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Cognitive and physical fatigue—the experience and consequences of ‘brain fog’ after spontaneous coronary artery dissection: a qualitative study

Joseph Weddell ^{1,2*}, Michelle C. Rogerson ³, Robyn Gallagher ^{1,2},
Stephanie Hesselon ⁴, Siiri E. Iismaa ⁴, Robert M. Graham ⁴,
Alun C. Jackson ^{3,5}, Julie Redfern ^{1,6}, Thomas Buckley ^{1,2},
and Barbara M. Murphy ^{3,5}

¹Sydney Nursing School, Faculty of Medicine and Health, The University of Sydney, Level 2 2W11, Building D17, Sydney, NSW 2006, Australia; ²Charles Perkins Centre, The University of Sydney, Level 2 2W11, Building D17, Sydney, NSW 2006, Australia; ³Australian Centre for Heart Health, Melbourne, VIC, Australia; ⁴Victor Chang Cardiac Research Institute, Sydney, NSW, Australia; ⁵Melbourne School of Psychological Sciences, University of Melbourne, Melbourne, VIC, Australia; and ⁶Institute for Evidence-Based Healthcare, Faculty of Health Sciences and Medicine, Bond University, Gold Coast, QLD, Australia

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Aims

Brain fog and fatigue are common issues after acute coronary syndrome. However, little is known about the nature and impact of these experiences in spontaneous coronary artery dissection (SCAD) survivors. The aim of this study was to understand the experiences of brain fog and the coping strategies used after SCAD.

Methods and results

Participants were recruited from the Victor Chang Cardiac Research Institute Genetics Study database and considered eligible if their event occurred within 12 months. Seven semi-structured online focus groups were conducted between December and January 2021–22, with this study reporting findings related to brain fog and fatigue. Interviews were transcribed and thematically analysed using an iterative approach. Participants ($n = 30$) had a mean age of 52.2 (± 9.5) and were mostly female ($n = 27$, 90%). The overarching theme of brain fog after SCAD included four main themes: how brain fog is experienced, perceived causes, impacts, and how people cope. Experiences included memory lapses, difficulty concentrating and impaired judgement, and perceived causes, including medication, fatigue and tiredness, and menopause and hormonal changes. Impacts of brain fog included rumination, changes in self-perception, disruption to hobbies/pastimes, and limitations at work. Coping mechanisms included setting reminders and expectations, being one's own advocate, lifestyle and self-determined medication adjustments, and support from peers.

Conclusion

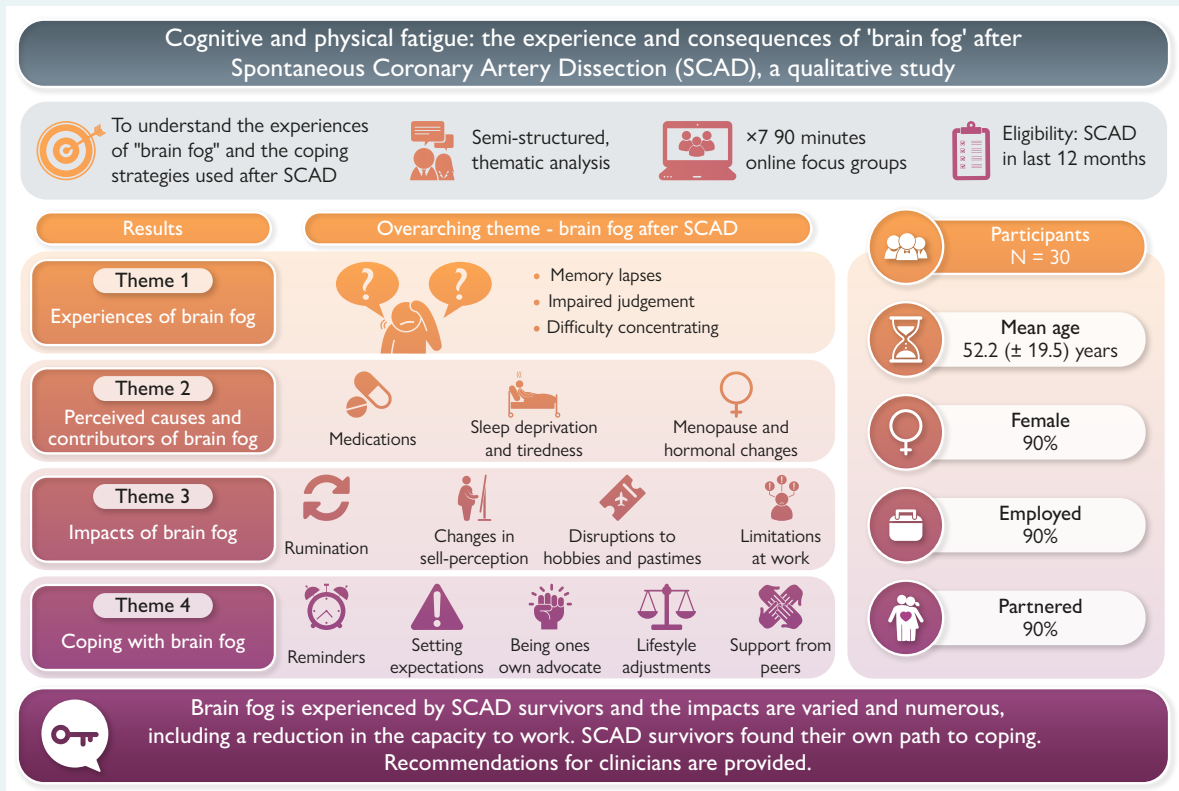
Brain fog is experienced by SCAD survivors, and the impacts are varied and numerous, including the capacity to work. Spontaneous coronary artery dissection survivors reported difficulty understanding causes and found their own path to coping. Recommendations for clinicians are provided.

