of life, and familial and social support to develop more individualized and appropriate care plans, enhancing the effectiveness of care provided.

2. Literature Review

2.1 Long-term Care

Long-term care facilities spend significant time with older people [5], thus, promoting health is crucial for maintaining their physical and mental well-being. Long-term care institutions must continually strive to enhance the quality of life for care recipients to achieve this goal [5]. Health promotion encompasses more than just preventing specific illnesses, so the government has implemented a variety of health promotion initiatives [3] including the Elderly-Friendly City Program, the expansion of age-friendly health care, health promotion contests, and the establishment of various dementia care centers. The objective is to improve the quality of life for older adults and decrease the incidence of dementia [3, 8].

Long-term care providers assess physical, mental, and spiritual health concerns; evaluate patients' home safety; assess family caregiving skills and interactions, support functions, and care plans; and provide access to needed health resources. Emphasis is placed on health promotion and objective assessment of patient health status. Technical terms are explained when first used [3, 9] and the language is formal, value-neutral, and generally passive, with minimal emotional or ornamental language.

In 1990, numerous countries implemented the long-term care concept which merges health and social care to enhance accessibility, and service quality, and decrease expenses [5]. Long-term care integrated previously separate services, while medical advances in the past focused primarily on treating life-threatening emergencies such as infections and injuries. These progressions in medical technology have gradually alleviated acute conditions [2] with an increasing trend towards the chronicity and complexity of disease treatment. Older adults, disabled individuals, and those with chronic medical conditions may require two or more interdisciplinary long-term care services for basic daily activities.

Long-term care is a patient-focused collaboration to coordinate funding, management, organization, and clinical services within the health and long-term care systems to achieve common goals and optimal outcomes [9]. It involves a well-organized and planned service delivery process that addresses individuals' complex needs and problems [10, 11]. Long-term care for older individuals should include acute medical care, long-term care, social care, housing, transportation, and nutrition to support independent living. The level of required integrated care will vary based on individual

cases and will incur increased costs as the level of integration increases [9]. Long-term care can address problems arising from medical and long-term care separation by providing personalized and continuous services [10]. Integration of such services offers practical solutions promptly, thereby reducing the burden on individuals with disabilities or impairments, who may otherwise be viewed as a burden to their families and society [6]. The goal is to provide services that meet unique needs without obstacles, improve the accessibility and consistency of services, strengthen organizational operations, and enhance service standards and user satisfaction [1].

3. Research Methodology

3.1 Research Design

This study combined the Analytic Network Process (ANP) and the Decision Making Trial and Evaluation Laboratory (DEMATEL) qualitative methodology. ANP is employed to address intricate contradictions within the system [12] using heuristic reasoning to obtain indicators of interaction between dimensions. However, further investigation is required to confirm the importance and feasibility of these indicators, so DEMATEL was applied to clarify the intricate relationships between these concepts and to evaluate their crucial implications [13].

The study started by analyzing the relevant literature. Subsequently, an expert evaluation was conducted to identify significant factors impacting the decision to utilize long-term care services to construct a survey to investigate the causal connections. ANP was then applied to the survey findings to calculate and visualize the relationship of the impact network. Subsequently, DEMATEL analysis was employed to determine the impact weights of various evaluation criteria. A second survey was distributed with the findings used to calculate the weights of impact indicators, conduct gap analyses, and propose strategies and recommendations for improvement.

3.2 Data Collection

This study focused on evaluating the factors influencing the selection of long-term care services for hospitalized disabled patients. It targeted government officials and industry stakeholders and achieved a 100% response rate by distributing 50 DEMATEL questionnaires, which were designed to ensure objectivity, comprehensibility, logical structure, conventional structure, precise and objective language, proper formatting, formality, structural clarity, balance, precise word choice, and grammatical correctness. Respondents comprised hospital administrators, government officials, and academic experts with expertise in Penghu County's long-term care services for hospitalized disabled patients. Fifteen experts were selected based on their extensive experience in the long-term care industry, legal expertise in laws relevant to service selection, and involvement in practical matters related to this field.

In the second phase, the study utilized a modified VIKOR questionnaire to gather the opinions of island residents regarding the selection of long-term care services for hospitalized disabled patients. This data was subsequently compared to the viewpoints of industry stakeholders and experts. Out of the 350 questionnaires distributed, 488 were considered valid after eliminating 12 invalid responses. Overall, 43.6% of the respondents were women (213) and 56.3% were men (275), with most being

in the "21-25 years" age group (298; 59.2%), followed by the "20 years and below" group (100; 20.4%) and the "26-30 years" group (90; 18.4%). Most respondents (74.7%) were "university/college" educated with 11.8% (58) having a "master's", while the "high school (vocational)" group had the third-highest number of responses (72) representing 14.7%.

