Coping and Burden Among Caregivers of Patients with Cognitive Impairment, Yunnan Province, the People's Republic of China*

การเผชิญปัญหาและภาระในผู้ดูแลผู้ป่วยภาวะการรู้คิดบกพร่อง มณฑลยูนนาน สาธารณรัฐประชาชนจีน*

Mengjie Li** เมิ่งเจี้ย หลี่**
Chiraporn Tachaudomdach*** จิราภรณ์ เตชะอุดมเดช***
Chomphoonut Srirat**** ชมพูนุท ศรีรัตน์****

Abstract

Caregivers of patients with cognitive impairment often employ various coping strategies to navigate the challenges associated with caregiving. These coping strategies can have both positive and negative adaptive outcomes, significantly impacting the overall burden of caregiving. This descriptive correlational study aimed to investigate the coping strategies utilized by family caregivers of patients with cognitive impairment and explore the relationship between coping and burden among caregivers. The participants were 172 caregivers from the two tertiary hospitals in Kunming City. Data were collected using a demographic data record form for both caregivers and patients, along with the Brief COPE-Chinese version and the Zarit Burden Interview Chinese version. The content validity indexes of the Brief COPE and the Zarit Burden Interview were 0.97 and 0.97, respectively, and the reliabilities were 0.84 and 0.92, respectively. Descriptive statistics and Spearman's rank-order correlation were employed for data analysis.

The results were presented as follows:

1. The frequently used coping strategies among caregivers of patients with cognitive impairment were dysfunctional coping, emotion-focused coping, and problem-focused coping. The mean scores ± SD were as follows: 29.27 ± 5.77, 25.11 ± 5.27, and 15.44 ± 2.94, respectively.

2. The overall mean burden score among caregivers was 45.06 (SD = 14.88). The mean scores ± SD for different dimensions of burden were as follows: Role strain, Personal strain, Incompetency, Dependency, and Guilt: 14.35 ± 4.99, 14.05 ± 4.89, 8.29 ± 3.08, 4.09 ± 1.86, 4.31 ± 1.67, respectively.

3. There was a weak positive correlation between coping strategies and caregiver burden. Specifically, Emotion-focused coping had a weak relationship with guilt (r_s = .212, $p < .01$), Role strain (r_s = .165, $p < .01$) and Incompetency (r_s = .176, $p < .01$); Problem-focused coping had a weak relationship with incompetency (r_s = .228, $p < .01$), dependency (r_s = .223, $p < .01$), and guilt (r_s = .216, $p < .01$); and Dysfunctional coping had a weak relationship with dependency (r_s = .178, $p < .01$), guilt (r_s = .159, $p < .01$) and Incompetency (r_s = .150, $p < .01$).

The findings offer insights into the coping mechanisms used by caregivers and their associations with caregiver burden. Future research should be carefully categorised based on the characteristics of caregivers, and should focus on examining the predictive factors of burden among caregivers of patients with cognitive impairment.

Keywords: Cognitive impairment; Caregivers; Coping strategy; Caregiver burden

---

* Master's thesis, Master of Nursing Science Program (International Program), Faculty of Nursing, Chiang Mai University

** Graduate student of Nursing Science Program (International Program), Faculty of Nursing, Chiang Mai University

*** Corresponding author, Associate Professor, Faculty of Nursing, Chiang Mai University; e-mail: chiraporn.tac @cmu.ac.th

**** Assistant Professor, Faculty of Nursing, Chiang Mai University

Received 28 March 2024; Revised 22 October 2024; Accepted 5 November 2024

บทคัดย่อ

ผู้ดูแลผู้ป่วยที่มีความบกพร่องทางสติปัญญา มักใช้กลยุทธ์การเผชิญปัญหาต่าง ๆ เพื่อรับมือกับความท้าทายที่เกี่ยวข้องกับการดูแล กลยุทธ์การเผชิญปัญหาเหล่านี้มีผลต่อการปรับตัวในเชิงบวกและเชิงลบ ซึ่งส่งผลกระทบต่อภาระการดูแลโดยรวม การวิจัยเชิงพรรณนาหาความสัมพันธ์ครั้งนี้ มีวัตถุประสงค์เพื่อศึกษากลยุทธ์การเผชิญปัญหาที่ใช้โดยผู้ดูแลผู้ป่วยภาวะการรู้คิดบกพร่อง และศึกษาความสัมพันธ์ระหว่างการเผชิญปัญหาและภาระในดูแลผู้ป่วย กลุ่มตัวอย่างเป็นผู้ดูแลจำนวน 172 คน จากโรงพยาบาลตติยภูมิสองแห่งในเมืองคุนหมิง เครื่องมือที่ใช้ในการรวบรวมข้อมูล ได้แก่ แบบบันทึกข้อมูลส่วนบุคคลของผู้ดูแลและผู้ป่วย แบบสอบถามการเผชิญปัญหาฉบับภาษาจีน และแบบสอบถามภาระการดูแลฉบับภาษาจีน แบบสอบถามการเผชิญปัญหา และ แบบสอบถามภาระการดูแลมีค่าดัชนีความตรงเชิงเนื้อหา เท่ากับ 0.97 และ 0.97 ตามลำดับ และมีค่าความเชื่อมั่น เท่ากับ 0.84 และ 0.91 ตามลำดับ วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และสถิติ Spearman’s rank-order correlation

ผลการศึกษาพบว่า

1. กลยุทธ์การเผชิญปัญหาที่ผู้ดูแลใช้บ่อยที่สุดคือ กลยุทธ์การเผชิญปัญหาที่ไม่มีประสิทธิภาพ กลยุทธ์การเผชิญปัญหาทางอารมณ์ และกลยุทธ์การเผชิญปัญหาที่เน้นการแก้ไขปัญหา คะแนนเฉลี่ย ± SD คือ 29.27 ± 5.77, 25.11 ± 5.27, 15.44 ± 2.94 ตามลำดับ

2. คะแนนเฉลี่ยภาระการดูแลโดยรวมในผู้ดูแลเท่ากับ 45.06 (SD = 14.88) คะแนนเฉลี่ย ± SD ในมิติต่าง ๆ ของภาระการดูแล ได้แก่ ความตึงเครียดในบทบาท, ความตึงเครียดส่วนบุคคล, ความรู้สึกไร้ความสามารถ, การพึ่งพา และ ความรู้สึกผิด: 14.35 ± 4.99, 14.05 ± 4.89, 8.29 ± 3.08, 4.09 ± 1.86, 4.31 ± 1.67 ตามลำดับ