* Corresponding author. Tel: +61 401 259 291, Email: joseph.weddell@sydney.edu.au

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Graphical Abstract



Keywords

Brain fog • Fatigue • Mild cognitive impairment • Spontaneous coronary artery dissection (SCAD)

Novelty

- This study uses a qualitative design with semi-structured focus groups to explore the experiences of 'brain fog' and cognitive and physical fatigue following spontaneous coronary artery dissection (SCAD).
- Spontaneous coronary artery dissection survivors discussed their perceptions of brain fog, the causes and the impacts that they attribute to it, and the coping strategies that they have developed.
- Recommendations are given for clinicians to better support individuals experiencing brain fog after SCAD.

Introduction

Spontaneous coronary artery dissection (SCAD) is a non-atherosclerotic cause of acute coronary syndrome (ACS) accounting for up to 4% of presentations worldwide.¹ Contrary to atherosclerotic ACS, SCAD presentations are typically women (95%) and have a younger mean age of 44–53 years.^{1,2} Many SCAD survivors have few modifiable cardiovascular risk factors and live relatively healthy lifestyles³; hence, existing cardiac rehabilitation and secondary prevention programmes targeting atherosclerotic ACS do not always meet their needs.² Uncertainty regarding best practice for managing SCAD,^{4,5} alongside lack of awareness of SCAD amongst healthcare professionals,^{6,7} means that SCAD survivors often struggle to self-manage their condition.^{8,9} Identifying and processing relevant information are required when SCAD survivors are still coming to terms with having had a heart attack.^{8,9} Fatigue and mild cognitive impairment, widely and colloquially referred to as 'brain fog' in several

conditions,^{10–13} may make this process difficult and undermine self-management. However, little is known about the incidence, nature, and impact of brain fog after SCAD.

Mild cognitive impairment is common after ACS potentially due to atherosclerosis¹⁴ and has been reported in 52% during admission, 29% at 4 weeks post-discharge, and up to 85% for 3 months post-ACS.^{15–17} However, several factors common in SCAD suggest that brain fog may also occur in this population. For instance, psychological impacts are common post-SCAD, including anxiety and depression,^{18–20} shock and disbelief,^{8,21} post-traumatic stress,²² and fear of recurrence.^{2,8,21} Anxiety and depression are reportedly higher before and after cardiac rehabilitation in SCAD compared with an age-and-sex-matched ACS cohort¹⁹ and four times more likely up to 6 months post-myocardial infarction.²⁰ Given the association between psychological symptoms and cognition, cognitive decline may be likely after SCAD.²³

