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Abstract

Background: Caregivers are instrumental in post-hospitalization care. Most of stroke survivors face complications, relying heavily on caregivers for rehabilitation and daily living support. However, inadequate preparation and resources burden these caregivers, predominantly women, impacting their quality of life. The strain leads to self-control fatigue, affecting their physiological-psychological-social well-being. Despite some understanding of the plight of family caregivers, the concept of self-control fatigue remains unclear and little is known about the causes, consequences, and effective intervention measures for self-control fatigue.

Objective: This scoping review aims to demonstrate the definition of self-control fatigue and the experience of self-control fatigue in family caregivers of stroke survivors.

Methods: The relevant studies will be examined following the methodological framework of the Joanna Briggs Institute for scoping studies. Sensitive searches for papers published from 1998 to August 2024 will be conducted in 8 electronic databases: PubMed, PsycINFO, Web of Science, EMBASE, CINAHL, China National Knowledge Infrastructure Database (CNKI), Yiigle, and PubScholar. The concept analysis of self-control fatigue will strictly follow the principle-based concept analysis methodology. Two authors (CX and QW) will carry out the process of screening. The data extraction will include details related to the antecedents, consequences of self-control fatigue and the experience of self-control fatigue in family caregivers of stroke survivors. The results will be summarized and reported in table and text format to prioritize findings related to specific research issues. All relevant data and documents are available online in registered project on the Open Science Framework (https://osf.io/ej36q)
Discussion: This protocol provides a reliable and replicable method for subsequent scoping reviews with the primary purpose being concept analysis. The results of this scoping review may promote greater research utility for future studies related to self-control fatigue.

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Keywords: stroke, protocol, review methodology, review methods, self-control fatigue, family caregiver

Introduction

As stroke survival rates increase, the importance of long-term care for stroke patients has increased[1]. Statistics indicated that most stroke survivors encounter a variety of complications, leading to varying degrees of dysfunction[2 3]. It has made caregivers a key role in their post-stroke rehabilitation care, leading to a high dependence of stroke survivors on their caregivers and a substantial amount of support that caregivers must provide to stroke survivors, particularly in performing activities of daily living and managing the challenges within rehabilitation. Stroke-related disabilities seriously affect one's ability of daily living[4] and social independence[5], leading to a decrease in quality of life, social participation[6], and happiness[7]. Influenced by traditional culture and family values, nearly 90% of stroke survivors in China choose home rehabilitation after discharge[8]. According to data from the American Stroke Association, over 53 million Americans are family caregivers[9]. On average, each stroke survivor requires at least two caregivers for daily care[10],which means that the number of family caregivers is approximately twice that of stroke survivors. Though there is no research on the number of stroke family caregivers in China, but according to the research results of GBD 2019[11], it can be inferred that the current number of stroke family caregivers is at least 57.5 million. Most of them are patients' spouses, children, brothers, sisters, parents and friends.

