

Trends in the Application of Dyadic Coping in Older Adults with Mild Cognitive Impairment and Their Spouses

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Abstract

Dyadic coping plays an important role in older adults with mild cognitive impairment and their spouses. Significant correlations were found between dyadic coping and self-efficacy, anxiety and depression, marital quality, and quality of life in elderly patients with mild cognitive impairment and their spouses, and there were gender differences, with a 36.1% [P = 0.028, OR = 0.639, 95% CI (0.429, 0.952)] and 54% [P = 0.004, OR = 0.460, 95% CI (0.269, 0.785)] reduction in the risk of MCI and dementia for older men aged 65 - 69 years with a spouse and for those aged 80 years and older with a spouse, respectively. In contrast, there was no significant difference in the association between having or not having a spouse and developing MCI and dementia in older women (all P > 0.05). Psychosocial interventions, skills interventions, and exercise from the perspective of dyadic relationships were effective in improving the physical and mental health of older adults with mild cognitive impairment and their spouses. However, there is a lack of specific intervention programs for dyadic relationships in the local cultural context as an entry point. Therefore, it is necessary to draw on internal and external relevant literature to treat both partners as a whole for intervention, provide personalized social, cognitive and motor therapy for patients and promote the integration and participation of caregivers, help patients and spouses to improve the sense of well-being and intimacy, reduce the burden of caregivers, and build a dyadic coping intervention program suitable for elderly patients with mild cognitive impairment in China. The current article aims to provide a conceptual review focusing on dyadic coping care to inform the development of a dyadic intervention program suitable for older adults with mild cognitive

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impairment in China. This review outlines the theoretical concepts, assessment tools, current state of research, and intervention methods for mild cognitive impairment and dyadic coping.

Keywords

Mild Cognitive Impairment, Dyadic Coping, Couples, Review

1. Introduction

Mild Cognitive Impairment (MCI) is a clinical transition stage between cognitive normalcy and dementia Alzheimer's disease (AD) with the main clinical manifestations of memory and executive function decline [1]. Dyadic Coping (DC) refers to the joint responses and strategies of spouses in the face of stressful events [2], and studies have shown that the quality of interaction between patients and their spouses plays a crucial role in the treatment of chronic illnesses, and that their mental health and quality of life are interrelated [3]. Couples' supportive dyadic coping has a mediating effect on the relationship between patients' fear of disease progression, spousal anxiety, and marital quality, and the development of interventions using couples' supportive dyadic coping as an entry point can help to improve the patients' and their spouses' negative emotions and improve marital quality [4]. Therefore, exploring dyadic coping between MCI patients and their spouses may provide a new perspective for early intervention management of MCI patients, which is important for slowing down the process of MCI and stopping its progression to dementia.

2. Conceptualization and Assessment Tools for Mild Cognitive Impairment and Dyadic Coping

2.1. Concept of Mild Cognitive Impairment and Assessment Tools

Mild cognitive impairment is a clinical condition in which an individual has an objectively measurable decline in memory or other cognitive domains that does not interfere with the ability to perform daily living tasks and was first comprehensively described in 1997 by Petersen *et al.* [5]. Palmer *et al.* [6] proposed that MCI is a state of cognitive impairment between normal aging and dementia, and is usually categorized into amnesic MCI and non MCI. Under the interaction of age, genetic factors, education level, lifestyle and other influencing factors, amnesic MCI is likely to progress to AD. Diagnosis is often made with the help of neurological examination and neuropsychological assessments, such as the Montreal Cognitive Assessment (MoCA), the Activities of Daily Living Scale (ADL), the Hamilton Anxiety Scale/Hamilton Depression Scale, etc.