Stress and fatigue are consistently reported after SCAD.²⁴ Fatigue is subjective and lacks a universal definition, but is often described as

reduced cognitive and physical capacity associated with mental and physical exhaustion,²⁵ and thus may contribute to brain fog. Alongside anxiety and depression, stress and sleep deprivation are associated with fatigue in ACS patients, especially women.²⁵ Moreover, issues with sleep are common after ACS, with 45% post-myocardial infarction patients reporting insomnia at 2–36 months, 5.4 times more often when anxiety is present and 1.8 times more often in women.²⁶ Fatigue has also been reported by SCAD survivors taking beta-blockers, the most common barrier to medication adherence in this population.²⁷ As the typical age of SCAD coincides with menopause, hormonal factors may also influence brain fog, given common reports of brain fog and cognitive difficulties in midlife women.¹²

The current understanding of brain fog and fatigue after SCAD is limited, and few studies report experiences of SCAD qualitatively.^{8,21,28} No previous study has specifically explored the experiences and challenges of brain fog and fatigue in the context of recovery from SCAD. Therefore, the aim of this study was to understand if and how brain fog is experienced by SCAD survivors and its perceived causes and impacts and the coping strategies used.

Method

Study design

This study uses qualitative design and is a subcomponent of a broader study reported elsewhere.⁸ These data have not been published previously. Ethics approval was granted by St Vincent's Hospital Sydney Human Research Ethics Committee (HREC/16/SVH/338). The study conforms with the Declaration of Helsinki.

Eligibility criteria

Participants who had SCAD within 12 months were eligible and recruited from a database of SCAD survivors participating in the Victor Chang Cardiac Research Institute Genetics Study (VC genetics study),²⁹ a larger study currently involving 433 SCAD survivors aged ≥ 18 . All participants required English language proficiency to read the consent form and study information.

Sample and setting

Written consent was provided as part of the larger genetics study. Eligible participants were identified and contacted by the VC genetics study coordinator (S.H.) via telephone or email to take part in this study, and focus groups (FGs) were conducted between December 2021 and January 2022. Financial incentives were not used.

Procedure

Seven FGs were undertaken using the Zoom communications platform, with three to six SCAD survivors per group. Each FG lasted for 1 h 30 min and used a semi-structured format to explore the psychosocial impacts of SCAD, as reported previously.⁸ Focus groups were led by investigators (B.M.M. and M.C.R.) extensively experienced in qualitative research and cardiac rehabilitation. The semi-structured FG discussion guide included an introduction/warm up, followed by discussion of the initial impacts of SCAD diagnosis, short- and longer-term emotional and lifestyle impacts of SCAD, help-seeking and unmet needs for support, positive emotional impacts and personal growth, and summary/close. The researchers engaged in a robust discussion around reflexivity prior to undertaking semi-structured FGs and data analysis, including their clinical backgrounds and the potential impact of their experiences. The researchers conducting the interviews and analysis had no existing relationships with any of the participants and no potential to provide future treatment or support to

the participants. Focus groups were digitally recorded and transcribed verbatim.

Analysis

Data were analysed by a thematic analysis outlined by Braun and Clarke.³⁰ Three investigators (J.W., B.M.M., and M.C.R.) independently reviewed all transcripts and sorted data into themes and sub-themes. Then, using an iterative process, themes and codes were compared, reflected on and re-worked, with a fourth investigator (R.M.G.) consulted for consensus, and then refined again. Themes and subthemes are presented with verbatim quotations, alongside participant number and FG.

Results

Participant characteristics

Thirty of the 50 SCAD survivors approached participated in a FG (18 declined, and two were unavailable). The sample had a mean age of 52.2 (± 9.5) years, and most were female (90%), employed (90%), and partnered (90%) (Table 1). Apart from one participant, all lived with other people. Half the sample reported being peri- or post-menopausal (50%), and half reported a history of anxiety (50%). Participants experienced SCAD at 1–4 months prior (26%), 5–8 months prior (40%), or 9–12 months prior (34%), and 43% reported attending cardiac rehabilitation (43%).

Themes and subthemes

Overarching theme: brain fog after SCAD

The overarching theme that was identified was brain fog after SCAD. The terminology 'brain fog' was specifically used by several participants to describe their experiences. Participants spoke in depth about the cognitive and physical challenges they experienced after SCAD and how these contributed to, or were exacerbated by, brain fog. These topics were broken down into four major themes: (i) experiences of brain fog; (ii) perceived causes and contributors of brain fog; (iii) impacts of brain fog; and (iv) coping with brain fog (Figure 1) (see Supplementary material online, Table S1).

