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The impact of coping on fatigue, cognitive and psychological complaints in patients with a subarachnoid hemorrhage

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Abstract

Introduction: Patients with a subarachnoid hemorrhage (SAH) often have fatigue, cognitive (e.g., attention, memory and executive functions) and psychological problems, such as anxiety and depression. To adapt to the consequences of SAH, patients must rely on their coping skills. Research from stroke patients shows that active coping often leads to fewer psychological and cognitive complaints, while passive coping leads to more complaints. However, up to date, little is known about the impact of coping strategies on fatigue, psychological and cognitive complaints in SAH patients. Therefore, this study aimed to investigate the impact of coping on fatigue, cognitive and psychological complaints in SAH patients. *Method*: 54 SAH patients and 62 healthy controls (HCs) were included in the study. This study conducted correlation analyses using four questionnaires measuring coping (Utrechtse Coping List; UCL), cognitive and emotional complaints (Checklist Cognition and Emotion; CLCE-24), fatigue complaints (Dutch Multifactor Fatigue Scale; DMFS) and anxiety and depressive complaints (Hospital Anxiety and Depression Scale; HADS). An independent t test and Mann Whitney U tests were used to analyze differences in fatigue, anxiety, and depressive complaints between SAH patients and HCs. *Results*: No significant correlations were found between active coping and fatigue, cognitive, emotional, depressive and anxiety complaints. However, significant, moderate to strong correlations were found between passive coping and fatigue, anxiety and emotional complaints, but not with cognitive and depressive complaints. *Conclusion*: These results indicate that passive coping is associated with higher levels of fatigue, anxiety and emotional complaints in SAH patients. This highlights the importance of using effective coping strategies to adapt to the consequences of SAH.

Keywords: subarachnoid hemorrhage, coping, cognitive complaints, psychological complaints, fatigue, depression, anxiety

The impact of coping on fatigue, cognitive and psychological complaints in patients with a subarachnoid hemorrhage

A subarachnoid hemorrhage (SAH) is a bleeding in the subarachnoid space, between the arachnoid membrane and the pia mater (Ogden, 2005). SAH can have serious consequences, whereby one third of patients recover without (severe) deficits (Passier et al., 2011a). Patients with SAH can have both cognitive, emotional, and behavioral problems (Al-Khindi et al., 2010; Morris et al., 2004; Persson et al., 2017). These problems may, in turn, affect quality of life. Previous studies have found that after SAH, patients experience loss of social contact and changes in work, social and leisure activities (Al Yassin et al., 2017; Buchanan et al., 2000; Buunk et al., 2015; Passier et al., 2011b; Powell et al., 2002). In addition, several studies indicate that most patients do not fully recover to their premorbid level of cognitive and psychological functioning (Haug Nordenmark et al., 2020; Powell et al., 2002, 2004; Samra et al., 2007).

Cognitive impairments commonly occur in the domains of attention, information processing speed, language, memory and executive functioning (Al-Khindi et al., 2010; Buunk et al., 2016; Kreiter et al., 2002; Rinkel & Algra, 2011; Springer et al., 2009). 83% of SAH patients show cognitive impairments and these may persist for a longer period of time despite good neurological outcomes (Mavaddat et al., 1999). Cognitive impairments are measured with objective neuropsychological tests, while cognitive complaints are measured with subjective self-reported measures. Research suggests that both objective cognitive deficits and subjective cognitive complaints are related to problems in daily life, such as planning, retaining an agreement, and showing inappropriate social behavior (Buunk et al., 2015; Powell et al., 2002).

In addition to cognitive impairments, patients may also experience physical and psychological symptoms such as fatigue, depression, and anxiety (Wong et al., 2014). Fatigue

is the most common symptom after SAH and is defined by “the awareness of a decreased capacity for physical and/or mental activity due to an imbalance in the availability, utilization and/or restoration of [physiological or psychological] resources needed to perform activity” (Aaronson et al., 1999). A follow-up study, in which 87.9% of SAH patients showed a good recovery (grade 1 on the Glasgow Outcome Scale (GOS)), shows that 86% still suffer from extreme fatigue at 12 months after SAH (Ogden et al., 1994). Other studies showed a high prevalence of fatigue even several years after SAH (Kutlubaev et al., 2012; Ogden et al., 1997; Western et al., 2020). This suggests that fatigue persists over a longer period of time. Furthermore, there seems to be a link between fatigue and symptoms such as anxiety, depression, and cognitive impairments after SAH (Boerboom et al., 2017; Ogden et al., 1997; Passier et al., 2011a; Walker et al., 1991). For example, Boerboom and colleagues (2017) found that fatigue was related to lower scores on cognitive functioning and depression and Passier et al. (2011a) found higher levels of fatigue in SAH patients with anxiety compared to SAH patients without anxiety.

