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Predictors of Discrepancies between Psychological Service Needs and Utilization among Long-Term Care Facility Residents

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SUMMARY

Background: Depressive symptom prevalence among long-term care facility (LTCF) residents is increasing. Accordingly, this study examined psychological service needs, their utilization and influencing factors, and discrepancies between needs and utilization.

Methods: This was a cross-sectional study. Residents of 13 community-based LTCFs in Northern Taiwan answered a structured questionnaire covering demographics, health status, psychological service needs, and service utilization.

Results: Participants were 117 residents with an average age of 80.2 and a mean of 3.4 diseases; 79.5% had severe disabilities and 77.8% showed depressive tendencies. Except for pain care, needs for all services exceeded utilization, with the highest discrepancy observed for psychological assessment (Mean: -2.12, SD: 1.33). Depressive symptoms were a significant predictor of this discrepancy (R^2 : 27.9%, β : -0.51, t : -6.64, $p < 0.001$).

Conclusion: Psychological needs and service use assessment should be included in LTCF routines to reduce depressive symptoms and improve quality of life.

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1. Introduction

The demand for long-term care (LTC) services in Taiwan is increasing because of the rapid growth of the elderly population. Although institutional care is viewed as conflicting with the Chinese value of filial piety, the number of LTC facilities (LTCFs) is growing rapidly owing to the transition from an agricultural to an industrial society, declining fertility rate, and increasing number of working women.¹ The number of LTCFs increased from 261 in 1999 to 1,098 in 2018, and the number of residents from 12,659 to 49,575.² Most Taiwanese LTC service users have physical disabilities.

With an increase in the number of older persons with mental health issues, the demand for psychological healthcare services will also rise. The most common mental health problems in this demographic are dementia and depression.³ However, depression is often not recognized among older LTCF residents because of the lack of a sensitive assessment tool.⁴

Depression prevalence among older adults differs worldwide according to setting: 11.6–44.4% in community dwellings^{5,6} and 42.5–65.7% in LTCFs.^{7,8} Psychological and depression-related service needs among LTCF residents must be explored.⁹ However, most service needs are related to physical health status and abilities of activities of daily living (ADLs).¹⁰ Therefore, the increasing prevalence of depressive symptoms among LTCF residents requires

better mental health services.

Ideally, service needs and utilization must be identical in care service provision. When utilization exceeds needs, resources are wasted, whereas underutilization of required services leads to unmet needs,¹¹ which are likely to increase hospitalization and medical costs.^{12,13} Thus, comparing such discrepancies is important to manage resource consumption. This study aimed to (1) investigate psychological service needs and utilization among LTCF residents and (2) explore the factors influencing such needs and utilization, and the discrepancies between the two.

2. Materials and methods

2.1. Study design and participants

A cross-sectional design and convenience sampling were adopted. Participants were residents at registered community-based LTCFs in Greater Taipei with fewer than 49 beds. Inclusion criteria were: (1) aged 60 or above, (2) admitted for one month or longer; and (3) normal cognitive function (Mini-Mental State Examination [MMSE]). Out of 357 residents, 117 met the inclusion criteria in 13 target LTCFs.

2.2. Measurements

We used a structured questionnaire covering sociodemographics, diagnoses, the Barthel Index (BI), Patient Health Question-

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naire (PHQ-9), Psychological Service Needs Assessment Scale, and Psychological Service Utilization Registration Form.

2.2.1. Sociodemographics

Age, gender, admission date, marital status, educational level were obtained from nursing records.

2.2.2. Medical diagnoses

Diagnoses were obtained from medical records.

2.2.3. BI

The BI was used to assess 10 ADLs: feeding, transfer, grooming, toilet use, bathing, mobility, stairs, dressing, bowel continence, and bladder continence. For each item, the ratings are "completely independent," "needs help," or "completely dependent," with four levels of severity (1–4). The total score ranges from 0–100, with higher scores indicating lower dependence. Scores from 0–20 indicate full disability, 21–60 severe disability, 61–90 moderate disability, 91–99 mild disability, and 100 functional independence. Cronbach's α ranges from 0.87–0.90.^{14,15}