3. พบความสัมพันธ์เชิงบวกในระดับต่ำระหว่างกลยุทธ์การเผชิญปัญหาและภาระของผู้ดูแล โดยเฉพาะอย่างยิ่งกลยุทธ์การเผชิญปัญหาทางอารมณ์มีความสัมพันธ์ระดับต่ำกับความรู้สึกผิด ($r_s = .212, p < .01$), ความตึงเครียดในบทบาท ($r_s = .165, p < .01$) และความรู้สึกไร้ความสามารถ ($r_s = .176, p < .01$) ตามลำดับ กลยุทธ์การเผชิญปัญหาที่เน้นการแก้ไขปัญหามีความสัมพันธ์ระดับต่ำกับความรู้สึกไร้ความสามารถ ($r_s = .228, p < .01$), การพึ่งพา ($r_s = .223, p < .01$) และความรู้สึกผิด ($r_s = .216, p < .01$) ตามลำดับ กลยุทธ์การเผชิญปัญหาที่ไม่มีประสิทธิภาพมีความสัมพันธ์ระดับต่ำกับการพึ่งพา ($r_s = .178, p < .01$), ความรู้สึกผิด ($r_s = .159, p < .01$) และความรู้สึกไร้ความสามารถ ($r_s = .150, p < .01$) ตามลำดับ

ผลการวิจัยให้ข้อมูลเชิงลึกเกี่ยวกับกลไกการเผชิญปัญหาที่ผู้ดูแลใช้ และความสัมพันธ์กับภาระของผู้ดูแล การวิจัยในอนาคต ควรศึกษาภาระการดูแลโดยแยกตามคุณลักษณะของผู้ดูแล และควรศึกษาปัจจัยทำนายภาระการดูแลของผู้ดูแลผู้ที่มีภาวะการรู้คิดบกพร่อง

คำสำคัญ: ภาวะการรู้คิดบกพร่อง ผู้ดูแล กลยุทธ์การเผชิญปัญหา ภาระของผู้ดูแล

---

* วิทยานิพนธ์หลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

** นักศึกษา หลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

*** ผู้เขียนหลัก รองศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ e-mail:chiraporn.tac@cmu.ac.th

**** ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่

วันที่รับบทความ 28 มีนาคม 2567 วันที่แก้ไขบทความ 22 ตุลาคม 2567 วันที่ตอบรับบทความ 5 พฤศจิกายน 2567

Background and significance

In recent years, there has been a progressive increase in the prevalence of cognitive impairment. A national cross-sectional study has shown that China's proportion of patients with cognitive impairment accounts for approximately 25.5% of the global total (Zhou et al., 2023). The prevalence of cognitive impairment among elderly hospitalized patients over 60 years old in Kunming, Yunnan Province is as high as 50.9% (Dai et al., 2023). However, approximately 70 to 80% of patients with cognitive impairment are untreated in China (Jia et al., 2020). Therefore, all of these data show that cognitive impairment has become a public health problem to which researchers need to pay attention.

Cognitive impairment is defined as when a person has trouble remembering, learning new things, paying attention, or making decisions that affect their daily lives. Cognitive impairment can be divided into mild cognitive impairment (MCI) and dementia. MCI is characterized by some cognitive decline, with evidence of impairment in one or more cognitive domains, but usually relatively preserved ability to perform activities of daily living. Dementia is a more serious clinical condition, in which patients have significant cognitive decline and their activities of daily living are often seriously affected (GBD 2016 Dementia Collaborators, 2019). However, most symptoms of cognitive impairment are irreversible, and only 1-2% of people with dementia have a potentially reversible condition (Oh & Rabins, 2019).

While taking care of cognitive impairment patients, a series of care burdens will accompany family caregivers. As for role strain burden, Asian society expects to take care of patients and elderly family members, and spouses and children may be forced to play the role of caring for the elderly (Win et al., 2017). For personal strain burden, caregivers often experience problems with depression and other mental problems (Sakka et al., 2019). For the incompetency burden, caregivers may have to pay for cognitive impairment and lose income due to giving up or reducing employment. This imposes a financial burden on caregivers of cognitive impairment patients (Brown et al., 2017).

For dependency, caregivers of people with Alzheimer's disease and dementia often feel socially isolated due to the lack of social contact and support, which results in the development of a limited social network and increased burden. (Fukuda et al., 2020). Lastly, for the burden of guilt, caregivers feel guilty and want to do more and better for the patient. They often experience problems with anxiety (Sakka et al., 2019). Therefore, family care for patients with cognitive impairment is a long-term and arduous task. These situations all place a considerable burden on family caregivers.

The impact of family caregivers on patients with cognitive impairment has positive and negative aspects. The study found that caregivers caring for people with dementia led to closer relationships between the patients and their caregivers, and caregivers have personal accomplishments. These caregivers' positive aspects are often reinforced by good medical counselling, formal caregiving support, and family/friend support (Lindeza et al., 2020). In contrast, caregivers' negative aspects for patients with dementia are particularly related to the emotional and social aspects of care, such as inadequate medical and nursing support, disease progression, and dementia-related costs, which reinforce the negative evaluation (Lindeza et al., 2020). All of these negative effects will place a heavy burden on caregivers of cognitive impairment patients.

Appropriate coping strategies are crucial for caregivers when facing the care needs of patients with cognitive impairments. Carver's coping concept was developed from the Lazarus and Folkman model and modified by Carver (2011). After that, researchers have divided Carver's coping concepts into three categories: problem-focused coping strategy, emotion-focused coping strategy, and dysfunctional coping strategy (Li et al., 2014). For problem-focused coping strategies, for example, educational interventions help patients provide problem-solving strategies to reduce caregiver burden (Chen et al., 2015). For emotion-focused coping strategies, caregivers often use emotional support. However, this emotional support in this situation is temporary and can also be burdening for caregivers (Huang et al., 2015). Moreover, for dysfunctional coping strategies, when caregivers are faced with some of the patient's symptoms (aggressive behavior), caregivers may adopt self-distraction which helps them to avoid thinking about the situation.