Symptoms of depression are frequently reported after SAH (Ackermark et al., 2017; Bartlett et al., 2021; Carter et al., 2000; Hedlund et al., 2011; Kwong Tang et al., 2020; Powell et al., 2004). Depression is associated with difficulties in performing activities of daily living and a lower quality of life (Fann et al., 2009; Kreiter et al., 2013). A meta-analysis of depressive symptoms after SAH by Kwong Tang et al. (2020) shows that the severity of depressive symptoms is mild, to moderate, but that these symptoms appear to be chronic and will not diminish over time. This is also evident from longitudinal research; depressive symptoms are at least as common and severe in the later stages of SAH as in earlier stages and persists for a longer period of time after SAH in 72% of patients (Ackermark et al., 2017).

In addition to depressive symptoms, SAH patients also commonly experience symptoms of anxiety (Bartlett et al., 2021; Powell et al., 2004; Wong et al., 2014). Hütter & Kreitschmann-Andermahr (2014) showed that two-thirds of patients occasionally fear a recurrent SAH. A meta-analysis of anxiety after SAH showed that the severity of anxiety symptoms in SAH patients is mild, but that these symptoms show a similar course to depressive symptoms, negatively influencing daily living (Kwong Tang et al., 2021).

To adapt to the consequences of SAH, patients must rely on their coping skills. Coping is the way a person responds to problems and stressful events (Donnellan et al., 2006) and is often divided into active problem-focused and passive emotion-focused coping. Active coping includes strategies that involve an active approach seeking opportunities to solve problems and deal with stressful situations. On the other hand, passive coping involves focusing on the emotions that result from a stressful situation rather than dealing with the stressor itself (Hedlund et al., 2010). Leventhal and colleagues (1980) developed the self-regulation model of illness cognition and behavior. This model suggests that the representations patients hold about their illness are directly related to coping and, via coping, to outcomes such as quality of life and disabilities. A review by Penley et al. (2002) suggests that some coping strategies are more beneficial than others in adapting to events/ trauma. For example, active coping is associated with good recovery after surgery in general surgical patients (Kopp et al., 2003). The way patients deal with stressors after brain injury appears to be crucial for adequate behavioral and emotional adaptation and is therefore important for outcome (Rakers et al., 2018).

There is very limited literature on the use of different coping strategies in SAH patients. To our best knowledge, only one study investigated coping strategies in SAH patients. This study found that patients in a more severe condition (grade III or IV of the Hunt & Hess Scale) used fewer task-oriented strategies compared to healthy controls (HCs) or

patients in good conditions (grade I or II of the Hunt & Hess Scale; Tomberg et al., 2001). Maladaptive coping mechanisms in patients with SAH can negatively influence the adjustment processes after SAH and this can lead to passive behavior. Moreover, it seems that coping skills are related to fatigue, cognitive and psychological complaints. One study investigated the relationship between coping and fatigue in SAH patients. This study found a significant difference in fatigue between SAH patients who use a passive coping style and SAH patients who do not use this coping style (Passier et al., 2011a), by which SAH patients using a passive coping style reported higher levels of fatigue then SAH patients who do not use this coping style. However, this significant difference disappeared when the SAH patients had physical and/or cognitive impairments. Besides this study, there is no further information about the relationship between coping, cognitive and psychological complaints in SAH patients. In stroke patients, active coping was associated with less depressive complaints (van Mierlo et al., 2015; Tielemans et al., 2015), lower levels of anxiety (Tielemans et al., 2015) and less subjective cognitive complaints (Nijsse et al., 2017; van Rijsbergen et al., 2019). On the contrary, passive coping was associated with the presence of depressive symptoms (van Mierlo et al., 2015), higher levels of anxiety (Gillespie, 1997) and executive dysfunction (Kegel et al., 2014) in this patient group. However, Wright et al. (2017) did not find an association between coping and anxiety. Avoidance coping was also associated with higher levels of depressive symptoms (Boynton De Sepulveda & Chang, 1994; King et al., 2002) and more subjective cognitive complaints (van Rijsbergen et al., 2019) in stroke patients. Another study found an association between patients focusing on emotions and self-blame and higher levels of poststroke fatigue (Jaracz et al., 2007). Tomberg et al. (2001) suggests that active coping strategies are considered to be a mediating factor in patients' psychological adjustment and reintegration, but this has not been studied in patients with SAH. Thus, previous research in stroke patients show associations between coping, fatigue, cognitive and psychological

complaints. However, up to date, little is known about the impact of coping strategies on fatigue, cognitive and psychological complaints in SAH patients.