Even with such a large population of family caregivers, due to the severity of the patient's condition, inadequate preparation of family caregivers and limited resources make it difficult to provide necessary services for stroke patients who choose community or family rehabilitation, resulting in a significant burden on family caregivers[12 13]. Though there is a trend of men entering the family caregiving field, the traditional focus on female family caregivers is still maintained. At present, more than half of family caregivers are women[14], and they may spend as much as 50% more time giving care than males. Moreover, women also spend more time on household chores[15]. Compared to men, female caregivers seemed less able to choose appropriate coping strategies and weaker physical conditions to cope with care. The impact of care events is more likely to affect their quality of life, leading to a decrease in quality of life and satisfaction, and a higher incidence of negative emotions such as fatigue, depression, and anxiety [14 16 17]. For female caregivers with full-time jobs, maintaining the work-life balance may also be a challenge[4]. Unfortunately, the long-term needs of informal caregivers of stroke patients were unqualified and most stroke survivors may feel the post-discharge care unsatisfactory[18-24]. Meanwhile, faced with highly demanded caregiving at home, family caregivers must make continuous efforts and maintain long-term focus to ensure the quality of care received by stroke patients. Family caregivers may face a daunting challenge when it comes to long-term care due to the high level of attention required and the physical and mental strain involved. The severity of physical dysfunction in stroke patients may account for the physical and mental health of caregivers[25]. In addition, the longer the duration of care and daily care time, the heavier the corresponding care burden on family caregivers[26]. Social support has been shown to be a significant factor in influencing caregiver life satisfaction and care burden, as evidenced by research[27 28]. As social support increases, the caregiver care burden decreases. Caregivers may find themselves unable to cope with physical fatigue, reduced willingness to attend to excessive care requirements, and verbal and psychological abuse from care recipients[29 30]. As a result, the symptoms of anxiety and social isolation gradually appear[31]. Various discomforts could damage their physical, and more importantly, psychological and social health[31-34], hindering their subjective initiative, reducing their ability to take care of themselves, and thus affecting the quality of life for stroke survivors. The malfunction of home-care not only compromises the quality of survival after discharge, but also impairs the well-being of family caregivers. It is time for medical personnel to pay attention to the welfare of caregivers and offer interventions to alleviate the burden on families of stroke survivors.

Self-control fatigue (SCF) has become a ubiquitous phenomenon in society. It has a profound effect on daily life and work, where individuals resolve motivational conflicts through strategies. It usually manifests itself as ego-depletion, self-regulatory fatigue, mental, decision and cognitive fatigue[35-39]. The majority of research on self-control fatigue currently revolves around ego depletion and self-regulatory fatigue, which are the most prominent manifestations of SCF. But little is known about it in family caregivers of stroke patients. In fact, it was reported that caregivers experienced upset and helplessness of making no progress and identity change can also cause goal and meaning loss very often[29 40]. This may indirectly prove the existence of SCF among family caregivers of stroke patients. The causes of SCF include a reduction in perceived resources and a decline in both self-control ability and subjective self-control willingness[41-43]. Based on speculation, the factors related to these may include the lack of resources, heavy caregiving burdens, and conflicts between the needs of themselves and care recipients [12 29 40]. Previous studies have also confirmed that there is indeed a certain correlation between negative emotions and aggressive actions among stroke survivors and the low self-control of family caregivers[29 44]. Due to the rarity of relevant research reports, there is no direct evidence to suggest factors related to SCF among family caregivers. Moreover, due to the immaturity of theory and the misinterpretation of concepts by researchers, despite the proliferation of studies, the definition of SCF has always been controversial[45 46]. Pignatiello G. A. et al.[35] initiated a concept analysis on decision fatigue that analyzed the causes and consequences of decision fatigue. They agreed with Baumeister et al.[42]'s self-control resource model in that a series of previous decisions play a significant prerequisite for the development of decision fatigue, behavior participating in self-regulation such as one’s attention and emotion indicates the manifestation of decision fatigue, and time, blood sugar, sleep deprivation, and physiological fatigue are key environmental factors that contribute to the development of decision fatigue. The self-control resource model was rejected due to the rejection of the glucose model, according to the study of Vadillo M. A.[47],. As a more general concept, SCF is more worthy of research and promotion.

The aim of this protocol is to provide a framework for implementing a scoping review for principle-based concept analysis on SCF for a deeper understanding of the experiences of family caregivers in the process of home care, paving the way for optimized and effective applications of the concept to practice and research.

Objectives

This scoping review aims to demonstrate:

(1) the definition of SCF;

(2) the experience of SCF in family caregivers of stroke survivors.

Methods

The relevant studies will be examined following the methodological framework of the Joanna Briggs Institute for scoping studies[48] and the scoping review will undergo reporting based on the Preferred Reporting Items for Systematic Reviews and Meta Analyses extension for Scoping Reviews checklist (PRISMA-ScR)(S1 Checklist I)[49]. The whole process of the scoping review will be conducted under the guidance and supervision of the lead author (YH). Considering the research objectives and the operability of the research steps, it is ultimately determined that our protocol will include at least six steps. Elements from previous research on concept analysis will be incorporated. This protocol was prospectively registered on the Open Science Framework on August 18, 2023 with all relevant data and documents are available on the website(https://osf.io/ej36q).