Major theme 1: experiences of brain fog

Participants spoke of their cognitive and mental experiences after SCAD, describing feeling 'fuzzy in the head' and 'vague'. The term 'brain fog' was used frequently to describe these experiences. Brain fog was described according to what aspect of thinking was affected, with three major manifestations:

1a: memory lapses

Some participants reported memory issues, describing it as 'terrible' following SCAD.

'I couldn't remember people's names. I literally didn't. It was like living in a fog'. (Participant 1, FG3)

Participants' difficulty remembering was also evident during the FGs:

'So once I had my, what do you call it again? ...[other participants respond 'angiogram']...angiogram, that's it'. (Participant 1, FG4)

1b: difficulty concentrating

Other participants reported challenges with staying on task, describing it as a 'struggle to put my brain into gear'. Concentration difficulties were described as a 'slowness about my brain' and were a source of embarrassment for some participants, particularly at work. Some

Table 1 Socio-demographic and clinical characteristics of participants (n = 30)

	n	%
Characteristics		
Age (years), mean, SD	52.2	9.5
Sex (female)	27	90
Partner status		
Partnered	27	90
Unpartnered	3	10
Employment status		
Employed	27	90
Not working	3	10
Living arrangements		
Lives alone	1	3
Lives with others	29	97
SCAD history		
Time since SCAD		
1–4 months	8	26
5–8 months	12	40
9–12 months	10	34
Previous SCAD	2	6
Mental health history		
Anxiety ^a	15	50
Depression ^a	9	30
Peri/post-menopausal ^a	15	50
Hormone therapy ^a	1	3
Medications post-SCAD		
Aspirin	27	90
Beta-blockers	23	77
Statins ^a	17	57
Ace inhibitors/ARB ^a	13	43
Attended cardiac rehab	13	43

^aData were lost to follow-up for one participant.

described being 'all over the shop, emotionally and mentally' following SCAD.

1c: impaired judgement

Participants also described challenges with judgement and with common sense as having 'gone out the window' regarding self-management.

Major theme 2: perceived causes and contributors of brain fog

As a way of processing their cognitive challenges and fatigue, participants had reflected upon apparent causes. In addition to attributing the brain fog to SCAD itself, participants acknowledged other potential causes, often uncertain about which had the most impact:

'I'm so tired. And I don't know if that's the medications or the aftereffects of the SCAD'. (Participant 1, FG7)

Perceived causes were grouped into three themes.

2a: medication

Some participants were convinced that medications prescribed since the SCAD were responsible for their brain fog. They described the side effects of medications, particularly beta-blockers, as 'awful', 'dreadful', 'ghastly', and 'really upsetting', making them *really sluggish*.

'The other thing is, you know, the medications have an impact with brain fog. And I believe the fatigue is part of the beta blockers that sort of slow you down, and those sorts of things'. (Participant 2, FG 5)

Participants with pronounced side effects wondered why they were not warned about this when the medications were started:

'It might have been handy to know [about the side effects of the beta blocker]...I thought I was going a bit crazy'. (Participant 5, FG5)

2b: sleep deprivation and tiredness

Some participants considered sleep deprivation and tiredness as part of brain fog development:

'I just thought it was because I wasn't getting enough sleep. Initially when this happened, oh god, I had some terrible nights' sleep, so of course you can't think straight, and you are irritable'. (Participant 2, FG4)

Brain fog and tiredness were inextricably linked by participants, with some reporting both within the same sentence, 'tiredness is definitely a factor, yeah, and brain fog'. (Participant 2, FG 4). Some reported feeling 'flat', 'lethargic', 'very fatigued', 'knackered all the time' (Participant 1, FG3) and like 'a 110-year-old because getting out of the chair was like climbing Mount Everest'. (Participant 3, FG1). The unexpected and enduring nature of post-SCAD fatigue was particularly challenging and described as a 'real up and down thing' (Participant 2, FG 5) and for some 'the biggest thing' (Participant 5, FG5).