Therefore, the current study will investigate the relationship between coping strategies, fatigue, cognitive and psychological complaints in patients with SAH. Firstly, the current study aims to investigate the impact of coping (namely passive and active coping) on fatigue, cognitive and psychological complaints. Psychological complaints are considered as emotional complaints in general, anxiety and depressive complaints. Subsequently, the current study aims to investigate the differences in fatigue, anxiety and depressive complaints between SAH patients and HCs.

Method

Participants and procedure

The present study was part of a larger prospective study (ICONS) at the University Medical Centre Groningen (UMCG). The sample comprised of SAH patients who were admitted to the Neurosurgery Department of the UMCG. Inclusion criteria were the presence of a SAH (aneurysmal or non-aneurysmal), age 18 years or older, ability to both mentally and physically sustain the neuropsychological assessment (NPA), and sufficient knowledge of the Dutch language. Exclusion criteria were the presence of neurological comorbidity. Six months after discharge from the UMCG, patients received a NPA, consisting of neuropsychological tests and questionnaires.

In addition, the present study also included HCs. The HCs were recruited using a convenience sample within the researchers' network, social media and posters at GP practices and various educational institutions. HCs received the same NPA. Exclusion criteria for HCs were the presence of neurological and/or psychiatric disorders. All participants voluntarily

participated in the current study, received an information letter and signed an informed consent. This study was approved by the Medical Ethical Committee of the UMCG.

Material

Coping

The Utrechtse Coping List (UCL; Schreurs et al., 1993) measures the way a person copes with problems or stressful events and is categorized into the following scales: (1) active approach, (2) palliative response pattern, (3), avoidance, (4) social support seeking, (5) passive response pattern, (6) expression of emotions, and (7) handling reassuring and comforting thoughts. The UCL consists of 47 items using a 4-point Likert scale ranging from 1 (*seldom or never*) to 4 (*very often*). In this study, only active coping and passive coping were considered. To this end, the scale "active approach" was used to measure active coping and the scale "passive response pattern" was used to measure passive coping. These subscales both consist of seven items. Scores can range from 7 to 28 on both scales. The psychometric properties of the UCL are good (Schaufeli & van Dierendonck, 1992) and it is a valid and reliable instrument (Schreurs et al., 1993).

Subjective cognitive and emotional complaints

The Checklist Cognition and Emotion (CLCE-24; Rasquin et al., 2006) is used as a semi-structured interview to provide insight into the cognitive and emotional problems after brain injury. The questionnaire consists of 22 items: 13 items about cognitive complaints and 9 about emotional complaints. All questions could be answered with either *yes* or *no*. Scores can range from 0 to 13 on the "cognitive complaints" subscale and range from 0 to 9 on the "emotional complaints" subscale. Within this study, cognitive and emotional complaints were examined separately. Reliability and validity are good, but the inter-observer reliability is unknown (Rasquin et al., 2006).

Fatigue

The Dutch Multifactor Fatigue Scale (DMFS; Visser-Keizer et al., 2015) is a questionnaire that is used to measure various aspects of fatigue (nature of fatigue, impact of fatigue, comorbid symptoms and complaints, and coping with fatigue). The questionnaire consists of 38 items and contains a 5-point Likert scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). Scores can range from 38 to 190. The DMFS has good reliability and validity (Visser-Keizer et al., 2015).

Anxiety and depression

The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983; Dutch translation: Pouwer et al., 1997) is a questionnaire that measures anxiety and depressive complaints. The questionnaire consists of 14 items, 7 items measuring anxiety complaints and 7 items measuring depressive complaints. The HADS contains a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*often*). Scores can range from 0 to 21 on both scales. The cut-off point for anxiety and depressive symptoms is 8 for each scale. Within this study, depressive and anxiety symptoms were examined separately. The reliability and validity of the HADS are good (Brocéréan & Dupret, 2014).

