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The Impact of IKAP-Based Nursing Interventions on the Caregiving Capacity of Family Carers for Individuals with Dementia

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Abstract: *Objective*: To investigate the effect of an information-knowledge-attitude-practice (IKAP) nursing intervention on the caregiving capacity of family caregivers of elderly dementia patients. *Methods*: Sixty-nine family caregivers of elderly dementia patients attending the neurology outpatient clinic of a hospital between October 2024 and March 2025 were selected. They were randomly divided into a control group (n = 35) and an observation group (n = 34). The control group received routine health education, while the observation group additionally underwent a systematic Information-Knowledge-Attitude-Practice (IKAP) nursing intervention. Care competence and self-efficacy scores were compared between groups before intervention and after 12 weeks. *Results*: Pre-intervention, no statistically significant difference existed in care competence or self-efficacy scores between groups ($p > 0.05$). Following the 12-week intervention, all scores significantly increased in both groups, with the observation group demonstrating superior outcomes compared to the control group ($p < 0.001$). *Conclusion*: The care intervention program based on the IKAP model effectively enhances caregivers' care competence and self-efficacy, thereby positively promoting the quality of life for patients with dementia.

Keywords: Alzheimer's disease; Information–Knowledge–Attitude–Practice model; Family caregivers; Caregiving competence; Self-efficacy

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1. Introduction

With the acceleration of China's population ageing process, the prevalence of dementia (Alzheimer's disease) has been rising annually, and the challenges of its care have become a major public health challenge [1].

Due to the scarcity of professional care resources for dementia patients, individuals primarily rely on family carers for long-term, high-intensity support. However, family carers commonly face issues such as insufficient care knowledge, inadequate skills, and overwhelming negative emotions. These factors severely impact their caregiving capacity and physical and mental health, ultimately leading to diminished care quality and increased patient readmission rates [2]. Traditional health education models predominantly focus on one-way knowledge dissemination, struggling to effectively translate into caregivers' beliefs and sustained behaviors.

The IKAP (Information–Knowledge–Attitude–Practice) theoretical framework, adhering to cognitive principles, employs systematic, stepwise interventions to internalize information into knowledge, thereby reinforcing positive attitudes and ultimately guiding the adoption and maintenance of healthy behaviors. This approach demonstrates significant efficacy in chronic disease management [3]. This study aims to investigate whether an IKAP-based nursing intervention model can systematically enhance the caregiving capacity and self-efficacy of family carers for individuals with dementia, thereby providing evidence-based support for developing effective family care support programs.

2. Materials and methods

2.1. General data

Sixty-nine family caregivers of elderly dementia patients attending the neurology outpatient clinic of a certain hospital between October 2024 and March 2025 were selected. They were randomly divided into a control group (n = 35) and an observation group (n = 34). Comparisons of baseline characteristics including age, gender, and educational attainment between groups revealed no statistically significant differences ($p > 0.05$), indicating comparability. Details are presented in **Table 1**.

Table 1. Comparison of general characteristics between caregiver groups

Item	Category	Control group (n = 35)	Observation Group (n = 34)	t/χ^2	p
Age ($\bar{x} \pm s$), years)		58.06 ± 8.98	57.82 ± 8.73	0.113	0.911
Gender [n (%)]	Male	10 (28.57)	11 (32.35)	0.117	0.733
	Female	25 (71.42)	23 (67.65)		
Educational attainment [Example (%)]	Primary education and below	9 (25.71)	7 (20.59)	0.513	0.774
	Junior secondary	19 (54.29)	18 (52.94)		
	Senior secondary and above	7 (20.00)	9 (26.47)		
Occupation [Example (%)]	Farmer	11 (31.43)	10(29.41)	0.120	0.942
	Clerical	14 (40.00)	15 (44.12)		
	Retired	10 (28.57)	9 (26.47)		
Relationship with patient [cases (%)]	Spouse	16 (45.71)	17 (50.00)	1.770	0.413
	Children	12 (34.29)	14 (41.18)		
	Daughters-in-law/Sons-in-law	7 (20.00)	3 (8.82)		
Daily care time [examples (%)]	Under 6 hours	5 (14.30)	7 (20.59)	0.529	0.768
	6–12 hours	18 (51.42)	17 (50.00)		
	12–18 hours	12 (34.28)	10 (29.41)		
Health status [cases (%)]	Average	16 (45.71)	18 (52.94)	0.360	0.548
	Good	19 (54.29)	16 (47.06)		
Level of understanding of the disease [Example (%)]	No knowledge	5 (14.29)	7 (20.59)	0.374	0.829
	Partially aware	21 (60.00)	20 (58.82)		
	Fully aware	9 (25.71)	7 (20.59)		
Monthly household income [Example (%)]	Below ¥2,000	5 (14.29)	6 (17.65)	0.159	0.923
	2000–4000 yuan	21 (60.00)	20 (58.82)		
	4000–6000	9 (25.71)	8 (23.53)		

2.1.1. Inclusion criteria

(1) The care recipient meets the diagnostic criteria for dementia in middle-aged and elderly individuals as outlined in the Chinese Guidelines for the Diagnosis and Treatment of Dementia and Cognitive Impairment [4]

(2) Age ≥ 18 years

(3) Serves as the primary caregiver for the patient, providing ≥ 4 hours of daily care for ≥ 3 consecutive months

(4) Possesses basic communication, reading, and comprehension abilities

(5) Voluntarily participates in this study.