2c: menopause and hormonal changes

Many participants were middle-aged women who recognized that brain fog and memory difficulties can be peri-menopausal symptoms. Some contextualized their brain fog as 'menopause amnesia'. Other participants acknowledged that menopause and hormones might contribute to symptoms, but wondered if other factors were responsible:

'I'm pre-menopausal so then I'm being altered with hormones during the month and I'm like: Is this pre-menopause, is this work stress, is this because my partner's being a bastard, is this because I'm fragile about my heart attack?'. (Participant 1, FG7)

Major theme 3: impacts of brain fog

Brain fog and mental fatigue impacted participants in different ways, but there was generally an emotional toll inherent across most impacts. Impacts were grouped into four themes, starting from internal impacts and working through to external challenges:

3a: rumination

Participants described overthinking and ruminating on thoughts as a result of cognitive and physical fatigue after SCAD, which then further exacerbated mental fatigue. Participants described having 'everything running through your mind' (Participant 6, FG2) and 'more things going around in your brain' (Participant 1, FG1). This overthinking was especially pronounced in participants with ongoing symptoms of SCAD, such as chest pain and fatigue.

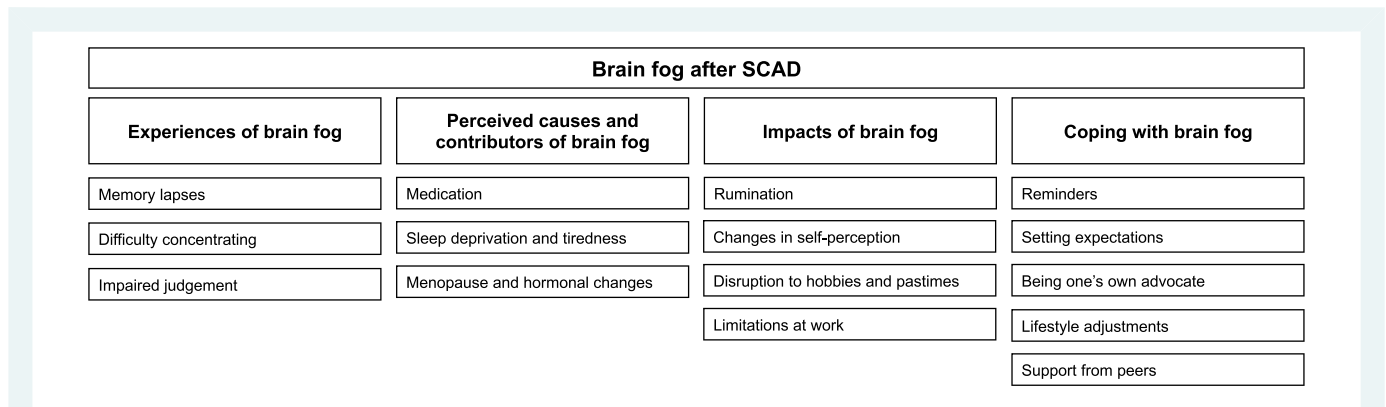


Figure 1 Themes and subthemes. SCAD, spontaneous coronary artery dissection.

'...I want to stop always thinking about it. I want to just think about the normal things I used to normally think about. I'm just sick of thinking about my own chest. Really sick of it...'. (Participant 3, FG6)

Some participants were second guessing whether their symptoms were normal after SCAD or if they would be long lasting:

'I was so fatigued. I just felt like.... the 'what-ifs?' is this normal, is this what it's going to be like forever?' (Participant 2, FG1)

3b: changes in self-perception

Cognitive and physical fatigue, alongside a new regime of medications, challenged how some participants felt about themselves after SCAD. Some participants considered these challenges as 'quite a big adjustment', stating they 'feel like an old lady' (Participant 3, FG6). Others struggled with the impact on their role and identity within their family—I was really frustrated because I'm a very hands-on mother, but I was just so tired, all the time, not being able to do the things I would normally do'. (Participant 3, FG4). Identity and self-perception were further challenged when participants had not been taking medications prior to the SCAD:

'I know we are supposed to be grateful that we've got these medications, but I've never been a pill popper before...'. (Participant 2, FG4)

3c: disruption to hobbies and pastimes

For some participants, brain fog and fatigue after SCAD impacted their abilities to do the things that they enjoy, taking an emotional toll:

'I can't do a number of things that I used to be able to do. So that was pretty tough. All those emotions. I love doing jigsaw puzzles, when I ever get a stretch of time that's my favourite thing to do. And I couldn't do a jigsaw. I didn't even want to look at a jigsaw. I think I was on the verge of depression. I was pretty sad. And annoyed'. (Participant 2, FG4)