Statistical analyses

Statistical analyses were performed using IBM SPSS Statistics version 26. Firstly, the descriptive statistics of SAH patients and HCs were analyzed. Educational level was based on the Dutch classification system (Verhage, 1964). This classification system consists of seven categories and these were merged into low educational level (1-4) and high educational level (5-7). Correlation analyses were used to test the relationships between coping strategies (UCL) and subjective cognitive and emotional complaints (CLCE-24), fatigue (DMFS), and anxiety and depressive complaints (HADS). Based on the Shapiro-Wilk test, the assumption

of normality was violated in almost all variables, with the exception of the DMFS and the "Active approach" subscale of the UCL. To investigate the relationship between the latter, Pearson correlation was used. Spearman correlation was used for the other scales/ questionnaires. In addition, the Bonferroni-Holm correction was used in the correlation analyses (Holm, 1979). To measure differences in fatigue, anxiety and depressive complaints between patients and HCs, three independent t tests were used. In case of violation of the assumption of normality the Mann-Whitney U test was used. All results were tested against a 0.05 significance level. Effect sizes have been interpretated using Cohen (1992), considering effect sizes as small (d = 0.20), moderate (d = 0.50) or strong (d = 0.80).

Research questions and hypotheses

Four research questions were formulated:

Question 1: "What is the relationship between coping strategies and subjective cognitive and emotional complaints in SAH patients?"

Question 2: "What is the relationship between coping strategies and fatigue in SAH patients?"

Question 3: "What is the relationship between coping strategies and anxiety and depressive complaints in SAH patients?"

Question 4: "Do SAH patients have more complaints of fatigue, anxiety and depression than healthy controls?"

Based on the literature and the research questions, three hypotheses were formulated.

Hypothesis 1: "Passive coping has a positive correlation with fatigue, cognitive complaints, emotional complaints, anxiety and depressive complaints in SAH patients."

Hypothesis 2: "Active coping has a negative correlation with fatigue, cognitive complaints, emotional complaints, anxiety and depressive complaints in SAH patients."

Hypothesis 3: “SAH patients have more complaints of fatigue, anxiety and depression than healthy controls.”

Results

Participants

A total of 55 SAH patients and 62 HCs were included in this study. Subsequently, one outlier was removed from this group due to standardized residuals greater than 3. This resulted in the final group of 54 SAH patients (47%) and 62 HCs (53%). All characteristics of the participants are reported in table 1.

Table 1

Characteristics of the participants

	Patient group (n = 54)	Control group (n = 62)
Demographic characteristics		
Sex, number of women	31	39
Age in years, mean (SD)	56.5 (12.3)	50.9 (11.4)
Education level		
Low (1-4)	10	1
High (5-7)	44	61
SAH characteristics		
Type of SAH		
Aneurysmal	37 (68.5%)	
Non-aneurysmal	17 (31.5%)	
WFNS score		
Low (GCS 13-15)	49 (90.7%)	
High (GCS 3-12)	5 (9.3%)	
Treatment after aSAH		
Coiling	29 (53.7%)	
Clipping	4 (7.4%)	
Stenting	1 (1.9%)	
WEB device	3 (5.6%)	

Note. SAH = Subarachnoid hemorrhage; WFNS = World Federation of Neurosurgical Societies grading system; GCS = Glasgow Coma Scale; aSAH = aneurysmal SAH.

Relationship between coping and subjective complaints in SAH patients

Table 2 shows the correlations between coping and fatigue, cognitive, emotional, anxiety and depressive complaints. Also, the correlations with the combined score of

cognitive and emotional complaints and the combined score of anxiety and depressive complaints are reported.

Table 2

Spearman and Pearson correlations between UCL and CLCE-24, HADS and DMFS

		N	Mean (SD)	UCL-A	UCL-P
CLCE-24					
	Cognitive complaints	54	2.4 (2.4)	- .295	.333
	Emotional complaints	54	2.5 (1.8)	- .107	.398*
	Total			- .230	.387*
HADS					
	Anxiety complaints	54	4.9 (3.6)	- .274	.433*
	Depressive complaints	54	4.1 (3.9)	- .361	.319
	Total			- .340	.419*
DMFS		54	114.3 (20.6)	- .207[a]	.385*

Note. UCL-A = Active approach subscale of UCL questionnaire; UCL-P = Passive reaction pattern subscale of UCL questionnaire.

* $p < .05$.

[a] = Pearson correlation.