2.2.4. PHQ-9

The PHQ-9 consists of nine items on a four-point scale. Respondents self-evaluate the occurrence of depressive and physiological symptoms over the past fortnight, with scores ranging from 0 (Not at all) to 3 (Nearly every day). Higher scores indicate more severe depressive symptoms. A score of 5 corresponds to mild, 10 to moderate, 15 to moderately severe, and 20 to severe depressive symptoms.¹⁶ The PHQ-9 has high sensitivity and specificity with regard to depressive symptoms in community and primary healthcare users and nursing home residents.^{17,18} Cronbach's α was 0.80; regarding test-retest reliability after two weeks, the intra-class correlation coefficient was 0.87.¹⁸

2.2.5. Psychological Service Needs Assessment Scale

Developed by the second author, the Psychological Service Needs Assessment Scale, evaluating LTCF residents' needs over the previous month, comprises eight service items: recreational activities, psychological assessment, psychological counseling, fall prevention, pain care, nutrition care, sleep quality improvement, and suicide prevention. Related needs are divided into five levels: 1 point indicates that the service is needed less than once per month; 2 points once per month; 3 points once per week; 4 points 2–6 times per week; 5 points once per day. The mean content validity index (CVI) in the pilot test was 0.99; the CVI of items and individual questions ranged from 0.75–1.00.

2.2.6. Psychological Service Utilization Registration Form

Service utilization was evaluated using the Nursing Home Long-Term Care Service Utilization Registration Form,¹⁹ based on the Long-Term Care Needs Questionnaire,²⁰ and it was then revised to create the Psychological Service Utilization Registration Form. The scale evaluates utilization of the eight service domains (27 items) within one month. Utilization frequency is divided into five levels: 1 point indicates usage less than once per month; 2 points once per month; 3 points once per week; 4 points 2–6 times per week; 5 points daily.

2.2.7. Discrepancies between service needs and utilization

Measuring service usage is considered more reliable than self-assessments of whether needs are met.²¹ Van Walsem et al. defined levels of unmet needs considering the gap between

needs for healthcare and social support services and their provision, defining the difference between service needs and utilization as "discrepancy."²² We used this concept of unmet service needs²² and calculated discrepancy as the score of utilization of psychological services minus the score of service needs from professional assessments. Zero discrepancy indicates that needs match utilization; negative discrepancy indicates that needs exceed utilization; positive discrepancy indicates that utilization exceeds needs.

2.3. Data collection

Data were collected from March 17 to May 30, 2015, by three community nursing researchers with master's degrees. All three researchers assessed health status, ADLs, and psychological service needs to establish intra-rater reliability. After reaching 90% consistency of three researchers, data were collected.

Sociodemographic data and medical diagnoses were gathered from nursing and medical records; ADL levels were obtained through field observations. The researchers completed the PHQ-9 and needs assessment scale through participant interviews. The Service Utilization Registration Form was recorded by nurses, social workers, and care assistants in LTCFs whom were trained by three researchers.

Care activities are normally conducted on weekdays (08:00 am to 05:00 pm). Therefore, the researchers visited LTCFs during these times.

2.4. Data analysis

Multiple linear regression analysis was conducted using SPSS 20.0 to examine the effect of health status on psychological service needs and utilization and explore factors influencing discrepancies.

2.5. Ethical considerations

This study was reviewed by the institutional review board (IRB) of a national university (IRB No.: YM103097E). Consent was obtained only from residents with normal cognition after MMSE screening. All participants provided written consent.

3. Results

3.1. Demographic characteristics

Participants were 117 residents meeting the inclusion criteria with an average age of 80.2 (*SD*: 9.47), with most aged 80–89 (36.8%). More than half were female (59.0%); 55.6% were literate or had attended elementary school; 44.4% had lost their spouse. The average stay in the current facility was 34.2 months (*SD*: 37.09).

3.2. Health status

On average, the participants had 3.4 medical conditions (*SD*: 1.56). The most prevalent diagnoses were hypertension (62.4%), diabetes (38.5%), and cerebrovascular accident (33.3%). The average ADL and disability scores were 39.7 (*SD*: 28.82) and 7.7 (*SD*: 2.87), respectively. Most had severe disabilities and complete dependence (79.5%) and depressive tendencies (PHQ-9 score ≥ 5) (77.8%). The average PHQ-9 score was 9.8 (*SD*: 6.44), indicating mild depressive symptoms.

