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The experience of people with rheumatoid arthritis living with fatigue: a qualitative meta-synthesis

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Abstract

Objectives

To identify, appraise and synthesize qualitative studies on the experience of living with rheumatoid arthritis (RA) related fatigue.

Methods

We conducted a qualitative meta-synthesis encompassing a systematic literature search in February 2017, for studies published in the past 15 years, in PubMed, Cinahl, Embase, SveMed, PsychInfo and Web of Science. To be included the studies had to report the experience of living with fatigue among adults with RA. The analysis and synthesis followed Malterud's systematic text condensation.

Results

Eight qualitative articles were included, based on 212 people with RA (69% women) and aged between 20-83 years old. The synthesis resulted in the overall theme 'A vicious circle of an unpredictable symptom'. In addition, the synthesis derived at four subthemes: 'being alone with fatigue'; ´time as a challenge'; 'language as a tool for increased understanding' and 'strategies to manage fatigue'. Fatigue affects all areas of everyday life for people with RA. They strive to plan and prioritize, pace, relax and rest. Furthermore, they try to make use of a variety of words and metaphors to explain to other people that the experience that RA-related fatigue is different from normal tiredness. Despite this, people with RA-related fatigue experience feeling alone with their symptom and they develop their own strategies to manage fatigue in their everyday life.

Conclusions

The unpredictability of RA-related fatigue is dominant, pervasive and is experienced as a vicious circle, which can be described in relation to its physical, cognitive, emotional and social impact. It is important for health professionals to acknowledge and address the impact of fatigue on the patients' everyday lives. Support from health professionals to manage fatigue and develop strategies to increase physical activity and maintain work is important for people with RA-related fatigue.

Keywords: long-term condition, tiredness, outcome, symptom, interview, impact

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Article summary

Strengths and limitations of this study

- The meta-synthesis approach led to new overall understandings, compared to the fragmented findings of individual studies
- The literature search was supervised by a research librarian and encompassed six databases
- Only peer-reviewed articles were included in the synthesis
- The inclusion of eight qualitative studies provided a useful basis for the synthesis
- The findings will be useful in relation to people with other types of inflammatory arthritis and long-term conditions where fatigue is a significant symptom

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Introduction

Rheumatoid Arthritis (RA) is an autoimmune inflammatory, fluctuating long-term condition, characterized by pain, fatigue, swollen and stiff joints and potential joint destruction, which can lead to disability. Fatigue in people with RA is highly prevalent; reported by 42-80% of the patients, and perceived as a dominating problem with a greater impact on everyday life, than pain.[1-3]

During the past 10-15 years, there has been an increasing research focus on RA-related fatigue, with qualitative studies revealing that people with RA struggle alone with their fatigue. [3-6] However, there is a need for an overall comprehensive understanding and acknowledgement of the experience of RA-related fatigue. With a synthesis of current qualitative research, it is possible to consolidate and add weight to the existing findings from individual qualitative studies, [7 8] that normally have little impact on evidence-based practice.[7 9] Therefore, the aim of this study was to identify, appraise and synthesize qualitative studies on the experience of living with fatigue in patients with RA.

Methods

We based the qualitative meta-synthesis on Sandelowski and Barrosos' approach.[10] The aim was to systematically review and formally integrate the interpreted findings from existing qualitative studies in order to achieve a higher level of understanding of the experience of RA-related fatigue. In accordance with Sandelowski and Barosso, [10] the qualitative meta-synthesis consists of three phases: 1) a systematic literature search; 2) appraisal of included articles; and 3) analysis, synthesis and integration of findings.

Systematic literature search

Two of the authors completed a systematic literature search in February 2017 in six databases: Pubmed, Cinahl, Embase, Sve-med, PsycINFO and Web of Science. The literature search was performed as block searches.[11] The other authors and a research librarian supervised the search. Keywords as well as subject headings were used to strengthen the literature search.[12] In each database, thesaurus, MESH-terms and entry words were identified as equivalent keywords for “rheumatoid arthritis” and “fatigue”. The equivalent keywords in each block were combined with OR, before the blocks were combined with AND (Table 1).