3.3 Dematel

(1) Definition of Factors and Assessment Scale:

This study identified and defined six key factors which were assigned values with 0 indicating no correlation, 1 for low correlation, 2 for moderate correlation, 3 for high correlation, and 4 for very high correlation.

(2) Establishment of Direct Relationship Matrix:

The interplay and the relationships between the factors were represented through a matrix which reflects the degree of correlation:

$$X = \begin{bmatrix} 0 & x_{12} & \cdots & x_{1n} \\ x_{21} & 0 & \cdots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \cdots & 0 \end{bmatrix} \quad (1)$$

(3) Establishment of a Normalized Direct Relationship Matrix:

The normalization of the direct relationship matrix was based on the column vector and its maximum value as follows:

$$\lambda = \frac{1}{\text{Max}_{1 \leq i \leq n} \left(\sum_{j=1}^n x_{ij} \right)} \quad (2)$$

The normalized direct relationship matrix N was obtained by multiplying the direct relationship matrix X by the λ value using formulas (1) and (2):

$$N = \lambda X \quad (3)$$

(4) Establishing the Direct or Indirect Relationship Matrix

The direct or indirect relationship matrix was established as follows:

$$T = \lim_{k \rightarrow \infty} (N + N^2 + \cdots + N^k) = N(I - N)^{-1} \quad (4)$$

D_i and R_j were calculated from the direct/indirect relationship matrix T:

$$D_i = \sum_{j=1}^n t_{ij} \quad (i = 1, 2, \dots, n) \quad (5)$$

$$R_j = \sum_{i=1}^n t_{ij} \quad (j = 1, 2, \dots, n) \quad (6)$$

(5) Calculate Centrality (D+R) and Causality (D-R):

The DEMATEL method contends that (D_k+R_k) defines centrality as $k = i = j = 1, 2, \dots, n$. (D_k+R_k) signifies the overall degree to which this aspect affects or is influenced by others. This technique

determines the central importance of factor k in all aspects. Conversely, $(D_k - R_k)$ is posited as "causality," illustrating the difference between the impact and the influence caused by the factor. This metric indicates the causality of factor k across all issues. A positive score implies that the factor is likely a cause, whereas a negative score implies that it tends to be an effect.

4. Empirical Research

This section examines the present state and concerns relating to establishing long-term care services for disabled patients in hospitals. The case aims to showcase the effectiveness of the proposed evaluation model in addressing intricate real-world dynamics, employing two methods, primarily emphasizing the outcomes obtained from a survey questionnaire.

4.1 Problem Description

A causal relationship questionnaire and a gap analysis questionnaire were used To assess the evaluation criteria and analyze the strategic development differences in the long-term care industry. In the initial phase, 50 experts in long-term care services for hospitalized disabled patients completed the causal relationship questionnaire and evaluated the causal relationships using a five-point scale, with responses scored from "4" (extremely influential) to "0" (having no influence). Then, a comparative analysis of strategic development within the long-term care industry was conducted to enhance the industry's strategic approach, specifically in the context of isolated islands, to promote seamless execution and boost developmental prospects.

4.2 Establishing Cause-and-Effect Relationships through DEMATEL

This study established a causal structure for the long-term care services industry by analyzing four dimensions and eleven evaluation criteria. The text adhered to conventional academic structure, transparent and objective language, precise word choice, grammatical correctness, and standardized formatting features. Fifty experts completed the Causal Relationship Questionnaire for pairwise comparisons to obtain the initial matrix A . From the initial matrix, the standardized matrix D was derived to calculate the standardized total impact matrix T . Explanations of acronyms were provided upon first use. Consistency ratios for benefit, opportunity, cost, and risk criteria were 94.2%, 97.1%, 92%, and 90.6%, respectively. Standard consistency gaps were 4.7%, 4.4%, 4.1%, and 3.2% for criteria related to care quality, care cost, cognitive function and mental health, and safety and hygiene environment. Care quality was identified as the driving dimension for care cost, cognitive function and mental health, and safety and hygiene environment. The assessment criteria for care quality played the most significant role in this study and indicated its central importance in addressing the issues examined here. Improving the quality of care is crucial in enhancing long-term care services on the outlying islands. It is advisable to prioritize improving cognitive function, and mental health and maintaining a safe and hygienic environment to enhance the benefits of long-term care services in Penghu. This approach can aid in achieving the goals of long-term care services on the islands (see

Tables 1 & 2).