2.1.2. Exclusion criteria

(1) Presence of severe cognitive impairment or psychiatric disorders

(2) Concurrent participation in other similar intervention studies

(3) Severe visual or auditory impairments preventing normal communication

(4) Inability to complete the full intervention and follow-up

2.2. Methods

2.2.1. The control group received conventional health education over 12 weeks

Initially, caregivers were provided with the hospital's "Guidebook for Home Care of Dementia Patients", covering disease fundamentals, daily care techniques (dietary nutrition, personal hygiene, safety precautions), identification of common behavioral and psychological symptoms with basic management strategies, and self-psychological adjustment methods for caregivers.

Secondly, centralized health education lectures were organized, delivered by attending physicians or higher-grade neurologists and senior nurses. These sessions emphasized disease progression, medication adherence, and complication prevention.

During the intervention period, monthly telephone follow-ups (15–20 minutes each) addressed carers' queries and provided routine advice.

2.2.2. The observation group received a systematic 12-week Information–Knowledge–Attitude Practice (IKAP) nursing intervention

A multidisciplinary team comprising neurologists, head nurses, psychotherapists, and rehabilitation specialists developed and implemented a progressive intervention plan divided into four stages.

(1) Stage one (Information)

Establish individual profiles through in-depth interviews and assessments to comprehensively gather personal details of caregivers, including knowledge gaps, skill deficiencies, negative emotions (and specific caregiving challenges), thereby tailoring intervention plans.

(2) Stage two (Knowledge)

Deliver personalized, systematic knowledge education based on assessment findings. Employ diverse formats, including one-to-one guidance, group workshops, scenario simulations, and video tutorials to translate specialized knowledge such as disease management, communication techniques, emergency response and rehabilitation training into practical skills that caregivers can comprehend and implement,

ensuring genuine mastery of caregiving competencies.

(3) Stage three (Attitude)

Organize peer support groups featuring experienced, positive caregivers sharing insights. Psychotherapists facilitate cognitive behavioral therapy sessions to guide emotional regulation, challenge irrational beliefs such as "caregiving failure", foster proactive coping frameworks, and enhance self-efficacy in caregiving.

(4) Stage four (Practice)

Establish a weekly behavioral check-in via a WeChat support group. Conduct regular home visits or video calls to observe and guide caregiving practices in real-time, promptly correcting erroneous behaviors while reinforcing positive actions. This ultimately facilitates the internalization of caregiving knowledge into stable, efficient behavioral competencies.

2.3. Observation indicators

Mastery of disease-related knowledge, caregiving skills and implementation capacity, coping and problem-solving abilities, self-regulation and physical/mental health management capabilities, caregiving beliefs and positive attitude scores.

2.3.1. Care competence

(1) Disease-related knowledge mastery was assessed using the Alzheimer's Disease Knowledge Scale, comprising 30 true/false statements with a maximum score of 30 points. Participants answered "true" or "false"; each correct response scored 1 point, incorrect responses scored 0 points.

(2) Care skills and implementation capacity were assessed using a hospital-developed Care Skills Questionnaire. This 20-item scale, each worth 1 point, asked about specific care competencies. Participants indicated whether they could or could not perform each task. The sum of "could perform" scores constituted the total.

(3) Coping and problem-solving abilities were evaluated using the Brief Coping Style Questionnaire, measuring participants' strategic tendencies when facing stressful events. The maximum score is 36 points. Higher scores indicate stronger coping and problem-solving abilities.

(4) Self-regulation and physical/mental health management abilities were assessed using the Health Promotion Lifestyle Scale. This scale comprises 22 items scored from 0 to 4 points each, yielding a maximum total score of 88 points. Higher scores indicate stronger self-regulation and physical/mental health management abilities.

(5) Caregiving Beliefs and Positive Attitudes were assessed using the Caregiver Positive Feelings Scale. This scale comprises 9 items, each scored on a 5-point Likert scale (ranging from "Strongly Disagree" to "Strongly Agree"), yielding a total score range of 9–45 points. Higher scores indicate greater positive feelings experienced by caregivers and more positive caregiving beliefs.

2.3.2. Self-efficacy

Assessed using the Chinese version of the General Self-Efficacy Scale (GSES). The scale comprises 10 items scored on a 4-point scale, yielding a total score range of 10–40 points. Higher scores indicate greater confidence in coping with challenges. Cronbach's α coefficient in this study was 0.819.

2.4. Statistical analysis

Statistical analysis was performed using SPSS 26.0 software. Normally distributed quantitative data were expressed as mean ± standard deviation ($\bar{x} \pm s$), with intergroup comparisons conducted using *t*-tests. Qualitative data were presented as frequencies and percentages (%), with intergroup comparisons using χ^2 tests. Differences were considered statistically significant at $p < 0.05$.

