

The effect of home nursing intervention on cognitive function of patients with Alzheimer's disease

Xiaoke Wang

College of Arts and Science, New York University, New York, NY, 10003, USA

xw2212@nyu.edu

Abstract. Alzheimer's disease is one of the most common neuropsychiatric disorders in the elderly. The disease has a long course and brings a heavy burden to individuals, families and society, and there is no clinical cure for it. Currently, in families, family members often act as caregivers to take care of patients with Alzheimer's disease. Past studies have examined the care patterns, roles, strategies, and influence of family caregivers on Alzheimer's patients. However, there is little literature review to understand the care mode, effect and influence of family caregivers on Alzheimer's patients. Therefore, this study sorted out and recognized the impact and the role of current family caregivers' interventions on Alzheimer's patients. A range of intervention strategies and models employed in family care are included as well. It was shown that family caregivers can effectively alleviate the cognitive decline of Alzheimer's patients through cognitive-related intervention models and can help them return to normal life.

Keywords: Alzheimer's patients, family caregivers, cognition, family nursing intervention.

1. Introduction

Alzheimer's disease is a progressive neuropathy and brain disease frequently occurring in the elderly, and it is also a malignant disease that causes intellectual disability in elderly patients [1]. As the disease progresses, the patient always shows reduced cognitive functions such as intelligence, memory, orientation, attention, and reasoning ability, as well as the ability to take care of themselves in daily life can decline [1]. Home nursing intervention means the patient is assisted by the family care including daily care, safety nursing activities such as holistic nursing, physical exercise, intellectual and cognitive training [2, 3]. It plays an important role in the rehabilitation of Alzheimer's disease patients. Effective home nursing intervention can improve the cognitive function of patients with Alzheimer's disease, delay the process of cognitive decline of patients, and enable patients to better maintain memory and language gaps [4]. Improved communication and social skills can also enhance Alzheimer's patients' life quality. In the past research, a series of studies have investigated the research on home care for improving life skills of Alzheimer's patients [4].

However, there is little research to understand the research of home nursing intervention for improving cognitive development of Alzheimer's patients. Therefore, this paper reviews the application status, methods and effects of home nursing intervention in cognitive rehabilitation nursing of Alzheimer's patients. The specific research question is to first understand the effect of the current family caregivers' use of the family care model on the relief of symptoms and the improvement of life ability

of Alzheimer's patients. Second, the application effect of home nursing in cognitive function intervention of Alzheimer's patients. It helps the general audience and potential family caregivers to better understand Alzheimer's Disease and increases the effectiveness of caregiving.

2. The effects of family nursing intervention

2.1. Family nursing intervention in Alzheimer's patients

According to past research, it can be found that family caregivers can effectively listen to the patient's emotional talk, relieve the patient's pressure, and enable the patient to maintain a good attitude and living habits [4, 5]. At the same time, family caregivers can regularly measure various physiological indicators for patients, adjust the use of drugs according to the improvement of the patient's disease or adverse reactions, instruct the patient to strictly follow the doctor's advice and take medicine on time, and assist the patient to relieve physical symptoms [6]. In addition, family caregivers also need to assist patients in formulating a reasonable diet plan, instructing patients to exercise appropriately to prevent patients from falling, aiding long-term bedridden patients, and actively assisting patients to live a normal life [7].

2.2. Cognitive function intervention in Alzheimer's patients

At present, the maintenance of cognitive function in Alzheimer's patients mainly includes comfort nursing, psychological nursing, and nursing intervention modes such as holistic nursing, comprehensive nursing, and home nursing use different methods to intervene in the patient's mental health, diet, sleep, and rehabilitation training to improve the patient's cognitive function [8, 9]. Psychosomatic holistic nursing intervention is an effective way to help Alzheimer's patients effectively improve their cognitive abilities [2]. This intervention method helps family caregivers to understand the patient's psychological characteristics, and cope with their unfamiliarity and fear of the environment, such as accompanying the patient to play poker, chess, etc., so that the patient can maintain an optimistic mood in recreational activities, and actively discover fun from life and build satisfaction [2].