However, studies have shown that this dysfunctional strategy can lead to a higher burden on caregivers (Huang et al., 2015). It follows that different coping strategies will lead to positive and negative adaptive outcomes. For caregivers of patients with cognitive impairment, if the coping is effective, the caregivers will be in a state of adaptation; if it is ineffective, the caregivers will not adapt well, and the caregivers will have depression, anxiety, and burden, which will affect their physical and mental health (Liu et al., 2012).

According to the literature review, several studies have examined the relationship between patients with cognitive impairments and caregivers' coping strategies and burden. The findings indicate that greater use of coping strategies is significantly associated with a higher level of caregiver burden ($r_s = .41$, $P < 0.01$). (Kim et al., 2012). Besides, previous studies have shown a positive correlation between burden and emotion-focus coping, problem-focus coping, and dysfunction coping ($r_s = .58$, $p < .001$; $r_s = .72$, $p < .001$; $r_s = .68$, $p < .001$) (Cooper et al., 2008). Moreover, if the frequency of problem-focused coping strategies increases, the burden decreases ($r_s = -.20$, $p < .001$) (Papastavrou et al., 2011). Overall, effective and adaptive coping strategies may play a protective role in reducing the caregiver's distress and burden.

In mainland China, there have been many studies on the coping of caregivers of patients with cognitive impairment. Most coping strategies are based on the Lazarus and Folkman model. However, no study on coping strategies has applied Carver's coping concept. Folkman and Lazarus, on the other hand, view coping styles from a situation-specific perspective. Folkman and Lazarus look at coping styles from a situation-specific perspective. According to them, the way individuals respond to stressful events is closely related to the situation (Biggs et al., 2017). Carver started from the stability of coping styles and believed that individuals have stable coping styles (Carver, 2011). Based on this idea, family caregivers of patients with cognitive impairment need patients to have the ability to respond to environmental changes and use their coping strategies to effectively adapt to challenges.

Due to the irreversibility of cognitive impairment and the fact that Yunnan Province has the largest number of ethnic minorities in China, it has a different filial piety culture from other regions of China. it is vital to explore how to cope with the current situation to reduce the burden on family caregivers. Therefore, the researchers wanted to explore further the relationship between coping and the burden of caregivers of cognitive impairment patients in tertiary hospitals in Kunming City.

Research objectives

1. To explore the coping strategy of family caregivers of cognitive impairment patients in Kunming City, Yunnan Province, China.
2. To explore the burden on family caregivers of cognitive impairment patients in Kunming City, Yunnan Province, China.
3. To examine the relationship between coping strategy and burden among family caregivers of cognitive impairment patients in Kunming City, Yunnan Province, China.

Conceptual framework

The conceptual framework of this study is based on Carver's 2011 coping concept which was developed from Lazarus' stress and coping model of 1984. Carver's coping concept emphasizes the diversity and complexity of individuals in the coping process and may focus more on the actual effects of coping strategies and individual differences than the cognitive assessment model proposed by Lazarus and Folkman et al. Coping refers to individual efforts to deal with a threatening or harmful situation, with the aim of either removing the threat or lessening its impact. People manage stress through coping strategies which include three dimensions (Li et al., 2014): 1) Emotion-focused coping strategy: aiming to solve the current problem. This typically involves generating solutions, evaluating the pros and cons of alternatives, and implementing steps to solve the problem; 2) Problem-focused coping strategy: involving regulating of the emotional consequences of stressful events; and 3) Dysfunctional coping strategy: or adverse reactions to stress. These cause people to avoid dealing with stress directly and instead engage in activities (such as drinking) or mental states (such as withdrawal).

Furthermore, the caregiver burden is a multidimensional concept. Caregivers' physical and emotional health, social life, and financial status suffer while caring for their relatives (Zarit et al., 1986). This study selects five burden dimensions that are appropriate for Chinese caregivers based on previous studies (Li et al., 2017): 1) Role strain, 2) Personal strain, 3) Incompetency, 4) Dependency, and 5) Guilt. Different coping strategies used by caregivers of patients with cognitive impairment may impact caregivers' burden on the patients. Positive coping strategies may reduce the burden of caregivers, while negative coping strategies may increase the burden of caregivers (Liu et al., 2012). The need for caregivers to find effective coping strategies to remove the burden is essential.

Thus, this study hypothesizes a positive correlation between coping strategies and caregiver burden.

Methodology

Population and sample

Participants were recruited by the convenience sampling method. The sample size was determined using Yamane's formula (1973) at a significance level of .05.

The study included all 172 family caregivers who had met the inclusion criteria for patients, which included: 1) they had been diagnosed with cognitive impairment by physicians based on the clinical guidelines of cognitive impairment and records; 2) the duration of diagnosis was at least 6 months; and 3) they had family caregivers and were willing to cooperate with the study.

Exclusion criteria for patients included suffering from severe mental illnesses, such as bipolar disorder, personality disorder, obsessive-compulsive disorder, schizophrenia, or major depression, as well as acute stages of internal system diseases, including infections that were not under control, acute cardiac insufficiency, acute cerebrovascular disease, unstable angina, and acute myocardial infarction, and physical disabilities, including hand dysfunction. The assessment was made based on medical records maintained by physicians.

Inclusion criteria for family caregivers included: 1) being an adult relative; 2) assuming primary responsibility for care; 3) duration of care ≥3 months; 4) no other serious diseases; 5) no cognitive or mental disorders; 6) being able to understand Chinese; and 7) willing to participate in the study.

Research instrument

1. The Demographic Data Form for Patients with Cognitive Impairment. This survey was created based on a literature review by researchers. It collected demographic information such as age, gender, marriage, education, years of cognitive impairment, severity of cognitive impairment, income, and insurance coverage.

2. The Demographic Data Form for Family Caregivers. This questionnaire was developed based on a literature review and comprises questions related to age, gender, marriage, education, years of nursing care, care hours, relationship with patient, and work status.

3. The Brief COPE-Chinese version. The Brief COPE is a self-completed questionnaire developed by Carver in 1997 to measure coping strategies (Carver, 1997) and translated by Tang et al. into Chinese in 2016. It comprises 28 items for which psychometric properties are described. Each item on the questionnaire was scored on a 4-point scale, with response options as follows: 1 = I haven't been doing this at all; 2 = I've been doing this a little bit; 3 = I've been doing this a medium amount; and 4 = I've been doing this a lot.