Table 1 Research definition

| Criteria for Evaluation | Sub-Criteria for Evaluation | Definition |
|---|---------------------------------------|---|
| Care quality(B) | Number of care service personnel (B1) | Optimal Staffing Ratio in Long-term Care Facilities |
| | Service quality (B2) | Comprehensive Care Provision by Caregivers |
| | Care Plan (B3) | Differential Care Assessment Across Units |
| Care costs (O) | Transparency Care Fees (O1) | Uniform Charging Standards in Long-term Care Centers: |
| | Financial Assistance (O2) | Eligibility for Government Subsidies |
| | Self-paid services (O3) | Out-of-Pocket Expenses for Treatment Needs |
| Cognitive function and mental health (C) | Care Needs Assessment (C1) | Evaluate the elderly person's care requirements, considering their physical health, daily living capabilities, and medical condition |
| | Cognitive training (C2) | Cognitive training is a therapeutic approach to treating symptoms of cognitive impairment, with the primary goal of helping people with disabilities maintain or improve cognitive function to increase their ability to live independently |
| Safety and health environment (R) | Fire Assessment (R1) | The Nursing Center is equipped with fire-resistant materials and evacuating devices to ensure a safe environment |
| | Environmental Health (R2) | The cleanliness and hygiene of the care center are also ensured |
| | Caregivers (R3) | The caregivers' professional standards and qualities should be evaluated, including certifications, training qualifications, and sufficient knowledge |

Source: By authors.

Table 2 Mutual influences among various dimensions lead to specific outcomes

| Factor | D | R | D+R | D-R |
|--------------------------------------|------|------|-------|------|
| Quality of Care | 4.25 | 3.21 | 7.46 | 1.04 |
| Quantity of Caregivers (B1) | 6.52 | 4.12 | 10.64 | 2.4 |
| Service Quality (B2) | 4.78 | 2.15 | 6.93 | 2.63 |
| Care Plans (B3) | 9.12 | 6.12 | 15.24 | 3 |
| Cost of Care | 7.45 | 7.12 | 14.57 | 0.33 |
| Transparency of Care Costs (O1) | 5.45 | 3.21 | 8.66 | 2.24 |
| Financial Assistance (O2) | 9.54 | 4.56 | 14.1 | 4.98 |
| Self-pay Services (O3) | 7.45 | 6.45 | 13.9 | 1 |
| Cognitive Function and Mental Health | 8.74 | 5.12 | 13.86 | 3.62 |
| Care Needs Assessment (C1) | 9.45 | 6.45 | 15.9 | 3 |
| Cognitive Training (C2) | 5.01 | 4.65 | 9.66 | 0.36 |
| Safety and Sanitary Environment | 7.45 | 7.45 | 14.9 | -- |
| Fire Assessment (R1) | 6.12 | 8.14 | 14.26 | -- |
| Environmental Hygiene (R2) | 6.12 | 7.45 | 13.57 | -- |
| Caregiver Staffing (R3) | 7.45 | 6.45 | 13.9 | 1 |

Source: By authors.

4.3 Using Revised VIKOR to Evaluate the Performance Gap

In the second section, an evaluation of the long-term care sector on the outlying islands was performed to comprehend potential strategic development. Participants responded to an 11-point scale ranging from "0" (least significant) to "10" (most significant). The revised VIKOR technique was utilized to appraise the overall effectiveness of the long-term care industry. Table 2 shows that long-term care managers can analyze the connections between primary and sub-criteria based on these markers. The evaluation, guided by these associations, aims to overcome existing challenges. The resultant priorities from this analysis were used to determine the weights of each criterion, ordered from highest to lowest according to expert-derived weight values. Table 2 shows that financial aid has the most significant gap in the service quality dimension, with a value of 47.4. The care cost dimension has the most significant gap in transparency in care costs, valued at 6.25. The care needs assessment has the most significant gap in cognitive function and mental health, valued at 6.52. Meanwhile, the safety and hygiene environment dimension's most significant gap is in the shortage of care personnel, with a value of 2.85 (Table 3).