Passive coping, as measured with UCL-P, has significant moderate to strong relationships with fatigue, anxiety and emotional complaints. This means that a passive coping style is associated with more fatigue, anxiety and emotional complaints. Passive coping also has significant moderate to strong relationships with the total scores of the HADS and CLCE-24. On the other hand, passive coping did not have significant relations with cognitive and depressive complaints. Also, no significant relations were found between active coping and fatigue, cognitive, emotional, anxiety and depressive complaints.

Comparison of SAH patients and healthy controls

The descriptive statistics of the DMFS and HADS are depicted in Table 3. 18.5% of SAH patients (*n* = 10) and 3.2% of HCs (*n* = 2) showed symptoms of depression. 20.4% of SAH patients (*n* = 11) and 4.8% of HCs (*n* = 3) showed symptoms of anxiety.

Table 3

Descriptive statistics and test statistics of the DMFS and HADS

Measures	Group	N	Mean (SD)	U	t / z	p	d
DMFS	Patient group	54	114.3 (20.6)		4.06	<.01**	.79
	Control group	44	100.4 (13.0)				
HADS-A	Patient group	54	4.9 (3.6)	825.00	-1.60	.11	.44
	Control group	38	3.5 (2.3)				
HADS-D	Patient group	54	4.1 (3.9)	768.50	-2.07	<.05*	.49
	Control group	38	2.4 (2.4)				

Note. HADS-D = Depression subscale of HADS questionnaire; HADS-A = Anxiety subscale of HADS questionnaire.

* $p < .05$. ** $p < .01$.

An independent t test was used to test for differences in fatigue complaints between SAH patients and HCs. SAH patients experienced significantly more fatigue complaints than HCs. The effect size for the difference between SAH patients and HCs was strong.

Mann Whitney U tests were used to test for differences in anxiety and depressive complaints between SAH patients and HCs. No significant difference was found for anxiety complaints. However, a significant difference in depressive complaints was found between SAH patients and HCs. SAH patients experience more depressive complaints than HCs. The

effect size for the difference in depressive complaints between SAH patients and HCS was moderate.

Discussion

This study investigated the relationship between coping and fatigue, anxiety, depressive, cognitive and emotional complaints in SAH patients. We found that passive coping has a moderate relationship with fatigue, anxiety, and emotional complaints, but no significant relationship with cognitive and depressive complaints. Also, no significant relationships were found between active coping and fatigue, cognitive, emotional, anxiety and depressive complaints. In addition, differences in fatigue, anxiety, and depressive complaints between SAH patients and HCs were examined. SAH patients reported significantly more fatigue and depressive complaints than HCs. Although SAH patients reported more anxiety complaints, no significant difference was found with HCs.

Our findings are not in line with previous studies, where passive coping leads to more depressive complaints (Boynton De Sepulveda & Chang, 1994; King et al., 2002; Tielemans et al., 2015; van Mierlo et al., 2015). A possible explanation might be that the current study looked at the UCL 'passive response pattern' subscale. On the contrary, other studies used a subset of passive coping (i.e., avoidance coping: Boynton De Sepulveda & Chang, 1994; King et al., 2002). On the other hand, the current study did find a moderate correlation between passive coping and anxiety. A passive coping style was associated with higher levels of anxiety in SAH patients. To our best knowledge, this relationship has not been found in SAH patients before. When looking at other neurological populations, we do find similar results in stroke populations (Gillespie, 1997) and traumatic brain injury (TBI) populations (e.g., Curran et al., 2000). Besides that, this relationship has also been found in the healthy population. For example, Richardson and colleagues (2021) found an association between avoidance coping

and anxiety in pre-adolescence and Ghane et al. (2016) found that emotion-focused coping significantly predicted anxiety in caregivers of hemodialysis patients.

To date, information on the relationship between coping and fatigue in SAH patients is very limited. The current study found a moderate relationship between passive coping and fatigue. A passive coping style was associated with higher levels of fatigue in SAH patients. This was also found in previous research, which found a significant difference in fatigue between SAH patients who used a passive coping style and SAH patients who did not use this coping style (Passier et al., 2011a). SAH patients using a passive coping style reported higher levels of fatigue then SAH patients who do not use this coping style. However, this significant difference disappeared when SAH patients had physical and/ or cognitive impairments. Although the current study did not distinguish between patients with or without physical and/ or cognitive impairments, the association between passive coping and fatigue is significant in the current sample. The relationship between passive coping and fatigue has also been found in other neurological patient groups, namely in stroke patients (Jaracz et al., 2007), multiple sclerosis (MS; Pust et al., 2021) and mild TBI patients (Rakers et al., 2021). Interestingly, previous research also found significantly higher levels of fatigue in anxious SAH patients compared to SAH patients who were not anxious (Passier et al., 2011a). Because of this, an interaction between anxiety, fatigue and passive coping should be considered. Future research should investigate causality and the possible interaction between passive coping, anxiety, and fatigue in SAH patients.