Li et al. (2014) divided the items into three subscales: 1) Emotional-focused (possible score: 10-40, including acceptance, use of emotional support, humour, positive reframing, and religion); 2) Problem-focused (possible score: 6-24, including active coping, use of instrumental support, and planning); and 3) Dysfunctional (possible score:12-48, including behavioural disengagement, denial, self-blame, substance use, venting, and self-distraction). Scores were tallied for problem-focused, emotion-focused, and dysfunctional coping with higher scores indicating greater use of a specific coping strategy (Cooper et al., 2008). The content validity index of the Brief COPE was 0.97 (Tang et al., 2021), and it exhibited high reliability with a Cronbach’s alpha of 0.84.

4. Zarit Burden Interview (ZBI) (Chinese version). The ZBI was developed by Steven H. Zarit in 1980. Initially, it was a 29-item version (Zarit et al., 1980) but was later revised to its current form comprising 22 items. In 2005, Chan et al. translated the original Zarit Burden Interview (ZBI) into Chinese. The ZBI, in its original and translated versions, is one of the most commonly used tools to measure the burden experienced by caregivers of patients with dementia. It is a valuable instrument for assessing subjective burden and its impact on caregivers’ lives. However, the 22-item scale has not been consistently categorized into standard dimensions across studies, although some research has suggested a five-dimension structure.

Researchers in China have divided the ZBI into five dimensions: 1) role strain, 2) personal strain, 3) incompetency, 4) dependency, and 5) guilt (Li et al., 2017). Items 1–21 are rated on a 5-point scale from 0 to 4, where 0 = never, 1 = rarely, 2 = sometimes, 3 = quite frequently, and 4 = nearly always. Item 22 is also rated on a 5-point scale, ranging from 0 = not at all to 4 = extremely. The total score range is from 0 to 88. There is no expert consensus standard for the various scoring methods of the ZBI. The ZBI-22 scores range from 0 to 88, with higher scores indicating greater subjective burden (Yu et al., 2015). The content validity index of the Zarit Burden Interview was 0.97 (Haghshenas et al., 2023), and it showed high reliability with a Cronbach's alpha of 0.91.

Ethical considerations

Before data collection, the research proposal was approved by the Faculty of Nursing Research Ethics Committee at Chiang Mai University, Thailand, with project ID 073/2021. Additionally, the data collection process was approved by the First Affiliated Hospital of Kunming Medical University and the Chenggong Affiliated Hospital of Kunming Medical University. Before data collection, all participants were provided with comprehensive details regarding their right to participate, abstain from participating, or discontinue the study at any stage. Informed consent forms were handed to each participant before they completed the questionnaire. Researchers clarified the research's objective and methodology and confirmed that they were fully informed before data collection. During the research, the confidentiality of the participants' answers was ensured. Their identities were kept hidden, and the information provided was only used for research purposes. At the end of the study, all research data involving the sample were placed in a special ethical data archive at the hospital where the investigator worked. All records should be maintained for at least five years after the end of the study.

Data collection

The research proposal and data collection tools were submitted for approval to two tertiary hospitals in Kunming. After seeking permission, the researcher handed out packets to participants that included an information sheet, a consent form, and questionnaires. Participants were given a relaxed and uninterrupted environment to complete the questionnaire. Upon receiving the signed informed consent forms from the participants, questionnaires were sent to participants, which they answered themselves. The entire questionnaire took approximately 30 minutes to complete. The researchers extended their gratitude to the participants for their active involvement in the study. The entire data collection period lasted about three months, with three to five samples collected daily. The response rate for 172 participants was 100%.

Data analysis

The data analysis in this study was conducted using the English version 23.0 of the Statistical Package for the Social Sciences (SPSS). The data of burden followed a normal distribution while the data of coping strategy did not follow a normal distribution, so Spearman’s rank-order correlation was used. The significance level was set at .05.

Results

A total of 172 patients participated in this research study, and their mean age was 70.73 years (SD = 7.61). The majority were male (58.72%), married (54.65%), and had a junior middle school education (34.89%). In terms of participant prevalence information, 31.98% of participants had had the disease for three to five years, and only 16.85% had cognitive impairment for over 10 years. The severity of cognitive impairment was moderate to severe in more than half of the participants (54.07%). In terms of personal income and insurance, the vast majority of participants had personal income (66.82%) and insurance (58.72%).

A total of 172 caregivers participated in this research study. The mean age of the caregivers was 38.83 years (SD = 12.37). The majority of those caring for patients with cognitive impairment were female (55.81%), married (75%), and educated at the university level or above (50.58%). In terms of care for patients, the majority of caregivers had been caring for patients for six months to two years (38.95%) and the majority of caring hours were less than four hours per day (38.37%). Children of the patients made up the majority of the caregivers (65.69%). In addition, the majority of caregivers were employed (73.84%).

The Brief COPE was used to assess the coping among caregivers of patients with cognitive impairment. There were no missing data. The overall mean coping score for this study was 69.83 (SD = 12.57), with a range of 29 to 100. In this study, the dimensions of coping are divided into emotion-focused strategies, problem-focused strategies, and dysfunctional coping strategies. The frequently used coping strategies among caregivers of patients with cognitive impairment were dysfunctional coping, emotion-focused coping, and problem-focused coping. The mean scores ± SD were as follows: 29.27 ± 5.77, 25.11 ± 5.27, and 15.44 ± 2.94, respectively. The mean scores ± SD of dysfunctional coping, emotion-focused coping, and problem-focused coping of every item were as follows: 2.44 ± 0.90, 2.51 ± 0.91, and 2.57 ± 0.93, respectively (Table 1).