2.2. The Concept of Dyadic Coping and Assessment Tools

German scholar Bodenmann [7] first proposed the concept of dyadic coping in the early 1990s, referring to the ability of partners to jointly cope with problem

solving in the face of dyadic stressful events. Mariana *et al.* [8] proposed that the dyadic coping process consists of: clear communication of stress; individual positive/negative coping; joint positive/negative coping, after integrating the process of dyadic coping. Randomized controlled studies of dyadic coping were conducted earlier abroad, and scholars have gradually shifted the study of the disease from an individualized to a dyadic perspective. A study investigated 154 pairs of men with prostate cancer and their spouses, and found that when dealing with cancer-related stress, the support and understanding between husband and wife helped to alleviate the patient's psychological distress. Sterba *et al.* [9] found that higher dyadic efficacy helped to increase the success rate of smoking cessation among smokers. Domestic nursing research on dyadic coping started late, Luo Qun [10] took the lead in exploring the association between dyadic coping styles and intimacy between gynecologic cancer patients and their spouses, and the results showed that the dyadic supportive coping of gynecologic cancer patients and spouses was related to each other, and the intimacy of the spouses and patients was related to each other; Conceivably, interventions centered on the coping styles of couples are an important way for couples to strengthen each other in the face of the challenges of cancer. An important approach to strengthen couples' resources in the face of cancer challenges. In recent years, scholars at home and abroad have tried to use the dyadic coping theory in the management of patients and spouses with cancer, chronic diseases, and obstetrics and gynecology *et al.* [3] [11] [12].

There are no standardized criteria for assessing dyadic coping, and the most widely used assessment tool is the Dyadic Coping Inventory (DCI) developed by Gmelch *et al.* [13] in 2008. The scale consists of six dimensions, namely stress communication, positive coping, negative coping, empowering coping, coping together, and quality evaluation, with a total of 37 entries. The scale is scored from 1 to 5, representing "rarely" to "very frequently", and the higher the score, the higher the level of dyadic coping, which was Chineseized by our scholars Xu *et al.* [14] in 2016. In addition, the Revised Dyadic Adjustment Scale (RDAS) and the Locke-Wollance Marital Adjustment Scale (LWMS) are also commonly used dyadic coping assessment tools [15] [16].

3. Current Status of Research on Dualistic Coping in Older Adults with MCI and Their Spouses

Self-efficacy refers to an individual's ability and beliefs when faced with a wide range of task demands or completely new situations [17]. Tonga *et al.* [18] found in a cross-sectional study that positive mood could be enhanced by increasing patients' confidence in their ability to cope with their illness and daily life, thereby improving overall quality of life. As for spouses of patients, increasing their self-efficacy not only helps them to better cope with the caregiving burden of AD or other types of cognitively impaired disorders, but also reduces depressive symptoms [19], significantly improves caregiving outcomes, and slows down the decline of cognitive functioning levels in the elderly [20].

3.1. The Correlation between Dyadic Coping and Self-Efficacy in Older Adults with MCI

The Chinese version of the General Self-Efficacy Scale (GSES) was co-developed by Zhang and Schwarze [21], which contains 10 entries on a four-point scale, with higher mean scores indicating higher self-efficacy for individuals. Kurasz *et al.* [22] adapted a self-efficacy scale used for the management of chronic illnesses to make it applicable to patients with mild cognitive impairment (MCI) and more targeted. Furthermore, he suggested that self-efficacy, especially memory self-efficacy (memory-SE), may be a key factor in maintaining patients' cognitive function and psychosocial integrity. Domestic scholars Tian Si-Ying *et al.* [23] found that MCI patients' self-efficacy was reduced after memory loss, and they were prone to self-doubt, self-denial and self-complaints, lack of confidence in many things, and loss of goals and motivation in life. In recent years, research on the relationship between dyadic coping and self-efficacy has achieved certain results, and the mediating roles played by the two in different diseases have been gradually clarified. Wang *et al.* [24] selected 206 spouses of patients with cervical cancer from five hospitals in Jiangsu Province, and used the 12-item Brief Health Questionnaire (SF-12), the General Self-Efficacy Scale, and the Dyadic Coping Inventory (DCI) were investigated and structural equation modeling was constructed. The results showed that self-efficacy partially mediated between dyadic coping and quality of life, and the mediating effect accounted for 16.0% of the total effect. Hui-Ying An [4] used purposive sampling to conduct semi-structured interviews with 12 pairs of young and middle-aged lymphoma patients and their spouses to gain insights into the couples' experience of disease coping and to explore the positive factors that promote the couples' adaptation to the disease. The results showed that patients' and spouses' dyadic coping status had different degrees of mediating effects in the relationship between their self-efficacy, negative emotions, and marital quality.