3.3. Service needs and influencing factors

The most needed services were fall prevention (*Mean*: 4.58, *SD*: 0.58), recreational activities (*Mean*: 3.87, *SD*: 0.48), and suicide prevention (*Mean*: 3.72, *SD*: 0.98) (Table 1). A significant predictor of fall prevention needs was PHQ-9 score (R^2 : 13.4%, $p < 0.001$) (Table 2).

3.4. Service utilization and influencing factors

The most utilized services were fall prevention (*Mean*: 3.20, *SD*: 0.81), nutrition care (*Mean*: 3.00, *SD*: 0), and suicide prevention (*Mean*: 2.12, *SD*: 0.43) (Table 1). Analyses did not reveal any significant predictors of service utilization.

3.5. Discrepancies between needs and utilization

The only positive discrepancy between service needs and utilization was observed for pain care (*Mean*: 0.15, *SD*: 0.96) (Table 1). A significant predictor was PHQ-9 score (R^2 : 13.2%, $p < 0.001$) (Table 3).

The highest negative discrepancies were seen for psychological assessment (*Mean*: -2.12, *SD*: 1.33) and recreational activities (*Mean*: -1.82, *SD*: 0.60). A significant predictor of the negative discrepancy for psychological assessment was PHQ-9 score (R^2 : 27.9%, $p < 0.001$). Item 8 of the PHQ-9 (“Others say that you move or speak slowly or, on the contrary, are always restless whether sitting or standing”) was a significant influencing factor of the negative discrepancy in psychological counseling (R^2 : 25.9%, $p < 0.001$).

4. Discussion

Residents’ average age was 80.2.^{23,24} The average number of diseases was 3.4, with hypertension being the most prevalent (62.4%).²⁵ Regarding ADLs, 79.5% had severe disabilities and complete dependence.²⁶ Almost 80% had depressive tendencies, with the mean PHQ-9 score being 9.8.²⁷

The services related to the most prevalent needs were fall prevention, recreational activities, and suicide prevention, with depressive symptoms being a significant predictor of needs for all services.²⁸ Falls are common among the elderly, with the annual rate

Table 1
Service needs, utilization, and discrepancies (n = 117)

Service type	Needs					Utilization					Discrepancy				
	Min.	Max.	Mean	SD	Order	Min.	Max.	Mean	SD	Order	Min.	Max.	Mean	SD	Order
1. Entertainment activities	2.27	5.00	3.87	0.48	2	1.64	3.00	2.05	0.44	4	-3.64	0.27	-1.82	0.60	2
2. Psychological assessment	1.00	5.00	3.26	1.23	6	1.00	3.00	1.14	0.51	8	-4.00	2.00	-2.12	1.33	1
3. Psychological counseling	1.00	5.00	3.19	1.13	7	0.67	3.00	1.49	0.86	7	-4.33	2.00	-1.69	1.33	3
4. Fall prevention	3.00	5.00	4.58	0.58	1	1.00	3.50	3.20	0.81	1	-4.00	0.50	-1.37	1.00	6
5. Pain care	1.00	5.00	1.70	1.28	8	1.67	3.33	1.84	0.41	6	-3.33	1.00	+0.15	0.96	8
6. Nutrition care	1.00	5.00	3.58	0.97	4	3.00	3.00	3.00	0.00	2	-2.00	2.00	-0.58	0.97	7
7. Sleep quality improvement	1.33	5.00	3.44	0.84	5	1.00	3.00	1.91	0.75	5	-4.00	0.67	-1.52	0.88	5
8. Suicide prevention	1.50	5.00	3.72	0.98	3	1.50	3.25	2.12	0.43	3	-3.50	0.50	-1.60	0.89	4

Note: 1 point indicates that the service was needed or used less than once per month; 2 points once per month; 3 points once per week; 4 points 2–6 times per week; 5 points at least once daily.