Table 1 Coping Strategy of Family Caregivers of Cognitive Impairment Patients in Kunming City, Yunnan Province, China (n = 172)

Coping score	Possible score	Actual score	Mean (SD) Dimension score	Mean (SD) Item score
Total for the Brief COPE	28-112	29-100	69.83 (12.57)	
Emotion-focused strategies (10 items)	10-40	10-37	25.11 (5.27)	2.51 (0.91)
Problem-focused strategies (6 items)	6-24	6-22	15.44 (2.94)	2.57 (0.93)
Dysfunctional coping strategies (12 items)	12-48	12-43	29.27 (5.77)	2.44 (0.90)

The 22-item Zarit Burden Interview was used to assess the caregiver's burden. The overall mean burden score was 45.06 (SD = 14.88), ranging from 0 to 80 in this study, as shown in Table 4. This indicates that the caregivers perceived that they were bearing a relatively heavy burden. As indicated by the last item (item 22) of the Zarit Burden Interview, which measures overall subjective burden, caregivers felt moderately burdened overall. Of these, 41.28% felt moderately burdened, 21.52% felt quite burdened, and 6.4% felt extremely burdened. Fortunately, there were still eight (4.56%) caregivers who felt no burden. Item 2 revealed that most caregivers felt burdened because they did not have enough time for themselves. In this study, the burden dimensions were divided into five dimensions: role strain, personal strain, incompetency, dependency, and guilt. The lowest burden items were for dependency, with means (SD) of 4.09 (1.86). The highest burden items were role strain, with a mean (SD) of 14.35 (4.99) (Table 2).

Table 2 The Burden Among Caregivers of Patients with Cognitive Impairment (n = 172)

ZBI score	Possible score	Actual score	Mean (SD)
Total ZBI score	0-88	0-80	45.06 (14.88)
Role strain	0-28	0-27	14.35 (4.99)
Personal strain	0-28	0-27	14.05 (4.89)
Incompetency	0-16	0-15	8.29 (3.08)
Dependency	0-8	0-8	4.09 (1.86)
Guilt	0-8	0-8	4.31 (1.67)

The Spearman-rank correlation coefficient was, therefore, chosen to test the relationship between each dimension of caregiver burden and coping. The results showed that the Total Zarit Burden Interview and the Brief COPE indicated a weak positive correlation (r_s = .219, $p < .01$). Three dimensions of burden that had a positive relationship with the emotion-focused strategy were role strain (r_s = .165, $p < .05$), incompetency (r_s = .176, $p < .05$), and guilt (r_c = .212, $p < .01$).

Three dimensions of burden that had a positive relationship with the problem-focused strategy were incompetency (r_s = .228, $p < .01$), dependency (r_s = .223, $p < .01$), and guilt (r_s = .216, $p < .01$). Moreover, the three dimensions of burden that had the strongest positive relationship with the dysfunctional strategy were incompetency (r_s= .150, $p < .05$), dependency (r_s = .178, $p < .05$), and guilt (r_s = .159, $p < .05$) (Table 3).

Table 3 Relationship Between Coping and Burden Among Caregivers of Patients with Cognitive Impairment (n = 172)

		Dimension of coping		
Burden	**The Brief COPE**	**Emotion-focused**	**Problem-focused**	**Dysfunctional**
Total ZBI	.219* *			
Role strain		.165 *	.189 *	.133
Personal strain		.137	.189 *	.094
Incompetency		.176 *	.228 **	.150 *
Dependency		.144	.223 **	.178 *
Guilt		.212 **	.216 **	.159 *

Note. * Correlation is significant at the .05 level (2-tailed)
** Correlation is significant at the .01 level (2-tailed)

Discussion

Coping strategy of family caregivers of cognitive impairment patients

In this study, emotion-focused coping was the strategy with the highest utilization, with a mean score of 2.51 (SD = 0.91), which is lower than reported in previous research (Muscat & Scerri, 2018). Qualitative research has shown that participants in the care of cognitive impairment patients will gradually become involved and accept the fact that the patient has the disease (Zhao, 2019). This coping strategy was used by most caregivers in this study, possibly because most of the patients had severe cognitive impairment. When caregivers face patients with severe cognitive impairment, they think that time will change the situation and the only thing to do is to wait and accept the reality because there is no other way. This strategy can sometimes play a role in easing the blow of frustration (Fowler et al., 2021).

A probable reason for caregivers in this study using emotion-focused strategies is that many of them were female. One meta-analysis has shown five studies in which wives used more emotion-focused coping strategies (Roche et al., 2016). Although the status of females has improved to a certain extent in China, the influence of Confucius' filial piety and virtuous culture means women bear the responsibility of filial piety to their parents and in-laws, and this filial piety and dedication is highly respected by society. Women nowadays are still mainly responsible for taking care of family and the elderly (Wang et al., 2020). In addition, this result may be related to caregivers' educational level. Caregivers who finished senior middle school account for the majority in this study. As their knowledge of the disease gradually deepens, caregivers accept the reality of the patient's illness through continuous encounters with the patient, through self-adjustment, and by finding new ways to get along with the patient (Yu et al., 2015).

Moreover, caregivers who use emotion-focused strategies report taking time to talk about their problems with family or friends. Chinese culture emphasizes a strong sense of family, which creates a sense of obligation to care for their loved ones (Yuan et al., 2021). Therefore, in this study, coping strategies were frequently used to get family support.

In this study, problem-focused strategies were lower than previous research (Muscat & Scerri, 2018). Due to the outbreak of COVID-19, family caregivers spend more time at home with patients with cognitive impairment. They lack adequate rest time and time for themselves and reduce communication with the outside world. Therefore, caregivers tend to use these strategies more to learn properly about prevention, use the community support system to get live help, or seek professional support to arrange the daily life of patients with cognitive impairment (Kang et al., 2020). In experiencing adverse events, such as COVID-19, adopting these strategies which can better solve difficulties, helps caregivers build confidence and establish positive feedback.

Dysfunctional strategies were used at a higher rate than seen in previous research (Muscat & Scerri, 2018). A reason for the frequent use of these strategies may be that most of the caregivers in this study were female. Sometimes, after a patient develops symptoms of cognitive impairment, the caregiver realizes the mistake of not bringing the patient to the doctor earlier and feels guilty for not being able to provide the treatment the patient deserves due to financial constraints (Zhao, 2019). Therefore, when facing this kind of situation, caregivers will choose to respond with dysfunctional strategies.

Many caregivers used dysfunctional strategies, likely because most patients in this study had mild to moderate cognitive impairment. In the early stages, changes in patients’ cognitive function were subtle, so caregivers initially experienced few noticeable differences in communication or relationship with their relatives. As these changes became more apparent, caregivers often felt insecure about the situation and sometimes resorted to denial. These findings are consistent with previous research showing that caregivers of patients with cognitive impairment tend to use maladaptive coping strategies as the disease progresses. (Rasmussen et al., 2019).