3d: limitations at work

Work-related implications of brain fog and fatigue were reported by several participants. Some felt unable to commit to 'work full-time anymore' in their current job because 'you need a lot of energy, you need to be on the ball' (Participant 5, FG2). The concept of struggling to be 'on the ball' was important, even for those who 'don't have a very demanding job' (Participant 2, FG5). Some considered part-time work, noting 'one full day's work is more than enough for me' (Participant 2, FG 4). Although some participants found their employers to be

considerate and understanding about their situation, participants themselves questioned their ability to perform to their peak work-wise, and early retirement was considered:

'That was seriously going through my mind, because I felt like I'm not giving my employer my best right now. And how long is it going to take before I can do my best again?' (Participant 2, FG5)

Major theme 4: coping with brain fog

4a: reminders

For participants with brain fog, setting reminders was a useful management strategy, particularly for medications:

'I never took medication before this. And then to be taking four different tablets, I found that I couldn't get my head around that, that I had to do this, so I've set an alarm for every time I've got to take my tablets, because I wasn't used to it'. (Participant 2, FG 4)

For some, this involved using an 'app to remind me to take my medication' (Participant 3, FG6) or referring to handwritten notes from the hospital.

4b: setting expectations

Some participants found it helpful to be clear and upfront with other people about their challenges with physical and cognitive fatigue post-SCAD. Participants emphasized the importance in giving others 'insight, particularly if you are feeling tired' (Participant 1, FG4). This was also an important strategy when communicating with healthcare professionals:

'She was pretty chatty, and people tend to tell me a lot about their stuff, I went, I'm actually really tired, like it was a bit overwhelming'. (Participant 2, FG5)

4c: being one's own advocate

The mental and physical fatigue challenges experienced after SCAD motivated several participants to take action and advocate for themselves, particularly in relation to medication, which were a perceived cause of brain fog. This process developed over time with questioning typically being the first step. Their experiences led participants to question the relevance and need for some medications, especially those who 'don't like taking medication long-term if there's no reason for it' (Participant 3, FG3). Then, due to many healthcare professionals' lack of experience in managing SCAD, participants began advocating for themselves as a way of coping with these experiences. Through self-advocacy, some participants actively challenged the need for

medications with the cardiologist or general practitioner (GP), who were in the position to adjust the dosages.

This was particularly pronounced in the absence of hypercholesterolemia:

'And I said [to the GP] look, I don't need to be on these statins, my cholesterol is fine, this is not an atherosclerotic event...I'm not taking them'. (Participant 2, FG7)

'I mentioned it to the cardiologist and he just reduced it'. (Participant 5, FG5)

Participants advocated for 'doing your own research and making your own decisions' (Participant 2, FG3), which had prompted several to 'decide myself to come off' (Participant 2, FG3) certain medication. Some participants questioned whether the medications helped at all, including one participant who had experienced a SCAD 18 years previously and a recent recurrence despite taking all prescribed medications:

'Well, I was on all those medications and I had the second SCAD, preventative wise, did that work? Did it actually prevent it?' (Participant 2, FG5)

This questioning illustrated the initiation of the process of taking charge of their condition and, ultimately, a way of coping. Participants who acted as their own advocate prompted others to do the same, encouraging fellow participants to '[at appointments] ask this and that question' (Participant 3, FG1) and demonstrating that it is okay to take charge.

4d: lifestyle adjustments

For some participants, the brain fog and fatigue meant their pre-SCAD lifestyle was unsustainable, leading to re-evaluation of life pace. Some acknowledged they 'wouldn't be able to work full-time anymore' (Participant 5, FG2), and others reconsidered their physical limits: 'I don't feel that I have the capacity that I had before' (Participant 1, FG3). Some participants sought the positivity in this change—'I was just so, so tired, but I did manage two whole books during the day, that was great, because I don't usually get around to doing that' (Participant 2, FG4). Some described this process as 'learning a new line again as to how far do I allow myself to go and am I going to have to pay for it later? I haven't figured that out yet' (Participant 2, FG5).

4e: support from peers

The FGs provided participants with a platform to discuss their cognitive and physical challenges. The benefits of peer discussion were noted: '[when] you don't have the energy to find out all that information, when it is so unknown, to have a little group like this is great' (Participant 1, FG4). In these FGs, peer support was organically fostered when sharing experiences and when participants came together to help the person currently experiencing brain fog, as reported earlier.