Therefore, patients and spouses should be regarded as a coping whole, focusing on dyadic strategies such as stress communication and supportive coping, and carrying out couple-centered coping interventions from the perspective of improving self-efficacy and negative emotions of both partners, so as to improve the quality of marriage, and then improve the quality of life of both partners. However, no research has been conducted on the mediating effects of dyadic coping, self-efficacy, quality of life, and negative emotions on MCI patients and their spouses, and it is necessary to construct a structural equation model to further clarify the relationship between them, so as to provide practical guidance for mental health research and clinical work, and to provide a reference for preventing and delaying the transformation of dementia.

3.2. The Correlation between Dyadic Coping and Anxiety and Depression in Older Adults with MCI

Most previous studies have focused only on the mental health status of patients

with MCI, and fewer studies have analyzed the emotional problems of their spouses. As early as 2005, in 1 cross-sectional study, researchers Garand *et al.* [25] found that even in the early stages of the onset of MCI, spouses of patients with MCI already face a caregiver burden similar to that of dementia caregivers, and there is an incremental mental health risk that progresses over time. In 2017, the World Health Organization established caregiver needs as one of the 2017-2025 one of the priorities of the Dementia Patient Care Plan [26]. Scholars Kim *et al.* [27] selected 2782 men and 2515 women, totaling 5307 study participants from the Korean Longitudinal Study of Aging (K-LSA) database, and assessed the depressive symptoms of the study participants with the Center for Epidemiologic Studies Depression Scale (CES-D 10), and with the Korean version of the Brief Mental State Examination Scale (K-MMSE) to evaluate the cognitive function of their spouses. The results showed that study subjects living with spouses with mild dementia (MMSE 18 - 23)/moderate to severe dementia (MMSE ≤ 17) exhibited higher depressive symptoms (CES-D ≥ 4) compared to those living with spouses with normal cognitive functioning; furthermore, those who did not engage in social activities had higher depression scores than those who did.

3.3. The Role of Spouses in the Maintenance of Cognitive Function in Older Adults with MCI

In a cross-sectional study of the relationship between dyadic coping and quality of life (QoL) in patients with dementia and their spouses, Schumann *et al.* [28] found that patients had higher QoL scores when their spouses were the primary caregivers compared with when their children were the primary caregivers. Yan Pingting *et al.* [29] conducted a cross-sectional survey of 8221 residents aged 65 years and older in urban and rural areas of Hubei Province, using face-to-face interviews to complete general surveys and neuropsychological assessments, as well as clinical physical examinations and laboratory tests, and diagnostic expert panels to diagnose MCI and dementia in participants. The results showed that the prevalence of MCI and dementia increased in the nulliparous elderly group, especially for men aged 65 - 69 years and 80 years and older, and that having a spouse is essential to protect cognitive function in the elderly. The significant association between marital status and the risk of dementia and mild cognitive impairment is consistent with the findings of Chen Lu, Liu *et al.*, Su Yuan, Skirbekk *et al.* [30]-[33]. Zhao Xiaohang *et al.* [34] also suggested that widowhood affects cognitive functioning and mental health in older adults; in terms of basic daily living skills, for men with high marital quality, their instrumental activities of daily living (IADL) skills such as housework, cooking, purchasing, and handling personal For men with high marital quality, their IADL such as housework, cooking, purchasing, and handling personal things decreased significantly, while for women, marital quality had no significant effect on their IADL abilities after widowhood. Scholars Yu (Yu Yifan) *et al.* [35] examined the rela-

tionship between living arrangements and cognitive decline in Chinese older adults, and further examined gender differences in these relationships. It was found that cognitive decline was slower in older adults who lived with their spouses, and that women had a smaller effect on their cognitive decline when living alone compared to men. This suggests that spouses contribute to the improvement of cognitive decline in people with MCI, and more so for men, and that appropriate responses can be developed by considering the couple as a whole and advancing public policies to support caregiving families.