Overall, nursing staff should guide family caregivers to choose positive coping methods with an optimistic attitude to produce high-quality coping effects and improve the psychological quality and coping ability of family caregivers in the face of emergency events. At the same time, nursing staff should help prevent family caregivers from using dysfunctional coping methods to escape life pressures and support them in building confidence, resilience, and determination to face difficulties.

Burden on family caregivers of cognitive impairment patients

The burden level of caregivers in this study is higher than that in northern China, central China, and Hong Kong (Liao et al., 2020; Wong et al., 2019; Zhang et al., 2018). The reason for this may be that our participants were recruited during the COVID-19 pandemic. Studies have reported that in the first few months of the pandemic, the burden on caregivers of dementia patients increased (Cohen et al., 2021). In addition, most caregivers in this study were female and children of the patients. They needed to balance work and family while taking care of cognitively impaired patients, making them prone to fatigue and pressure (Xiong et al., 2020).

The mean burden score was at a moderate level in this study. However, the last item of the ZBI burden interview (22nd item, overall, how burdened do you feel in caring for your relative?) revealed a relatively low overall burden, and eight participants even reported no burden. The caregivers' high level of education means that they had a high level of knowledge acquisition and problem-solving skills and may have relatively little financial stress. One Chinese study revealed that for caregivers of dementia patients, a lower education level was associated with higher caregiver burden (Tang et al., 2016). This may explain why the burden score in this study is moderate, while most people showed a relatively low overall burden. Caregivers with a high level of education can effectively deal with care issues and stress.

In this study, most caregivers felt that they lost control of their lives when caring for relatives while almost all provided care for more than six months. Role stress begins to decrease by the sixth month of care which may be because caregivers experience significant role stress with less care experience, and this stress decreases as they become more familiar with care (Kajiwara et al., 2018). Therefore, they feel less burdened. Most caregivers may feel that role stress increases, and they cannot control their lives well. Caregiver stigma can also increase the burden risk on caregivers. The Chinese term for cognitive impairment is "laonianchidai", which means" stupid or idiotic ", and having a family member with dementia may result in shame for a Chinese family (Sun, 2014). As the group with the longest and most intensive contact with patients, family caregivers in China have received little attention regarding the stigma they experience when caring for relatives with dementia.

Caregivers of older patients with cognitive impairment experience higher caregiver burdens in terms of role strain and personal strain. Since filial piety is a core value in Chinese culture, children are more likely to be primary caregivers. Children caregivers are often unprepared for the transition to this role and experience higher caregiver burden in terms of role strain and personal strain (Win et al., 2017).

Relationship between coping strategy and burden among family caregivers of cognitive impairment patients

In terms of the relationship between coping strategy and burden, the overall results showed that each dimension of coping strategy was positively correlated with some dimensions of burden.

This indicates that the more frequently they use coping strategies, the higher their burden levels. The stronger the caregiver's coping ability, the higher the caregiver's expectations for themselves and those being cared for, which may mean they take on more responsibilities. Caregivers who neglect their own needs increase their psychological burden which leads to increased economic pressure. In summary, stronger coping ability among caregivers does not necessarily mean a lighter burden. On the contrary, the burden may increase due to various factors. This is consistent with the work of Jones et al. (2017).

From the result, there was a positive correlation between emotion-focused coping and five dimensions of burden, especially the burden of guilt. This suggests that caregivers who adopt emotion-focused coping strategies face a heavier guilt burden for patients with cognitive impairment which is consistent with previous research (Cooper et al., 2008). One possible reason is that frequent use of these emotion-focused coping strategies, although they help manage feelings of tension, may not effectively address the situation itself. This can lead to poorer emotional adjustment and fail to relieve feelings of guilt or burden. (Huang et al., 2015).

Moreover, there was a significant positive correlation between problem-focused strategies and burden. Using problem-focused strategies to deal with situations beyond an individual's control, such as caring for a person whose condition deteriorates, may not be effective, thereby creating a burden that the caregiver feels strained about, resulting in wanting someone to take over the care (Jones et al., 2017).

Furthermore, there was also a positive correlation between being problem-focused and having a personal burden strain in this study, similar to one previous study (McConaghy & Caltabiano, 2005) which reported that problem-focused coping strategies moderated the carers' feelings of stress and strain, reducing these to more bearable levels. However, they also noted that this sample maintained these levels over the study period even though the person they were caring for was deteriorating, thus creating an extra burden for the carer.

According to the results of the present study, there was a positive correlation between the dimension of burden and dysfunctional coping strategies, although caregivers use them to reduce stress by avoiding exposure problems. Dysfunctional coping can help to deal with stressful feelings, but it does not help when the event occurs, such as behavior in which the caregiver self-blames while caring for the patient, which leads to poor emotional regulation and ultimately failure to reduce the burden. This is consistent with previous research in Taiwan (Huang et al., 2015).

Conclusions and implications

The findings provide insights into the coping mechanisms employed by caregivers and their associations with caregiver burden in the context of cognitive impairment. Understanding this mechanism can inform targeted interventions aimed at supporting caregivers and alleviating caregiver burden. The current study has some limitations. First, the Brief COPE was not specifically developed for caregivers of patients with cognitive impairment, although there is precedent for its use in this population. In addition, the sample was from Kunming, Yunnan Province, so the findings cannot be generalized to all family caregivers with dementia in China, especially those in rural and remote areas.

Suggestion for further research

Future studies should examine how caregiver characteristics influence coping strategies and burden, identify key predictors of caregiver burden.

References

Biggs, A., Brough, P., & Drummond, S. (2017). Lazarus and Folkman's psychological stress and coping theory. In C. L. Cooper & J. C. Quick (Eds.), *The handbook of stress and health: A guide to research and practice* (pp. 351–364). Wiley Blackwell. https://doi.org/10.1002/9781118993811.ch21

Brown, L., Hansnata, E., & La, H. A. (2017). *Economic cost of dementia in Australia 2016-2056.* Alzheimer's Australia. https://www.dementia.org.au/sites/default/files/2024-02/The-economic-cost-of-dementia-in-Australia-2016-to-2056.pdf

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92–100. https://doi.org/10.1207/s15327558ijbm0401_6Carver,1997

Carver, C. S. (2011). Coping. In R. J. Contrada & A. Baum (Eds.), *The handbook of stress science: Biology, psychology, and health* (pp. 221–229). Springer.