Procedures

Stage 1: identifying the research questions

Based on the stated objectives, this scoping review aims to address the following key questions:

- What is the exact definition of SCF?
- What is the experience of SCF in family caregivers of stroke survivors?

Stage 2: identifying relevant studies

In accordance with recommendations of Penrod and Hupcey[50] for the inclusion of eligible research, relevant literature will be sought from within the philosophy of nursing, medicine, psychology and sociology. According to the nature of SCF, the majority of literature will be retrieved from psychology and nursing.

The inclusion and exclusion criteria for scientific literature are as follows:

Inclusion criteria:

(1) published in English or Chinese;
(2) publication date from 1998–August 2024;
(3) studies that target SCF, ego depletion, emotional distress and social disturbance among family caregivers of stroke survivors;
(4) quantitative studies, qualitative studies, and review articles.

Exclusion criteria:

1. research that targets only SCF among stroke survivors;
2. research that fails to clarify the concept of SCF, emotional burden, emotional distress or social disturbance.

The family caregivers of included studies will:

1. be 18 years of age or older,
2. be responsible for the daily care of post-stroke patients;
3. be the spouse, children, parents or friends of stroke survivors.

The coding of the search strategy will be formulated in the logic of Medical Subject Heading (MeSH) terms and titles and abstracts, using combination sets of keywords (1: stroke; 2: family caregiver; 3: self-control fatigue). The electronic databases will be searched are as follows: PubMed, PsycINFO, Web of Science, EMBASE, CINAHL, China National Knowledge Infrastructure Database (CNKI), Yiigle, and PubScholar. The last three databases are Chinese databases. An example of the retrieval formula for PubMed database is available in S2 Appendix I. The retrieval formula will be pilot-tested and refined for each database with an academic librarian at the University of South China. Relevant authors will be informed of adjustments and detailed literature retrieval strategies will be adopted after discussion with experienced librarians. All database search formulas will be reported as supplementary material in the scoping review and uploaded online in the registered project file of the Open Science Framework.

Stage 3: study selection

Literature searches for each database will be conducted during the same time period to ensure synchronised access to all the latest literature. All literature retrieved from above databases through the search strategies will be collected from the databases and respectively imported into EndNote v.X9 in the platform of citation management. After removement of duplicates, two independent reviewers (CX and QW) will then screen the titles and abstracts to assess them against the eligibility criteria for the review. Studies focusing on psychological relationships between family caregivers and stroke survivors will be rigorously selected to identify relevant factors contributing to SCF in family caregivers. All studies that pass the first step of screening will be retrieved in full text with detailed citation information imported into Endnote v.X9 to update the previous record for further selection. The full text of selected citations will then be thoroughly assessed by the two independent reviewers (CX and QW). Full-text studies that do not meet the eligibility criteria will be excluded, and explanations will be captured and reported in the scoping review. At each stage of the study selection process, disagreements between reviewers will be resolved by discussion, with a third reviewer (ZH) joining the discussion to resolve the issue if the parties remain in disagreement. The results of the literature retrieval will be fully reported in the final scoping review and a draft of flowchart based on the PRISMA-ScR flow diagram[51] is shown in Figure 1.

[insert Figure 1.]

Figure 1 Flowchart for the scoping review.