Table 2
Multiple regression analysis of the effects of diagnoses, ADL scores, and PHQ-9 scores on service needs (n = 117)

Needs (dependent variables)	Predictors	B	Standard error	Standardized regression coefficient β	95% confidence interval for β	R ² × 100	t
1. Entertainment activities		3.53	0.08				
	PHQ-9 score	0.02	0.06	0.32	0.10–0.04	9.5	3.81***
2. Psychological assessment	Diabetes	0.28	0.08	0.29	0.12–0.45	8.3	3.48**
		2.34	0.17				
3. Psychological counseling	PHQ-9 score	0.10	0.01	0.54	0.07–0.13	31.2	7.07***
	BPH	-0.97	0.35	-0.21	(-1.66)–(-0.28)	4.4	-2.80**
4. Fall prevention		2.18	0.15				
	PHQ-9 score	0.11	0.01	0.62	0.09–0.13	41.4	8.89***
5. Pain care	BPH	-0.75	0.30	-0.18	(-1.34)–(-0.17)	3.1	-2.55*
		4.37	0.11				
6. Nutrition care	PHQ-9 score	0.04	0.01	0.39	0.02–0.05	13.4	4.47***
	ADLs score	-0.00	0.00	-0.17	(-0.01)–0.00	2.9	-2.00*
7. Sleep quality improvement		0.70	0.22				
	PHQ-9 score	0.07	0.02	0.33	0.03–0.10	11.2	4.02***
	Fracture	1.03	0.33	0.26	0.38–1.68	6.1	3.15**
8. Suicide prevention	Diabetes	0.57	0.22	0.22	0.14–1.01	4.7	2.63*
		3.43	0.19				
9. Psychological assessment	PHQ-9 score	0.05	0.01	0.31	0.02–0.07	7.1	3.49**
	ADLs score	-0.01	0.00	-0.23	(-0.01)–0.00	4.4	-2.60*
10. Psychological counseling		2.71	0.12				
	PHQ-9 score	0.07	0.01	0.57	0.05–0.09	32.5	7.44***
11. Suicide prevention		2.66	0.12				
	PHQ-9 score	0.11	0.01	0.71	0.09–0.13	51.9	11.14***

Note 1. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Note 2. BPH: benign prostatic hypertrophy.

Table 3
Multiple regression analysis of the effects of diagnoses, ADL scores, and PHQ-9 scores on the discrepancy between service needs and utilization (n = 117)

Discrepancy (dependent variables)	Predictors	B	Standard error	Standardized regression coefficient β	95% confidence interval for β	$R^2 \times 100$	t
1. Entertainment activities	Parkinson's disease	-1.61	0.11				
	PHQ-9 score	0.51	0.18	0.25	0.16–0.86	6.6	2.87**
	Diabetes	-0.03	0.01	-0.31	(-0.05)–(-0.01)	6.8	-3.55**
	Other diseases	-0.27	0.11	-0.22	(-0.48)–(-0.06)	4.6	-2.51*
2. Psychological assessment		0.22	0.11	0.18	0.01–0.43	2.9	2.06*
	PHQ-9 score	-1.30	0.20				
	PHQ-9 score	-0.11	0.02	-0.51	(-0.14)–(-0.07)	27.9	-6.64***
3. Psychological counseling	BPH	0.86	0.38	0.17	0.10–1.62	2.7	2.24*
	Heart disease	0.48	0.22	0.17	0.05–0.91	2.8	2.19*
	PHQ-9 score	-0.46	0.18				
4. Fall prevention	PHQ-9 score	-0.12	0.02	-0.57	(-0.15)–(-0.09)	35.0	-7.67***
	Parkinson's disease	-0.75	0.34	-0.17	(-1.42)–(-0.08)	2.7	-2.21*
5. Pain care	PHQ-9 score	-1.00	0.16				
	PHQ-9 score	-0.04	0.01	-0.24	(-0.07)–(-0.01)	5.9	-2.68**
6. Nutrition care	PHQ-9 score	0.91	0.16				
	PHQ-9 score	-0.05	0.01	-0.36	(-0.08)–(-0.03)	13.2	-4.35***
	Fracture	-0.68	0.25	-0.23	(-1.16)–(-0.19)	4.6	-2.74**
7. Sleep quality improvement	Diabetes	-0.39	0.16	-0.20	(-0.72)–(-0.07)	3.9	-2.39*
	PHQ-9 score	-0.22	0.21				
	PHQ-9 score	-0.05	0.01	-0.34	(-0.08)–(-0.03)	7.9	-3.87***
8. Suicide prevention	ADLs score	0.00	0.00	0.20	0.00–0.01	5.1	2.24*
	CVA	-0.37	0.18	-0.18	(-0.74)–(-0.01)	3.1	-2.03*
	PHQ-9 score	-0.73	0.19				
9. Other services	PHQ-9 score	-0.05	0.01	-0.39	(-0.08)–(-0.03)	19.0	-4.78***
	CVA	0.36	0.15	0.19	0.06–0.66	4.6	2.38*
	Diabetes	-0.44	0.15	-0.24	(-0.72)–(-0.15)	4.2	-3.02**
	ADLs score	-0.01	0.00	-0.19	(-0.01)–(0.00)	3.4	-2.37*
10. Other services	PHQ-9 score	-0.79	0.12				
	PHQ-9 score	-0.10	0.10	-0.71	(-0.12)–(-0.08)	46.3	-10.28***
	Other diseases	0.25	0.13	0.14	0.00–0.50	1.8	2.02*