Chan, T. S. F., Lam, L. C. W., & Chiu, H. F. K. (2005). Validation of the Chinese version of the Zarit Burden Interview. *Hong Kong Journal of Psychiatry, 15*(1), 9-13.

Chen, M. C., Chen, K. M., & Chu, T. P. (2015). Caregiver burden, health status, and learned resourcefulness of older caregivers. *Western Journal of Nursing Research, 37*(6), 767–780. https://doi.org/10.1177/0193945914525280

Cohen, S. A., Kunicki, Z. J., Drohan, M. M., & Greaney, M. L. (2021). Exploring changes in caregiver burden and caregiving intensity due to COVID-19. *Gerontology and Geriatric Medicine, 7*, 2333721421999279. https://doi.org/10.1177/2333721421999279

Cooper, C., Katona, C., Orrell, M., & Livingston, G. (2008). Coping strategies, anxiety and depression in caregivers of people with Alzheimer's disease. *International Journal of Geriatric Psychiatry, 23*(9), 929-936. https://doi.org/10.1002/gps.2007

Dai, J.R., Li, J., He, X., Li, Y., & Li, Y. (2023). Prevalence and influencing factors of cognitive dysfunction in inpatients of geriatric medicine department of a hospital in Yunnan Province. *Journal of Basic Medicine and Clinical Sciences, 43*(3), 468-475. (in Chinese)

Fowler, N. R., Judge, K. S., Lucas, K., Gowan, T., Stutz, P., Shan, M., Wilhelm, L., Parry, T., & Johns, S. A. (2021). Feasibility and acceptability of an acceptance and commitment therapy intervention for caregivers of adults with Alzheimer's disease and related dementias. *BMC Geriatrics, 21*(1), 127. https://doi.org/10.1186/s12877-021-02078-0

Fukuda, M., Lyu, X. Z., Li, T., Xie, T., Wand, H., & Yu, X. (2020). Caregiver burden and related factors among caregivers of people with diagnosis of Alzheimer disease within one year. *Chinese Mental Health Journal, 34*(7), 572-577. (in Chinese)

GBD 2016 Dementia Collaborators. (2019). Global, regional, and national burden of Alzheimer's disease and other dementias, 1990–2016: A systematic analysis for the global burden of disease study 2016. *The Lancet Neurology*, *18*(1), 88-106. https://doi.org/10.1016/S1474-4422(18)30403-4

Haghshenas, H., Jokar, Z., Zarshenas, L., Rakhshan, M., & Poursadeghfard, M. (2023). Assessing the psychometric properties of persian version of Zarit Burden Interview among family caregivers of patients with multiple sclerosis. *BMC Nursing*, *22*(1), 97. https://doi.org/10.1186/s12912-023-01260-6

Huang, M. F., Huang, W. H., Su, Y. C., Hou, S. Y., Chen, H. M., Yeh, Y. C., & Chen, C. S. (2015). Coping strategy and caregiver burden among caregivers of patients with dementia. *American Journal of Alzheimer's Disease & Other Dementias, 30*(7), 694-698. https://doi.org/10.1177/1533317513494446

Jia, L., Quan, M., Fu, Y., Zhao, T., Li, Y., Wei, C., Tang, Y., Qin, Q., Wang, F., Qiao, Y., Shi, S., Wang, Y. J., Du, Y., Zhang, J., Zhang, J., Luo, B., Qu, Q., Zhou, C., Gauthier, S., ... Group for the Project of Dementia Situation in China. (2020). Dementia in China: Epidemiology, clinical management, and research advances. *The Lancet Neurology, 19*(1), 81-92. https://doi.org/10.1016/S1474-4422(19)30290-X

Jones, A. J., Kuijer, R. G., Livingston, L., Myall, D., Horne, K., MacAskill, M., Pitcher, T., Barrett, P. T., Anderson, T. J., & Dalrymple-Alford, J. C. (2017). Caregiver burden is increased in Parkinson's disease with mild cognitive impairment (PD-MCI). *Translational Neurodegeneration, 6*, 17. https://doi.org/10.1186/s40035-017-0085-5

Kajiwara, K., Noto, H., & Yamanaka, M. (2018). Changes in caregiving appraisal among family caregivers of persons with dementia: A longitudinal study over 12 months. *Psychogeriatrics, 18*(6), 460-467. https://doi.org/10.1111/psyg.12360

Kang, F. J., Wang, W., Zhou, B., Xie, H. G., Wang, Z. F., & Wang, L. N. (2020). Family care guidance to caregiver for dementia patients during epidemic period of 2019 novel coronavirus. *Chinese Journal of Geriatric Multiorgan Diseases, 3*. (in Chinese)

Kim, H., Chang, M., Rose, K., & Kim, S. (2012). Predictors of caregiver burden in caregivers of individuals with dementia. *Journal of Advanced Nursing, 68*(4), 846-855. https://doi.org/10.1111/j.1365-2648.2011.05787.x

Li, D., Hu, N., Yu, Y., Zhou, A., Li, F., & Jia, J. (2017). Trajectories of multidimensional caregiver burden in Chinese informal caregivers for dementia: Evidence from exploratory and confirmatory factor analysis of the Zarit Burden interview. *Journal of Alzheimer's Disease, 59*(4), 1317-1325. https://doi.org/10.3233/JAD-170172

Li, R., Cooper, C., Barber, J., Rapaport, P., Griffin, M., & Livingston, G. (2014). Coping strategies as mediators of the effect of the START (strategies for RelaTives) intervention on psychological morbidity for family carers of people with dementia in a randomised controlled trial. *Journal of Affective Disorders*, *168*, 298-305. https://doi.org/10.1016/j.jad.2014.07.008

Liao, X., Huang, Y., Zhang, Z., Zhong, S., Xie, G., Wang, L., & Xiao, H. (2020). Factors associated with health-related quality of life among family caregivers of people with Alzheimer's disease. *Psychogeriatrics, 20*(4), 398-405. https://doi.org/10.1111/psyg.12528

Lindeza, P., Rodrigues, M., Costa, J., Guerreiro, M., & Rosa, M. M. (2020). Impact of dementia on informal care: A systematic review of family caregivers' perceptions. *BMJ Supportive & Palliative Care*, bmjspcare-2020-002242. https://doi.org/10.1136/bmjspcare-2020-002242