3. Results

3.1. Comparison of caregiver competency scores between groups before and after intervention

Prior to intervention, no significant differences were observed between groups in disease-related knowledge, care skills and implementation, coping and problem-solving abilities, self-regulation and physical/mental health management, or care beliefs and positive attitudes ($p > 0.05$).

Following the intervention, scores across all dimensions of caregiving competence significantly increased in both groups, with the observation group demonstrating superior outcomes compared to the control group ($p < 0.001$). See **Table 2**.

Table 2. Comparison of caregiver competency scores between groups ($\bar{x} \pm s$, points)

Group	Mastery of Disease-Related Knowledge		Care Skills and Implementation Ability		Coping and problem-solving abilities		Self-regulation and physical/mental health management		Care Beliefs and Positive Attitude	
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	After intervention	Before intervention	After intervention	Before intervention	Post-intervention
Control group (n = 35)	20.02 ± 1.02	23.42 ± 2.27*	12.33 ± 0.86	16.25 ± 0.92	25.40 ± 1.08	30.15 ± 1.17	60.45 ± 2.27	79.15 ± 3.57	30.06 ± 2.51	40.19 ± 1.31
Observation group (n = 34)	19.61 ± 1.08	26.35 ± 2.41*	12.17 ± 0.69	18.06 ± 0.87	24.97 ± 1.13	33.59 ± 1.14	60.52 ± 2.38	81.42 ± 3.09	29.89 ± 2.67	42.24 ± 1.28
t	1.622	5.20	0.851	8.392	1.616	12.370	0.126	2.821	0.274	6.573
p	0.109	< 0.001	0.398	< 0.001	0.110	< 0.001	0.900	0.006	0.785	< 0.001

3.2. Comparison of self-efficacy scores among caregivers in both groups before and after intervention

Prior to intervention, the difference in self-efficacy scores between the two groups of family caregivers was not statistically significant ($p > 0.05$). Following the 12-week intervention, self-efficacy scores significantly increased in both groups, with the observation group demonstrating higher scores than the control group. This difference was statistically significant ($p < 0.001$), as shown in **Table 3**.

Table 3. Comparison of self-efficacy scores between caregiver groups ($\bar{x} \pm s$, points)

Group	Pre-intervention	After intervention	t	p
Control group (n = 35)	23.58 ± 5.72	26.29 ± 2.60	2.552	0.013
Observation group (n = 34)	23.61 ± 4.79	33.88 ± 1.87	11.646	< 0.001
t	0.024	13.886		
p	0.981	< 0.001		

4. Discussion

The findings indicate that prior to intervention, no statistically significant differences existed between the two groups of family carers in terms of disease-related knowledge acquisition, caregiving skills and implementation capabilities, coping and problem-solving abilities, self-regulation and physical/mental health management competencies, caregiving beliefs and positive attitude scores, or self-efficacy ratings ($p > 0.05$).

Following the 12-week intervention, scores for all indicators among family carers in the observation group were significantly higher than those in the control group ($p < 0.05$). This indicates that nursing interventions grounded in the IKAP theory can effectively enhance family carers' caregiving capabilities and elevate their self-efficacy. Analysis attributes this outcome primarily to the distinct advantages of the nursing intervention model based on the Information-Knowledge-Attitudes-Practice (IKAP) framework

(1) Unlike traditional health education's generalized knowledge dissemination, the IKAP model employs initial systematic assessment to precisely identify individual differences in each caregiver's knowledge structure, skill gaps, and psychological state. This enables tailored intervention plans that effectively address specific challenges in caregiving practice, significantly enhancing the precision and practicality of interventions [5].

(2) The nursing intervention model grounded in IKAP theory transcends mere knowledge transmission. Through systematic training, scenario simulations, peer demonstrations and other methods, it constructs a complete pathway from cognitive internalization to behavioral transformation [6]. Crucially, it enhances carers' self-efficacy and caregiving beliefs through belief-level interventions, such as cognitive restructuring and psychological support, providing intrinsic motivation for sustained caregiving practice [7].

(3) The IKAP model positions psychological support as a pivotal component. By organizing support groups and delivering emotional management training, it effectively alleviates carers' anxiety and helplessness while fortifying their psychological resilience to stress. This not only improves carers' subjective experience but also establishes the psychological foundation for sustaining consistent care practices [8–9].

(4) The care intervention model grounded in IKAP theory establishes a multidimensional support system encompassing remote guidance, home visits, and peer mutual aid. This provides carers with continuous behavioral feedback and consolidation mechanisms, enabling timely resolution of emerging challenges in care practice while fostering robust behavioral maintenance. Consequently, it ensures sustained enhancement and long-term improvement in caregiving capacity [10].

5. Conclusion

In summary, this study confirms that the care intervention program grounded in IKAP theory effectively enhances the caregiving capacity and self-efficacy of family carers for patients with dementia, indirectly promoting improved patient quality of life. It warrants wider adoption in clinical practice.

Disclosure statement

The author declares no conflict of interest.

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