More importantly, nursing intervention for cognitive impairment mainly includes nursing measures for patients with intellectual disability, memory impairment, thinking disorder, visual hallucinations, auditory hallucinations, and time and space orientation disorders [10]. Targeted measures should be taken according to the different symptoms of the patients. For patients with active or disordered thinking, they should selectively change the topic, divert their attention, and maintain their emotional stability [10]; for the patients with auditory hallucinations and visual hallucinations, the focus of intervention should be stabilizing their emotions, which leads to normal situation [10]. It can be seen that the psychosomatic holistic nursing interventions focus on the basic health needs of patients and provide comprehensive interventions that combine physical comfort and psychological adaptation, which have a significant effect on improving the living ability and cognitive function of the patients.

Play therapy is also an effective way to help Alzheimer's patients [11]. The therapy is designed based on the theory of brain plasticity and brain function reorganization. Play therapy requires patients to cooperate with family caregivers. The types of games include Puzzle games, such as number sorting, color puzzles drawing, pushing boxes, etc. This can exercise the patient's brain, eye, hand functions, and train logical thinking ability, improve the agility of movements, and then improve the patient's intelligence level [12]; Memory games, such as replaying scenes with sound playback machines, revisiting old photos to tell stories. This can help patients to exercise memory through methods of understanding, reciting, associating, and classifying [12]; Coordination games, such as racquetball, trampling and throwing. This can exercise the patient's motor coordination ability [12]; Comprehensive games, such as hooping, origami, building blocks, playing chess, etc. These are comprehensive trainings that integrates elements such as puzzle, memory, coordination, fine motor, and artistic perception [12]. Studies have shown that making patients participate in games and promoting their coordination and unification of their expressions, psychology, and body movements can improve the patient's self-efficacy and improve the patient's cognitive function [13].

2.3. Family nursing intervention applications on Alzheimer's patients

Alzheimer's patients are prone to negative psychological reactions such as suspicion, withdrawal, depression, irritability, and indifference, which would affect the results of treatment and cognitive function intervention for Alzheimer's patients [14, 15]. Patients should be encouraged to participate in activities beneficial to physical and mental health, such as chatting, reading newspapers, planting flowers, physical exercise, group activities, etc., so that they can remain optimistic and happy in entertainment, enrich self-satisfaction, and relieve their psychological burden [14]. The primary caregiver of the family should also mobilize the enthusiasm of all family members, enhance the communication between the patient and family members, relatives, and friends, and take the initiative to grasp the patient's inner feelings, meanwhile encourage the patient to express their feelings [15]. Besides using more positive language to comfort patients, and giving full encouragement to their progress, family members should also provide them with psychological support, and make patients feel the warmth of family, which can effectively reduce loneliness, and promote the improvement of patient's cognitive function and quality of life.

There are several categories of intervention applications for cognitive abilities. First, although the memory of Alzheimer's patients declines, memory training can still help patients develop new memories and retain existing ones [16]. For example, by collecting photos and photo albums from the past and accompanying the patient to watch them at certain intervals to stimulate the patient's memory of past events, patients' memory can be refreshed and consolidated. Additionally, newspapers, magazines, and other materials can also be prepared and read to the patient every day to stimulate the patient's memory of current events. These measures aim to improve the excitability of the nerve center of the brain, enhancing the signal transmission so that the patient's memory and learning ability can reach the best level. Furthermore, it is necessary to tell the patient about the people, things, things, etc. that are deeply impressed by the patient, help him recall and reproduce the scene, and encourage the patient to express or repeat the content in words as much as possible [16]. At present, some intervention models for improving the attention of Alzheimer's patients are also advocated. For example, attention training encourages patients to participate in activities of their own interest, in the process of activities to develop and improve the patient's concentration on something. At the same time, because attention-enhancing interventions are led by caregivers or family members at home, they can better understand the interests and usual concerns of Alzheimer's patients. From this, it can be concluded that there are currently many intervention models to help Alzheimer's patients improve cognitive ability, which can be completed by family caregivers or family members, which has a certain role in helping Alzheimer's patients with cognitive decline.