Discussion

These findings indicate that brain fog is experienced after SCAD, including clouded thinking, memory lapses, difficulty concentrating, and impaired judgement. Participants perceived their brain fog to be due to fatigue, medications, sleeplessness, hormonal/menopausal changes, or the SCAD itself. The impacts of brain fog carried an emotional toll and included rumination and overthinking, changes in self-perception, and disruption to hobbies and work. Participants used various techniques to cope, including using reminders, setting expectations, taking affirmative action, and relying on peer support. Some strategies took time to develop and were established throughout the SCAD recovery journey.

Participants' experiences of brain fog are consistent with reports that mild cognitive impairment is common after ACS.^{15–17} It is unclear whether this occurs transiently, as cases of mild cognitive impairment after ACS decrease over time, including following cardiac rehabilitation attendance.^{16,17,31} However, these challenges may persist, with one small study reporting 88% of ACS patients having a mild cognitive impairment diagnosis 4 months post-admission.³² The aetiology of mild cognitive impairment associated with cardiac events has not been established, and the relevance to SCAD survivors also remains unclear.

Several factors likely contribute to these cognitive experiences after SCAD. Feeling worried, anxious, and overwhelmed are states of mind that limit clear thinking^{23,33} and these are all commonly experienced after SCAD.^{19,20,34} Feelings of uncertainty and overwhelm are driven by an absence of information following SCAD,⁸ likely exacerbating rumination. This process occurs alongside post-SCAD lifestyle changes, such as modification or cessation of pre-SCAD exercise regimes often relied upon to benefit cognition and wellbeing.³⁵ In individuals with anxiety, depression, or sleep disturbances, lack of vigorous physical activity is synergistically associated with an increased risk of mild cognitive impairment.³⁶ Sleep disturbances reported by participants can independently promote fatigue and brain fog.³⁷ Transition through menopause also contributes to brain fog and sleep disturbances, impacting the quality of life, productivity, and health in a similar way to fatigue.³⁸ Some participants related brain fog to taking menopause hormone therapy, which has been associated with a decline in global cognition over 4 years in post-menopausal women.³⁹ Other medications, such as beta-blockers, have also been implicated in central nervous system side effects⁴⁰ and, in SCAD, may influence brain fog by causing fatigue.²⁷

This study identified that fatigue is a challenge after SCAD and often described as an indistinguishable part of brain fog. Fatigue is multifaceted, largely subjective, and, therefore, undertreated and poorly understood,⁴¹ despite commonly occurring in chronic conditions, especially in long-term cardiovascular diseases.⁴² Cognitive and physical fatigue may be bidirectional because it heightens rumination and hypervigilance of symptoms, in turn further exacerbating fatigue.⁴¹ Fatigue resulting from disease processes often occurs at rest and is thus unpredictable,⁴³ perpetuating feelings of uncertainty for SCAD survivors.⁸ Disease-related fatigue worsens social, emotional, and job-related functioning⁴³ and quality of life,⁴² which can exacerbate perceptions of brain fog. Brain fog and fatigue are overtly discussed as bothersome and carried implications, including reducing full-time work, consideration of early retirement, and impact on pastimes. These impacts are substantial as hobbies influence subjective wellbeing,⁴⁴ whereas employment provides financial security, routine, improved wellbeing, self-worth, and social engagement.⁴⁵ In a recent survey of $n = 310$ SCAD survivors, financial strain was a key predictor of both psychological and lifestyle impacts after SCAD, with one in 10 seeking financial assistance, 37% reducing work hours, and 20% giving up work entirely.⁴⁶ Therefore, after SCAD, there is an urgency to clinically support people with brain fog and fatigue to maintain optimal workforce engagement.