BLOCK 1	Subject headings in PubMed	arthritis, rheumatoid [MeSH]
	Subject headings in Embase	exp rheumatoid arthritis/
	Subject headings in Cinahl	MH arthritis, rheumatoid+
	Subject headings in PsycINFO	exp rheumatoid arthritis/
	Subject headings in SveMed	exp rheumatoid arthritis/
	No Subject headings in Web of Science	
AND	Each subject heading **OR** these keywords	((rheumatoid OR reumatoid OR rheumatic OR reumatic OR rheumat* OR reumat*) AND (arthrit* OR artrit* OR diseas* OR condition* OR nodule*)) mp.
BLOCK 2	Subject headings in PubMed	asthenia [MeSH] fatigue[MeSH]
	Subject headings in Embase	exp asthenia/ exp fatigue/ exp lassitude/
	Subject headings in Cinahl	MH fatigue
	Subject headings in PsycINFO	exp asthenia/ exp fatigue/
	Subject headings in SveMed	exp asthenia/ exp fatigue/ exp lassitude
	No use of subject headings in Web of Science	
	Each subject heading **OR** these keywords	fatigue* or tired* or sleepy or sleepi* or drows* or lassitude or letharg* or weary or weariness or exhaustion or exhausted or lacklustre or ((asthenia or asthenic) and syndrome) or ((lack or loss or lost) and (energy or vigour))mp.

Table 1. Description of the literature search

Inclusion criteria were studies reporting experiences of living with fatigue in patients diagnosed with RA and age > 18 years. Qualitative peer-reviewed studies published between 01.01.2002 - 02.23.2017 were included. Only full-text articles in Danish, English, Swedish and Norwegian languages were included. As the experience of fatigue is different depending on peoples’ cultural, psychosocial and economic context,[13 14] we excluded studies from non-western countries to ensure homogeneity. We considered western countries to encompass Europe, Canada, USA, Australia and New Zealand. We excluded studies reporting fatigue in people with different diagnoses, if findings regarding people with RA were not reported separately. The retrieved titles were managed in the electronic reference-program Endnote X7 (endnote.com), where duplicates were removed.

The web-based reference-program Covidence (Veritas Health Innovation, Melbourne; Australia, Covidence.org) was used in the screening process. The next step was full text screening of 61 articles. Potential conflicts were resolved and agreement obtained through discussions among AH, AL, BAE and JP. The overall literature search and selection process are described in Figure 1.

Eight articles were included after an initial critical assessment of the studies' typology, credibility and relevance for practice (Table 2). The combined sample size was 212 people with RA; 69% were women, aged between 20-83 years. The check list from the Critical Appraisal skills Programme (CASP),[15] for assessment of quality in qualitative studies was used. Sampling strategies, data management, discussion, implications and techniques for maximizing rigour and credibility were essential issues. The critique of individual studies was further informed by selected elements from Sandelowski and Barrosos' reading guide to strengthen the appraisal of the findings.[10] The selected elements encompassed judgement about whether plausible findings were appropriately supported by data; if appropriate analysis and interpretation of data were evident; if findings related to the overall aim of the individual study; variation of findings; coherence between and precise reporting of ideas and concepts and finally whether the results offered new information or insight in RA-related fatigue.[10]

After this process, eight studies were included in the meta-synthesis. A comparative appraisal [10] across the included studies, allowed us to derive at meta-study inferences, which provided an interpretive context for the following synthesis (Table 2). An audit trail [10] (in Danish) documented the procedures and decisions.