4. Current Status of Interventions for Dyadic Coping in Older Adults with MCI and Their Spouses

4.1. Dyadic Psychosocial Interventions

Many treatment programs are often carried out for individual patients or caregivers, but a meta-analysis showed that interventions are less effective when they are targeted only to the individual [36]. A systematic evaluation by Poon *et al.* [37] showed that Cognitive Stimulation Therapy (CST) is currently mostly applied in studies of psychological interventions for people with MCI. This therapy was first pointed out by the clinical guidelines issued by the National Institute for Clinical Excellence in the UK, which can be used as a non-pharmacological intervention to treat dementia, emphasizing the suppression and abatement of the various aspects and stages of wrongly acquired behaviors, and the correction of problematic behaviors for the treatment of mental illnesses [38]. Yates *et al.* [39], in a randomized controlled trial (RCT), regarded patients with dementia and their family caregivers as a whole, and made a CST modified to form Individual Cognitive Stimulation Therapy (iCST), which was family caregiver-led and dementia patient-centered, and 356 intervened with the subjects. Results showed that although people with dementia treated with iCST did not significantly improve cognitive function/quality of life, and iCST was not found to improve caregivers' mental or physical health, the therapy had a positive impact on improving caregiving relationships and improving caregivers' quality of life, suggesting that iCST may be an important component of in-home care for people with dementia in order to help them receive effective long-term care. This was also confirmed by Myhre *et al.* [40] study on the coping experience of spouses of patients with dementia, where spouses who participated in Norwegian Cognitive Behavioral Therapy for Early Stage Dementia (N-CORDIAL) with their dementia patients showed an improvement in coping strategies 6-12 months post-intervention and were able to utilize memory aids such as calendars/memos, as well as a positive emotional orientation to cope with the patient.

Spouses, as the primary caregivers of patients with MCI/dementia, play a key role in the provision of in-home care; therefore, strengthening family resources is an important task for caregivers, and further research is needed on how to effectively educate caregivers about the disease, and develop training in problem solving and dealing with negative emotions in order to improve the coping

strategies of spouses of patients with MCI/dementia in the long term.

4.2. Dyadic Skills Interventions

Greenaway *et al.* [41] conducted a Memory Support System (MSS) cognitive rehabilitation intervention with 40 patients with MCI, in which patients compensated for their memory loss by using calendars/notebooks, etc., to record to-do lists and journaling about tasks that needed to be accomplished at a specific time or day. Participants in the intervention group received a total of 12 one-hour sessions of MSS training for 6 weeks. The training consisted of instruction, demonstration, practice, and assignment of homework. The control group was only provided with the MSS calendar/notebook and encouraged to use it on their own, but had no further verbal or written instruction. Results showed that MCI patients who received MSS training showed significant improvements in activities of daily living (ADLs) and memory self-efficacy, and improvements in ADLs in the intervention group compared with the control group who were only provided with calendars/notebooks were sustained until the follow-up visit 8 weeks later. In addition, spouses in the intervention group had significantly lower Center for Epidemiological Survey, Depression Scale (CES-D) scores than spouses in the control group at the 8-week and 6-month post-intervention follow-ups. This suggests that MSS training helps patients to better manage their daily lives and reduces the frequency with which spouses need to intervene, thus improving their mood and quality of life. Subsequently, a study by Khayoun *et al.* [42] also demonstrated that positive emotional feedback from spouses, as well as support and assistance provided to patients with MCI, can help patients to successfully adapt to the stress of the disease, and their results showed that partner involvement and support were crucial to the patients' learning outcomes of the MSS, and that the higher the partner's openness, the greater the willingness of the patients to learn the MSS, and the shorter the time it took to master the MSS.