Last but not least, family caregivers are the main executors of health maintenance and rehabilitation care for Alzheimer's patients [17]. The patience and psychological endurance of family caregivers directly affect the patient's quality of life and cognitive function development [18]. Healthcare workers should also focus on family caregivers. On the basis of full communication, healthcare workers need to give patient answers to their questions, explain to them the relevant knowledge of cognitive function nursing intervention for senile dementia patients, and publicize successful cases to enhance their confidence. In addition, the critical role family caregivers play in the care for Alzheimer's patients makes them the most direct influencers. The patience and psychological endurance of family caregivers will directly affect the patient's quality of life and cognitive function development [18]. Healthcare workers should also focus on family caregivers. On the basis of full communication, they will give patient answers to their questions, explain to them the relevant knowledge of cognitive function nursing intervention for senile dementia patients, and publicize successful cases to enhance their confidence.

3. Discussion

In this study, intervention and care by family caregivers had a positive effect on improving the quality of life of Alzheimer's patients because it put the patient at the heart of the program. The intervention model of family caregivers can stimulate the patient's cognition, allow Alzheimer's patients to relax, and allow them to gain a sense of self-worth, belonging and achievement in the process [2]. Chen believes

that family caregivers intervene with patients more than just treating patients, which means that the interventionist, the family caregiver, takes care of the patient physically, psychologically, emotionally, and socially, which can effectively improve the relationship between the patient and the family members [19]. Also, some researches have proved that family caregivers' caring can help improve family relationship and reduce stress on family members [17]. Therefore, intervening and caring for Alzheimer's patients through family caregiver is cannot only help the cognitive recovery of Alzheimer's patients, but can also relieve the pressure of caregivers and promote better family relationships.

4. Conclusion

In this research, a series of literatures about family caregivers' interventions on Alzheimer's patients were compiled through the sorting and reading of second-hand literature to test whether family caregivers could reduce the physical and mental health of Alzheimer's patients through intervention models. And, the results also pointed out that family caregivers use the intervention to help Alzheimer's patients to maintain cognitive abilities and return to a normal lifestyle. By sorting and summarizing the literature, it can be found that family caregivers can effectively help Alzheimer's patients maintain their existing cognitive abilities through a series of cognitive intervention methods.

Furthermore, it is known from the literature that effective cognitive intervention strategies implemented by family caregivers can improve communication and relationships among family members. The findings of this study are useful in some ways. First, the findings of this study have the potential to significantly advance the theoretical understanding of dementia patients and family carers. Second, it also has some practical application value. For instance, the study's findings support the fact that family carers can provide for dementia patients with various benefits. In order to help senile dementia patients, mitigate cognitive decline and enhance their quality of life, family members of those patients can actively participate in family interventions. On the other hand, utilizing this strategy can also help patients and their families communicate better, which can build family ties and lessen the stress experienced by the patient's family members.

In addition, this study also has some limitations. Since it is challenging to check and corroborate these literatures' research techniques and sources, it's possible that the gathered resources are skewed and can't be used to their maximum potential across all populations. Moreover, this study only used a straightforward keyword search to find the relevant literature data without using techniques like systematic literature reviews or meta-analyses. Hopefully, a more thorough and efficient data search methodology can be used in the future to search, organize, and analyze the literature in a systematic manner. Furthermore, several experimental techniques can be applied, such distributing surveys, holding interviews, requesting loved ones of Alzheimer's sufferers to join in the study, gathering primary research data sources, and better responding to the research questions.