Please insert Figure 1

References	Aim	Analysis	Participants	Data collection	Classification of typology
Hewlett et al. (2005)[4] UK	To explore the concept of fatigue as experienced by patients with RA	Grounded theory	15 patients 3 men /12 women. Age 31-80 years	Semi-structured in-depth individual interviews	Conceptual /thematic description
Repping-Wuts et al. (2008)[5] Netherlands	To explore the experience of fatigue in Dutch RA patients, including the concept, causes and consequences of fatigue, patients' self-management strategies and bottlenecks in professional care.	Thematic content analysis	29 patients 12 men / 17 women Age 36-80 years	Questionnaires and individual semi-structured interviews	Thematic survey
Crowley et al. (2009)[16] Ireland	To identify barriers to exercise in RA	Grounded theory	12 patients 12 women Age 43-80 years	Focus groups	Thematic survey
Nicklin et al. (2010)[17] UK	To develop draft PROMs to measure RA fatigue and its impact through collaboration with patients to identify language and experiences, create draft PROM items, and test for comprehension. Decisions supported throughout by a patient research partner.	*The study consists of 3 substudies* 1) Inductive thematic content analysis 2) Identifying and developing data to use in the third study 3) Cognitive method of survey methodology	1) 15 patients, 3 men /12 women. Age 31-80 years 2) 17 patients, 6 men / 11 women Age > 18 years 3) 15 patients > 18 years	1) Analysis of transcriptions from a former study of semi-structured qualitative interviews 2) Three focus group interviews 3) Cognitive interviews	Conceptual /thematic description
Nikolaus et al. (2010)[6] Nederlands	To gain further insight into the experience of fatigue in RA.	Framework approach combining inductive and deductive elements	31 patients, 8 men / 23 women Age 32-83 years	Electronic questionnaire and semi-structured in-depth individual interviews	Thematic survey
Dures et al. (2012)[18] UK	To explore the patient perspective of a Cognitive- Behavioral Program for patients with RA and the impact of behavior changes	Hybrid thematic content analysis	38 patients, 8 men / 30 women Age 35-77 years	Study nested in a RCT. Focus groups and one individual interview	Thematic survey
Feldthusen et al. (2012)[3] Sweden	To describe how persons with RA of working age experience and handle their fatigue in everyday life	Qualitative content analysis	25 patients, 6 men / 19 women Age 20-60 years	Individual questionnaires and focus groups	Conceptual /thematic description
Thomsen et al. (2015)[19] Denmark	To examine how patients with RA describe their daily sedentary behavior	Qualitative content analysis	15 patients, 5 men / 10 women Age 23-73 years	Semi-structured in-depth individual interviews	Conceptual /thematic description

Table 2. Overview of the included studies

RA: Rheumatoid arthritis; RCT: Randomized controlled trial; UK: United Kingdom

Analysis, synthesis and integration of findings

We used Malteruds' systematic text condensation for an interpretive synthesis of the findings from the included studies [20] (Table 3).

1. From chaos to themes
Reading all the material/articles to obtain an overall impression of the findings, bracketing previous preconceptions.

2. Identifying and sorting meaning units - from themes to codes
Identifying units of meaning, representing different aspects of patients with RA´s experience of living with fatigue and coding these.

3. Condensation - from code to meaning
Condensing and extracting the meaning within each of the coded groups.

4. Synthesizing - from condensation to descriptions and concepts.
Summarizing the contents of each code group to generalized descriptions and synthesis/results.

Table 3. The stages in Malterud's text condensation[20]

Inductive and deductive analysis methods were used alternately. To ensure rigour, a constant movement between fragments and the original text was applied [20].

The initial analysis identified five themes representing different aspect of the experience of fatigue and 241 codes. The text bites from the 241 codes were organized according to the five themes. New understandings developed based on subgroups within each of the initial themes and were described in new text. Eventually the findings were merged and described in relation to four emergent themes. Text-condensation and contextualization were discussed among the authors to extract the meaning of the coded groups.

Patient involvement

Due to the nature of this study, no patients were involved in its planning or conduct. The study deals with the patient perspective and a significant and challenging symptom for most patients with RA.

Findings

Based on the systematic interpretive analysis we identified an overall theme ‘A vicious circle of an unpredictable symptom’ and four sub-themes, inter-linked to each other and to the overall theme: ‘being alone with fatigue‘; ´time as a challenge’; ‘language as a tool for increased understanding’ and ‘strategies to manage fatigue’ (Figure 2).

Please insert Figure 2

A vicious circle of an unpredictable symptom

Fatigue is one of the most important symptoms for people with RA as it is difficult to control and has considerable consequences for all aspects of their everyday lives.[3-6 19] They consider their fatigue both to be more intense and different from the fatigue they knew before they were diagnosed and different from the fatigue that people without RA might experience.[3 4 17] RA-related fatigue is unpredictable and does not occur regularly within or across days. It varies in severity, duration, frequency and intensity, and varies from short episodes daily, weekly or less often, to fatigue that is more permanent, and can become an overwhelming and total feeling with no specific cause or reason. As such, it is perceived as inexplicable.[3-5 17] Fatigue can have a cumulative physical, cognitive, emotional and social impact, which forms the basis for a vicious circle, where fatigue wears people down and generates more fatigue.