Liu, Q. S., Shang, S. M., & Yue, P. (2012). Caring experiences of spousal caregivers of home dementia patients under Lazarus Stress-coping Model. *China General Practice, 2012*(5), 498-500. (in Chinese)

McConaghy, R., & Caltabiano, M. L. (2005). Caring for a person with dementia: Exploring relationships between perceived burden, depression, coping and well-being. *Nursing & Health Sciences, 7*(2), 81-91. https://doi.org/10.1111/j.1442-2018.2005.00213.x

Muscat, M., & Scerri, C. (2018). Coping with anxiety, depression, burden and quality of life in informal primary caregivers of community-dwelling individuals with dementia. *Journal of Aging Research & Clinical Practice, 7*, 128-135. http://dx.doi.org/10.14283/jarcp.2018.22

Oh, E. S., & Rabins, P. V. (2019). Dementia. *Annals of Internal Medicine, 171*(5), ITC33-ITC48. https://doi.org/10.7326/AITC201909030

Papastavrou, E., Tsangari, H., Karayiannis, G., Papacostas, S., Efstathiou, G., & Sourtzi, P. (2011). Caring and coping: The dementia caregivers. *Aging & Mental Health, 15*(6), 702-711. https://doi.org/10.1080/13607863.2011.562178

Rasmussen, H., Hellzen, O., Stordal, E., & Enmarker, I. (2019). Family caregivers experiences of the pre-diagnostic stage in frontotemporal dementia. *Geriatric Nursing, 40*(3), 246-251. https://doi.org/10.1016/j.gerinurse.2018.10.006

Roche, L., MacCann, C., & Croot, K. (2016). Predictive factors for the uptake of coping strategies by spousal dementia caregivers: A systematic review. *Alzheimer Disease Associate and Disorder, 30*(1), 80-91. https://doi.org/10.1097/WAD.0000000000000105

Sakka, M., Goto, J., Kita, S., Sato, I., Soejima, T., & Kamibeppu, K. (2019). Associations among behavioral and psychological symptoms of dementia, care burden, and family-to-work conflict of employed family caregivers. *Geriatrics & Gerontology International, 19*(1), 51–55. https://doi.org/10.1111/ggi.13556

Sun, F. (2014). Caregiving stress and coping: A thematic analysis of Chinese family caregivers of persons with dementia. *Dementia, 13*(6), 803-818. https://doi.org/10.1177/1471301213485593

Tang, K. N., Chan, C. S., Ng, J., & Yip, C. H. (2016). Action type-based factorial structure of Brief COPE among Hong Kong Chinese. *Journal of Psychopathology and Behavioral Assessment, 38*(4), 631-644. https://doi.org/10.1007/s10862-016-9551-0

Tang, W. P. Y., Chan, C. W., & Choi, K. C. (2021). Factor structure of the brief coping orientation to problems experienced inventory in Chinese (Brief-COPE-C) in caregivers of children with chronic illnesses. *Journal of Pediatric Nursing*, *59*, 63-69. https://doi.org/10.1016/j.pedn.2021.01.002

Wang, X., Tang, L., Howell, D., Shao, J., Qiu, R., Zhang, Q., & Ye, Z. (2020). Psychometric testing of the Chinese version of the coping and adaptation processing scale-short form in adults with chronic illness. *Frontiers in Psychology, 11*, 1642. https://doi.org/10.3389/fpsyg.2020.01642

Win, K. K., Chong, M. S., Ali, N., Chan, M., & Lim, W. S. (2017). Burden among family caregivers of dementia in the Oldest-Old: An exploratory study. *Frontiers in Medicine, 4*, 205. https://doi.org/10.3389/fmed.2017.00205

Wong, D. F. K., Ng, T. K., & Zhuang, X. Y. (2019). Caregiving burden and psychological distress in Chinese spousal caregivers: Gender difference in the moderating role of positive aspects of caregiving. *Aging & Mental Health, 23*(8), 976-983. https://doi.org/10.1080/13607863.2018.1474447

Xiong, C., Biscardi, M., Astell, A., Nalder, E., Cameron, J. I., Mihailidis, A., & Colantonio, A. (2020). Sex and gender differences in caregiving burden experienced by family caregivers of persons with dementia: A systematic review. *PLOS ONE, 15*(4), e0231848. https://doi.org/10.1371/journal.pone.0231848

Yamane, T. (1973), *Statistics: An introductory analysis*. John Weather Hill.

Yu, X., Chen, S., Chen, X., Jia, J., Li, C., Liu, C., Toumi, M., & Milea, D. (2015). Clinical management and associated costs for moderate and severe Alzheimer's disease in urban China: A Delphi panel study. *Translational Neurodegeneration, 4*, 15. https://doi.org/10.1186/s40035-015-0038-9

Yuan, Q., Wang, P., Tan, T. H., Devi, F., Poremski, D., Magadi, H., Goveas, R., Ng, L. L., Chong, S. A., & Subramaniam, M. (2021). Coping patterns among primary informal dementia caregivers in Singapore and its impact on caregivers-implications of a latent class analysis. *The Gerontologist, 61*(5), 680-692.

Zarit, S. H., Reever, K. E., & Bach-Peterson, J. (1980). Relatives of the impaired elderly: Correlates of feelings of burden. *The Gerontologist, 20*(6), 649-655. https://doi.org/10.1093/geront/20.6.649

Zarit, S. H., Todd, P. A., & Zarit, J. M. (1986). Subjective burden of husbands and wives as caregivers: A longitudinal study. *The Gerontologist, 26*(3), 260-266. https://doi.org/10.1093/geront/26.3.260

Zhang, M., Chang, Y. P., Liu, Y. J., Gao, L., & Porock, D. (2018). Burden and strain among familial caregivers of patients with dementia in China. *Issues in Mental Health Nursing, 39*(5), 427-432. https://doi.org/10.1080/01612840.2017.1418034

Zhao, D. M. (2019). Analysis of stigma and its influencing factors in family caregivers of dementia patients. *Journal of Qilu Nursing, 13*. (in Chinese)

Zhou, S. J., Luo, B. A., Cao, H., Zhang, X., & Wang, D. X. (2023). Epidemiological characteristics of dementia and its correlation with multimorbidity among residents aged 65 and above. *Chinese General Practice Medicine, 26*(29), 3616-3621. https://doi.org/10.12114/j.issn.1007-9572.2023.0234 (in Chinese)