References

- [1] Jolival, C. G., Calcutt, N. A., and Masliah, E. Similar pattern of peripheral neuropathy in mouse models of type 1 diabetes and Alzheimer's disease. *Neuroscience*, 202, 405-412 (2012).
- [2] Bush, E. The use of human touch to improve the well-being of older adults: A holistic nursing intervention. *Journal of holistic nursing*, 19(3), 256-270 (2001).
- [3] Callahan, C. M., Boustani, M. A., Unverzagt, F. W., Austrom, M. G., Damush, T. M., Perkins, A. J., and Hendrie, H. C. Effectiveness of collaborative care for older adults with Alzheimer disease in primary care: a randomized controlled trial. *Jama*, 295(18), 2148-2157 (2006).
- [4] Han, Y., Jia, J., Li, X., Lv, Y., Sun, X., Wang, S., and Zhou, Y. Expert consensus on the care and management of patients with cognitive impairment in China. *Neuroscience bulletin*, 36(3), 307-320 (2020).
- [5] Xue, J., Li, J., Liang, J., and Chen, S. The prevalence of mild cognitive impairment in China: a systematic review. *Aging and disease*, 9(4), 706-715 (2018).
- [6] Williams, V. P., Bishop-Fitzpatrick, L., Lane, J. D., Gwyther, L. P., Ballard, E. L., Ven-dittelli, A. P., and Williams, R. B. Video-based coping skills (VCS) to reduce health

- risk and improve psychological and physical well-being in Alzheimer's disease family caregivers. *Psychosomatic medicine*, 72(9), 897-904 (2010).
- [7] Chen, L., Zhao, Y., Tang, J., Jin, G., Liu, Y., Zhao, X., and Lu, X. The burden, support and needs of primary family caregivers of people experiencing schizophrenia in Beijing communities: A qualitative study. *BMC psychiatry*, 19(1), 1-10 (2019).
- [8] Crous-Bou, M., Minguillón, C., Gramunt, N., and Molinuevo, J. L. Alzheimer's disease prevention: from risk factors to early intervention. *Alzheimer's research & therapy*, 9(1), 1-9 (2017).
- [9] Levy-Storms, L., and Chen, L. Communicating emotional support: family caregivers' visits with residents living with dementia in nursing homes. *Journal of Women & Aging*, 32(4), 389-401 (2020).
- [10] Aarsland, D., Taylor, J. P., and Weintraub, D. Psychiatric issues in cognitive impairment. *Movement Disorders*, 29(5), 651-662 (2014).
- [11] Lewis, M. M., and Trzinski, A. L. Counseling older adults with dementia who are dealing with death: Innovative interventions for practitioners. *Death studies*, 30(8), 777-787 (2006).
- [12] Robert, P. H., König, A., Amieva, H., Andrieu, S., Bremond, F., Bullock, R., and Manera, V. Recommendations for the use of Serious Games in people with Alzheimer's Disease, related disorders and frailty. *Frontiers in aging neuroscience*, 6, 54 (2014).
- [13] Lohse, K., Shirzad, N., Verster, A., Hodges, N., and Van der Loos, H. M. Video games and rehabilitation: using design principles to enhance engagement in physical therapy. *Journal of Neurologic Physical Therapy*, 37(4), 166-175 (2013).
- [14] Richly, P., Manes, F., and Bustin, J. Depression and Alzheimer's disease. *Depression in Neurologic Disorders: Diagnosis and management*, ed, 1, 177-188 (2012).
- [15] Tetsuka, S. Depression and Dementia in Older Adults: A Neuropsychological Review. *Aging and disease*, 12(8), 1920-1934 (2021).
- [16] Kolber, A. J. Therapeutic forgetting: The legal and ethical implications of memory dampening. *59 Vanderbilt Law Review* 1559 (2006).
- [17] Breen, L. J., Aoun, S. M., O'Connor, M., Howting, D., and Halkett, G. K. Family caregivers' preparations for death: a qualitative analysis. *Journal of pain and symptom management*, 55(6), 1473-1479 (2018).
- [18] Dew, M. A., Goycoolea, J. M., Harris, R. C., Lee, A., Zomak, R., Dunbar-Jacob, J., and Kormos, R. L. An internet-based intervention to improve psychosocial outcomes in heart transplant recipients and family caregivers: development and evaluation. *The Journal of heart and lung transplantation*, 23(6), 745-758 (2004).
- [19] Brodaty, H., and Donkin, M. Family caregivers of people with dementia. *Dialogues in clinical neuroscience*. 11(2): 217-28 (2009).