Stage 4: charting the data

A Microsoft Excel structured data recording sheet will be used to document the relevant general data for the selected study. The general data will include the publication year, country, author, study type, the definition of SCF, affecting factors, the intervention strategy, outcome, and reference (Table 1). Based on the four principles of conceptual analysis (epistemological, pragmatic, linguistic, and logical), a conceptual analysis checklist (S3 Checklist II) was developed to examine the definitions of SCF and the experience of SCF in family caregivers of stroke survivors in each included paper in order to systematically analyse concepts and estimate the probable authenticity of the experience of SCF in family caregivers in the caregiving process. A data extraction table (S4 Appendix II) will be used to extract the goals, instructions, methods, and participant characteristics for each study. To ensure consistent data extraction, two reviewers (CX and JCY) will independently pilot test the tables and checklists on a random 10% sample of the included studies, supervised by the corresponding author (YH). And the forms will be iteratively revised as necessary after discussion among all researchers. During formal data extraction, one reviewer (CX) will extract data according to the scoping review objectives and another reviewer (JCY) will verify it. Any disagreements between CX and SL will be resolved through consensus, with a third reviewer (ZH) invited if necessary.

Table 1 General data of selected studies

No.	Country	Author	Study type	Definition of SCF	Affecting factors	Intervention strategy	Outcome	Reference
1								
2								
3								
4								
⋮								

Stage 5: collating, summarizing and reporting the results

The PRISMA Systematic Review Reporting Guide[52 53] will be used for delicate and accurate reporting of review search results and analysis summaries. The main purpose of proposing the scoping review is to develop an evolving definition of SCF and estimate the probable authenticity of the experience of SCF in family caregivers in the caregiving process and provide an overview of research. Therefore, this scoping review remains a repetitive task in future studies. By employing this reflexive approach, we will ascertain the essential elements of the relevant factors to integrate into the definition of SCF, ultimately gaining a more comprehensive understanding of the associated research. This will help to identify areas where further in-depth analysis and more research is needed to facilitate personalised management of SCF in family caregivers of stroke patients. The results will be summarized and reported in table and text format to prioritize findings related to specific research issues. The relevant scoping review on the definition of SCF and the experience of SCF in family caregivers will strictly follow the four philosophical principles of Penrod and Hupcey's concept analysis methodology[50]. Quantitative data and key assessment results from each study will be tabulated by measurement tool and intervention type. All qualitative data will be analyzed by topic and reported in narrative or tabular form. In addition, further narrative descriptions will be provided for all results to help explain the findings related to the research question which includes the initially defined questions and any new issues that arise throughout the review process. The narrative approach will also be used to highlight gaps in the existing research evidence for subsequent studies. The collective findings will be utilized to summarise the definition of SCF and the experience of SCF among family caregivers of stroke survivors. The results of the conceptual analysis of the experience of SCF among family caregivers of stroke patients will be reported in terms of antecedents and consequences. Additionally, recommendations for future research priorities and practices related to managing SCF for family caregivers of post-stroke patients with poor self-care will be provided.

Stage 6: consultation

We will be conducting a stakeholder consultation to confirm the results of this scoping review and to pinpoint areas where further research is needed. The stakeholders involved will be clinicians, nurses, family caregivers, stroke patients, and experts in evidence-based medicine methodology. Any suggestions made will be taken into account in the final version of our scoping review.

Discussion

Family caregivers are a key factor in stroke rehabilitation and continuity of care, and it is important to identify the concept of SCF and understand the relevant experiences of this population. This scoping review protocol provides an approach to synthesizing evidence from various studies in this field. The main advantage of the proposed review is that it adopts logical principles to clarify the boundaries of SCF and related concepts, fully elucidates the concept of SCF, and summarizes the experience of SCF in family caregivers of stroke survivors. We also expect that the results of this scoping review may promote greater research utility for future studies related to SCF. This concept analysis of theoretical definition will lay the foundation for future research, especially in defining this controversial concept.