The relationship between coping and objective cognitive impairments and subjective cognitive complaints has not been previously investigated in SAH patients. In previous research with stroke patients, a relationship between active coping and less subjective cognitive complaints (Nijsse et al., 2017; van Rijsbergen et al., 2019) was found. Also, passive coping was associated with subjective cognitive impairments (van Rijsbergen et al.,

2019) in stroke patients. However, we did not find a relationship between both passive and active coping and cognitive complaints in SAH patients. A possible explanation could be the use of different questionnaires to measure coping. Nijsse et al. (2017) used the Proactive Coping Competence Inventory (PCI; Bode et al., 2008) to measure active coping and van Rijsbergen et al. (2019) used the shortened version (15-item version) of the UCL (Schreurs et al., 1993). Future research should further investigate the relationship between coping and subjective cognitive complaints in order to provide more clarity about this relationship in SAH patients. In addition, future research could focus on the influence of coping on objective cognitive impairments in SAH patients, as this relationship is observed in other neurological patient groups, such as stroke (Kegel et al., 2014), MS (Goretti et al., 2010) and TBI (Krpan et al., 2007).

Additionally, the differences in fatigue, anxiety and depressive complaints between SAH patients and HCs were examined. We found that SAH patients reported significantly more fatigue complaints than HCs, which is in line with previous research (Kutlubaev et al., 2012; Ogden et al., 1994, 1997; Western et al., 2020). A possible explanation for the experience of fatigue in SAH patients might be that patients need additional cerebral resources to compensate for the cognitive deficits as a result of the SAH. Research in patients with traumatic brain injury has shown that they have to put in more cerebral effort than HCs to be able to perform complex cognitive tasks (Smits et al., 2009; van Zomeren et al., 1984). This extra effort then leads to more feelings of fatigue (van der Horn et al., 2016).

Furthermore, we also found that SAH patients reported significantly more depressive complaints than HCs. Experiencing depressive symptoms after SAH is also supported by various studies (Ackermark et al., 2017; Fann et al., 2009; Kwong Tong et al., 2020). Research has shown that cognitive deficits and fatigue lead to an increased risk of developing depression (Kwong Tang et al., 2020). The current study found fatigue complaints in SAH

patients, putting them at risk for developing depression. In contrast, no difference in anxiety complaints is found between SAH patients and HCs, which contradicts the literature (Hütter & Kreitschmann-Andermahr, 2014; Kwong Tang et al., 2021; Wong et al., 2014). A possible explanation could be that the current study included both aneurysmal and non-aneurysmal SAH patients. Literature shows that non-aneurysmal SAH generally have a good recovery after SAH (Rinkel et al., 1991). Because non-aneurysmal SAH patients are also included in the current study, the average amount of anxiety complaints may be lower than in studies which only include aneurysmal SAH patients. However, we did not investigate differences between aneurysmal and non-aneurysmal SAH patients in the number of experiences related to anxiety and depression.

Some limitations of this study should be taken into account. First, the period in which the study took place, i.e., during the COVID-19 pandemic, must be taken into account. Restrictions imposed by the Dutch government on society (e.g., lockdown and curfews) may have negatively impacted the mental health of the participants (Xiong et al., 2020). Secondly, it could be the case that patients with severe depressive symptoms are less likely to participate in the study (Nagata et al., 2021) which limits the generalizability of the results. Finally, the current study used data from six months post-SAH, therefore no conclusions could be made about long-term complaints in SAH patients.

Conclusions

In conclusion, the current study shows a relationship between passive coping and emotional, anxiety and fatigue complaints. A passive coping style is associated with higher levels of emotional, anxiety and fatigue complaints in SAH patients. Furthermore, SAH patients show more fatigue and depressive complaints than HCs. Based on these results, it is of great importance to intercept passive coping styles in SAH patients, for example by teaching them other effective coping styles. Future research could look at the effects of

teaching effective coping strategies on reducing anxiety, fatigue and emotional complaints in SAH patients. Moreover, clinical practice should focus on reducing fatigue and depressive complaints in SAH patients. Overall, illustrating subjective complaints and coping skills in SAH patients is important for the implementation of a treatment plan and rehabilitation.

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