The potential avenues for support for brain fog after SCAD fall largely into two groups: (i) those that occur organically from survivors' experiences and (ii) those that healthcare professionals can provide. In the former, the lack of research on cognitive challenges after SCAD results in survivors having to develop their own understanding of these experiences and learn a 'new normal', a negotiated process that plays out over time as they experience the psychological ramifications of SCAD.^{3,8,9,20} This fosters investigative reading and self-directed research that ultimately results in survivors becoming their own advocate, in the process developing mastery and skills for self-management. These FGs provide a forum to share this mutual support⁴⁷ alongside personal experiences, thereby fostering reciprocal coping and promoting vicarious self-efficacy.⁴⁸ As such, there is a need for peer support strategies where survivors can openly discuss these issues and derive support strategies from others experiencing the same cognitive challenges. Direction towards relevant SCAD peer

Table 2 Recommendations for practice

Provide information on potential cognitive and physical fatigue post-SCAD and the symptoms that may be experienced.
Encourage patients experiencing brain fog and fatigue to discuss their symptoms with their treating clinicians, ask questions about potential causes, including medications, and develop management strategies.
Discuss strategies for coping with brain fog and fatigue, such as setting reminders or using medication apps, planning activities to ensure cognitive breaks, and informing employers, family, and friends of challenges to adjust expectations.
Discuss potential peer support strategies to enable normalizing processes, such as sharing of experiences and coping mechanisms. These strategies may include online SCAD support groups, cardiac rehabilitation, and SCAD websites with experiences/stories.
Consider screening for mild cognitive impairment using a validated tool. Brief screening tools are available if time is a limiting factor in clinical settings. ⁵¹
Where cognitive challenges and fatigue are enduring or worsening, recommend a follow-up with patient's GP and seek appropriate referral to a psychologist for comprehensive cognitive assessment and management. Specialists, such as health psychologists and neuropsychologists, are appropriate considerations.

support groups is an important consideration,³ as are online resources for SCAD where lived experience is shared, given that this is an effective vessel for information dissemination.⁴⁹

On the other hand, these findings are relevant for multidisciplinary healthcare professionals working in cardiac and primary care settings. Firstly, this study is important in expanding awareness of this subtle but burdensome issue and the potential impacts that it may have on self-management after SCAD. Many cardiac nurses remain unaware of cognitive challenges, and only 16% report routinely screening for them,⁵⁰ despite the availability of brief screening tools with sufficient sensitivity and specificity for detecting mild cognitive impairment after ACS.⁵¹ Secondly, with or without screening, these findings provide insight for healthcare professionals to acknowledge and normalize brain fog after SCAD, provide information regarding symptoms, including medication side effects, and develop patient-centred management strategies. Clinicians can draw upon the coping strategies identified here in order to give practical advice for coping. For ongoing challenges with cognition, patients can be encouraged to consult with their GPs. From this, referral to a health psychologist or neuropsychologist is an apt consideration, allowing for a comprehensive cognitive assessment, as well as for a more intensive psychological management of SCAD and brain fog. Recommendations for clinicians are given in [Table 2](#).

Some limitations apply to this study. The broader study purpose was not specifically to explore brain fog and cognitive fatigue. While it is telling that these challenges were voiced unprompted, this investigation is not comprehensive. Future qualitative and quantitative research that focuses specifically on cognitive challenges following SCAD would provide further clarity and methodological rigour to this area. Brain fog was identified subjectively only and causation cannot be inferred. Longer-term experiences cannot be implied as participants were less than 12 months post-SCAD. There is a need for a future co-designed research that focuses on these issues and further explores coping strategies.

Conclusion

Brain fog and fatigue can present challenges to normal life for SCAD survivors. Rumination and overthinking, changes in self-perception, and disruption to hobbies and work were amongst the significant impacts discussed. Participants attributed these symptoms to medications, sleeplessness, hormonal changes, and SCAD itself. The coping mechanisms for these issues were developed over time and included reminders, setting expectations, self-advocacy, and reliance on peer support. Clinicians have great potential in assisting SCAD survivors with these challenges.

Supplementary material

Supplementary material is available at *European Journal of Cardiovascular Nursing* online.

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Author contributions

Conceptualization: J.W., B.M.M., and R.G. Investigation: B.M.M., M.C.R., A.C.J., and S.H. Data curation and formal analysis: J.W., B.M.M., and M.C.R. Project administration: S.H. Resources: S.E.I. and R.M.G. Supervision: R.M.G., T.B., and J.R. Writing original draft: J.W. Review and editing: all authors.

Conflict of interest: none declared.

Data availability

The data underlying this article cannot be shared publicly due to ethical and privacy reasons. This is to ensure the privacy and protect the identities of individuals that participated in the study. The data will be shared on reasonable request to the corresponding author.

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