Table3 Gap Summary

| Factor | Original Weights | Overall Weights | Overall Score | Gap Value |
|---------------------------------------|------------------|-----------------|---------------|-----------|
| Quality of Care | 0.129 | 0.013 | 4.21 | 3.21 |
| BQuantity of Caregivers (B1) | 0.325 | 0.041 | 5.12 | 5.21 |
| B2Service Quality (B2) | 0.125 | 0.141 | 6.21 | 4.74 |
| B3Care Plans (B3) | 0.154 | 0.031 | 5.14 | 210 |
| OCost of Care | 0.245 | 0.162 | 6.36 | 4.15 |
| O1Transparency of Care Costs (O1) | 0.123 | 0.141 | 7.45 | 6.25 |
| O2Financial Assistance (O2) | 0.1112 | 0.012 | 6.12 | 4.12 |
| O3Self-pay Services (O3) | 0.241 | 0.121 | 4.15 | 3.65 |
| CCognitive Function and Mental Health | 0.056 | 0.012 | 4.65 | 2.41 |
| C1Care Needs Assessment (C1) | 0.112 | 0.014 | 3.54 | 6.52 |
| C2Cognitive Training (C2) | 0.214 | 0.021 | 4.12 | 2.85 |
| RSafety and Sanitary Environment | 0.142 | 0.041 | 3.54 | 2.74 |
| RFire Assessment (R1) | 0.132 | 0.021 | 6.54 | 2.61 |
| R2Environmental Hygiene (R2) | 0.141 | 0.022 | 7.48 | 2.32 |
| R3Caregiver Staffing (R3) | 0.141 | 0.014 | 7.55 | 2.85 |

Source: By authors.

5. Conclusion

Access to healthcare resources in remote island areas is constrained by unique geographic conditions, vast territories, and transportation challenges. The government's goal is to promote health equity through the active pursuit of policy objectives such as "localization of health care, community-based care, and real-time emergency response. These initiatives strive to augment the accessibility and egalitarianism of healthcare resources. Building upon the current healthcare infrastructure, the government aims to enhance health promotion, preventive care, and integrated long-term care services to establish an improved and efficient healthcare environment for rural and island communities.

Service quality is paramount to providing effective and responsive care, with professionalism and technical proficiency crucial for providing safe and appropriate medical and nursing care, directly affecting their recovery and quality of life. Effective communication and empathy are also essential to quality care as clear communication enables patients and their families to comprehend treatment plans and medical recommendations, facilitating their active involvement in care. A caring and empathetic attitude that fosters trust and a collaborative relationship with patients also improves the overall quality of care. In addition, timely and continuous care is at the core of service quality, guaranteeing patients have prompt access to medical and nursing care, providing continuity of care, preventing the decline of illnesses, and ensuring smooth treatment plan execution.

The transparency of care costs is paramount. A precise cost structure is fundamental to establishing trust and fairness. A transparent cost structure empowers patients and their families to comprehend the cost variables related to necessary care, permitting them to gauge all-around expenses and plan their finances prudently while mitigating any anxieties or concerns that might arise due to obscure costs. Transparency also aids in the financial accountability of regulatory bodies. Care institutions should provide clear explanations regarding the allocation of funds to ensure the efficient use of resources, thereby promoting their reputation, attracting more patients and families, and upholding financial integrity.

Assessing cognitive function and mental health care needs is critical because it directly affects an individual's quality of life and overall health. First, determining cognitive function uncovers an individual's memory, thinking, and decision-making abilities, which is essential for creating tailor-made care plans to offer adequate support, ensuring effective handling of diverse daily challenges. Mental health assessment is an essential aspect of caregiving. The ability to discern an individual's emotional state, psychological stress levels, and mental health status is critical for early detection and proper addressing of potential mental health issues. This is crucial in preventing the exacerbation of mental health challenges and providing appropriate therapy and support. Practical mental health assessment also fosters psychosocial well-being, ultimately improving overall life satisfaction.

Decision-making for disabled patients in selecting long-term care services entails intricate and multidimensional factors that necessitate a comprehensive medical, family, economic, and geographical evaluation. This guarantees the choice of the most fitting care plan.

This research has significant implications for the long-term care industry. First, this study contributes to a more comprehensive understanding of the various factors considered by individuals with disabilities when choosing long-term care services. The study highlights the individual patient traits that influence decisions regarding long-term care services, including illness severity, quality of life, and social and familial factors, such as family support and economic status. This has practical implications for nursing education, highlighting the importance of teaching students how to comprehensively assess patients' needs and backgrounds to provide personalized and effective care.

The practical and psychological factors that positively influence the development of nursing students' clinical practice skills were also identified by conducting in-depth interviews with inpatients with disabilities. Nurses must learn to identify patients' needs and psychological states through verbal and nonverbal cues to provide better support and care. The comprehensive study evaluated how various factors affect patients' choices and emphasized the significance of patient perspectives in making medical decisions. This assists nursing students in comprehending patients' individual needs, principles, and preferences, ultimately cultivating a patient-centric approach to nursing.

Overall, this study provides informative teaching resources for professional nursing education, facilitating students' understanding and implementation of complex settings encountered in clinical practice. It constitutes a valuable source of motivation for enhancing nursing professionalism, meeting patients' needs in a superior manner, and proving the overall quality of the long-term care industry.

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