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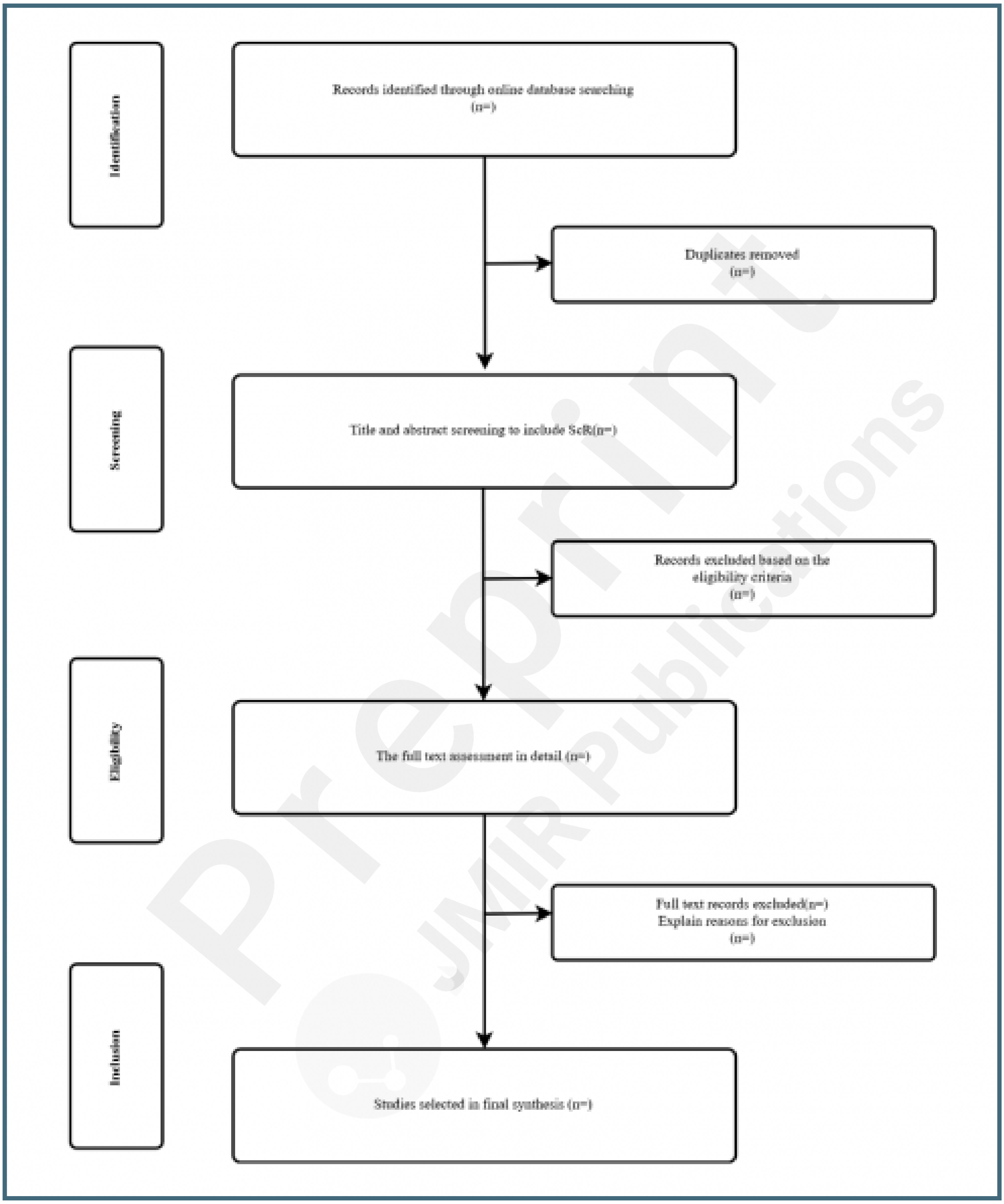
Supplementary Files

Figures

Untitled.


Identification
Records identified through online database searching
(n=)
Duplicates removed
(n=)
Screening
Title and abstract screening to include ScR(n=)
Records excluded based on the
eligibility criteria
(n=)
Eligibility
The full text assessment in detail (n=)
Full text records excluded(n=)
Explain reasons for exclusion
(n=)
Inclusion
Studies selected in final synthesis (n=)

Multimedia Appendixes

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Untitled.
URL: http://asset.jmir.pub/assets/24cdcc52a6f018fa4fc7a65b38d454dc.pdf

CONSORT (or other) checklists

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