Note 1. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Note 2. BPH: benign prostatic hypertrophy; CVA: cerebrovascular accident.

among LTCF residents exceeding 50%. Fear of recurrent falls reduces residents' willingness to participate in activities, creating a vicious circle.²⁹ Depressive symptoms increase the risk of falls in elderly persons, a rate five-fold higher among those using multiple drugs.³⁰ Thus, LTCF professionals must consider the relationship between depressive symptoms, multiple drug use, and falls.

Recreational activities were the second highest service need, predicted by depressive symptoms. Depressive symptoms significantly affect the elderly's participation in leisure activities (β : -0.16, t : -3.19, $p < 0.001$),³¹ with higher depressive symptoms being associated with lower participation, maybe because of feelings of frustration and worthlessness.³¹ Thus, staff should consider depressive symptoms when designing activities and encourage participation based on needs and psychological status.

Suicide prevention was the third highest service need, depressive symptoms were a significant predictor of the need for suicide prevention services in this study. Similar findings were reported in overseas study.³² The restricted environments and isolation of LTCFs can easily cause depressive symptoms³³ and depression and suicide risk are strongly related among LTCF residents.³⁴ Therefore, facilities should assess suicide intentions in regular evaluations and refer high-risk individuals for professional counseling.

Pain care was the only service for which utilization exceeded need. Result from the presence of multiple comorbidities and geriatric syndrome, older people living in LTCFs often experience complex persistent pain associated with physical, psychological and emotional stresses. Therefore, these residents presented more complaint about pain and led to receive more pain care service.³⁵

Future studies must further explore the factors related to this discrepancy between pain care utilization and needs, and its potential effects on staff workload.

A possible reason for unmet needs may be the high nursing turnover, resulting in insufficient staff, leading to the prioritization of physiological needs.³⁶ Furthermore, on-job training education of LTCF nursing personnel mainly focuses on physiological aspects, such as infection control and physical examination, while neglecting residents' psychological needs.³⁷ Moreover, psychological care knowledge among LTCF nursing personnel is poorer than that about physiological care. While most LTCF residents receive physical healthcare, psychological services need improvement.³⁸ Thus, training must also focus on psychological assessment and care.

The degree of discrepancy between care needs and service utilization among LTCF residents can be influenced by the medical diagnosis of stroke (t : -2.975, $p < 0.010$),³⁹ those whom have the stroke have the more discrepancy between care needs and service utilization. Furthermore, cognitive status, ADL functional level, age, economic background, and educational level can be effective predictors of LTC service needs and use.⁴⁰

In this study, depressive symptoms (particularly PHQ-9 Item 8) were a significant predictor of discrepancies; thus, further studies must examine whether depressive symptoms are a moderator or confounding variable in relation to needs/utilization of LTC services. The routine assessment system at LTCFs could include depressive symptoms and psychological services needs to improve care quality.

4.1. Limitations

This was a cross-sectional study; thus, changes in service needs and utilization among institutionalized elders could not be examined. Moreover, the scales assessing service needs and utilization must be further validated in larger study populations. In addition, owing to limitations related to research staff and LTCF conditions, service utilization data were collected only during the day shift for one month. Future studies could extend the duration of data collection.

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Declarations of interest

None.

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