In a randomized controlled trial by researcher Lu *et al.* [43], 36 pairs of MCI patients and their spouses were intervened, of which 17 pairs received the Daily Enhancement of Meaningful Activity (DEMA) intervention and 19 pairs received the Attention Control Intervention. The DEMA program is a skills training program for MCI patients and their spouses, and their spouses, a skills-training program designed to help couples learn how to support dyadic coping to adapt to possible changes in the condition as it progresses over time. It consists of 6 offline sessions of 1 hour each, conducted once every 2 weeks, covering 6 self-management needs: planning meaningful activities; understanding MCI; treatments for MCI; understanding and coping with negative emotions; learning to live with and cope with MCI; how to seek out healthcare resources that can give help. The results showed that the DEMA group had higher bidirectional consistency in perceived functional ability and life satisfaction at 3 months post-intervention and improved somatic functioning at 2 weeks post-intervention

compared to the attention control intervention control group.

4.3. Dyadic Movement Interventions

Ahn *et al.* [44] conducted a 16-week intervention with four pairs of patients with mild cognitive impairment (MCI) and their spouses to assess the role of couples engaging in physical activity together in improving physical health and psychological well-being of both partners. The study included aerobic exercise and muscle strength training, and the results showed that patients with MCI had improved partner support scores after the intervention, exercising with their partners enhanced mutual support and encouragement; aerobic fitness was improved by an increase in the 6-minute walk test distance; fall efficacy scale scores were reduced, and the fear of falling was alleviated; the time to complete the color-vocabulary interference task was shortened, executive functioning improved; quality of life scores improved. Spouses' positive affect scores increased, Zarit Caregiver Burden Scale scores decreased, and psychological well-being increased.

5. Conclusion

With the further aging process, up to 42.0% of the global elderly population over 60 years old is affected by mild cognitive impairment, and there are 9.83 million AD patients and 38.77 million MCI patients in the population over 60 years old in China [45]. Epidemiologic data published in the journal JAMA show that approximately 10% to 12% of patients with MCI progress to AD each year, with 80% developing AD after 6 years of follow-up [46]. Since the etiology and pathogenesis of AD are still unknown, there is no effective cure, and it will show irreversible degenerative changes, with patients becoming progressively demented and incapacitated, which will bring great pain and economic burden to the family and society; therefore, it is necessary to carry out early identification of and intervention in MCI at the pre-diagnostic stage of AD. There is a correlation between the dyadic coping strategies employed by patients with mild MCI and their spouses and the indicators of physical and mental health outcomes. These include improvements in self-efficacy, reductions in depression and anxiety symptoms, and delays in cognitive decline, among others. Intervention studies utilising dyadic relationships as a starting point can effectively enhance the level of psychological adaptation, subsequently enhancing the quality of life. In China, research on dyadic coping commenced relatively late, with the majority of cross-sectional studies conducted. Furthermore, interventions for patients with MCI have been limited to individual patient, with couples not being considered as a whole in the treatment programme. In future research, we need to draw on mature foreign experience and combine it with our culture, conduct high-quality randomised controlled trials, track the effects of the interventions on a regular basis, and develop dyadic coping interventions adapted to China's MCI geriatric population, so as to improve the mental health outcomes of both spouses and

thus enhance their quality of life. Furthermore, it is imperative that we actively develop the “Internet + Nursing Service”, implement home skills training, and reinforce WeChat/telephone/door-to-door follow-up visits. This will ensure that MCI couples receive suitable health education in a timely and convenient manner. In a timely, efficient and convenient manner, this enhances their ability to cope with illnesses and slows down the process of illnesses. The traditional nursing care model is often limited by hospitals and clinics, and “Internet + Nursing Service” breaks through this limitation. As a novel medical service model, it fuses Internet technology with medical care. Through cell phone apps, WeChat, and other digital platforms, it prioritizes an “online application and of-line service” approach, offering online reservations, consultations, health management, and care services for discharged patients or specific groups facing illness and mobility challenges. Pay attention to rural areas with relatively insufficient medical and health resources and a relatively low level of education. This can be achieved by increasing the sample size and expanding the scope of the survey, which will provide a theoretical basis for relevant epidemiological studies. At the same time, it is necessary to guide high-quality medical resources down to the grassroots level, intensify screening and intervention efforts, and provide more comprehensive psychosocial support and treatment programmes for MCI patients and their spouses.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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