Physical impact

In the overall theme, physical impact included the experience of fatigue as the main barrier for physical activity and exercise.[16] Physical activity becomes extremely exhausting and is associated with irritability and anger.[3 4 19] People with RA-related fatigue experience reduced sleep quality, with episodes of being awake at night and feeling unrefreshed after sleep, and a body that feels heavy or as though they are ill.[3-6 17 19]

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Cognitive impact

The cognitive impact includes the effect of fatigue on concentration, memory, the ability to learn, solve problems, assimilate information and participate in conversations and engaging with others.[3 5 17] Fatigue has a negative influence on motivation and enthusiasm.[4 5 17] The cognitive problems create a feeling of being limited and always one step behind.[5 17 19] People with RA-related fatigue also experience positive effects of their fatigue. This encompasses learning to be more conscious about choices in life, learning to let things pass, and recognizing the advantages of resting.[18]

Emotional impact

The emotional impact of fatigue is related to experiences of frustration, hopelessness, fear, reduced motivation, lack of patience and loss of control in relation to other people.[3-5 17] In addition, fatigue is experienced as exhausting, with a negative impact on people's ability to take initiatives and to get things done.[3 16] A reduced energy to participate in social activities leads to negative feelings such as anger.[3 5 6] Younger women with many social roles report being overly sensitive and feeling misunderstood.[6] Others report feeling useless.[4 6] It is hard to fulfill social expectations which leads to a feeling of being viewed as lazy, boring and self-absorbed.[4] They can feel too tired to entertain others or fall asleep, which can induce feelings of guilt and embarrassment.[17]

Social impact

Social impact of fatigue covers the feeling of being restricted in the ability to fulfill normal social roles in the family, in social life, at work and in recreational activities, and consequently social relations are strained.[3-6 16-19] People with RA-related fatigue experience the fatigue as a great barrier to being with other people, and they reduce social activities to a minimum.[3-5 17] Planning and prioritizing are important in relation to the experience of fatigue and tasks are divided over a day or over several days in order to be able to manage bad days and save energy for later events and tasks.[3 19] The unpredictability makes it hard to plan and the postponement or cancellation of social agreements may be necessary.[3 5 19] Work and functional roles are often given higher priority than recreational activities and physical activity and consequently people reduce and limit the time they spend on 'nonessential' tasks.[3 16 17]

Being alone with fatigue

The described emotional and social consequences of fatigue can result in a particular experience of loneliness, which people with RA do not share with others. Days with high levels of fatigue leads to isolation at home either because it is difficult to go out or people deliberately choose to be by themselves and stay home.[19] They find it hard to reciprocate help and describe this as exhausting, which limits their relationships with other people.[3-5 17] In particular, people describe how a sense of being dependent on other people is detrimental. Fatigue leads to a feeling of imbalance in everyday life, which is dominated by the experience of negative emotions such as hopelessness and loneliness.[3 19] People describe not having enough energy to take care of their families, and how this may lead to a feeling of being hard to live with. To manage work, everyday tasks and social activities is a lonely fight and is intensified as people strive not to show fatigue at work or in public[3] It is essential for them not to be perceived as grumpy or whining, but to manage fatigue on their own.[3] Their experience of fatigue as a particular symptom is not necessarily articulated in the dialogue with their rheumatologist or nurse specialist.[3 5] They believe that support from health professionals is rare and that health professionals tend to focus on physical problems and disease activity rather than fatigue[4]. Overall, this leads to the feeling that there is nothing to be done about their fatigue and that the experience of fatigue, its management, and acceptance of fatigue is their own problem.[3-5 18 19]

Time as a challenge

Poor sleep and the unpredictable nature of fatigue requires breaks and rests during the day. For some people, this means setting time aside, while for others this is perceived as impossible.[3-6 17 19] Some everyday tasks become slow and troublesome due to joint pain and physical limitations. Tasks take longer than pre-RA and are more strenuous to perform, which can increase the fatigue and require more breaks and the need for additional rest.[4 5] There is a need to sit down to perform some tasks and a need to be alone, which also takes time and increases the imbalance in everyday life in relation to family life, household and garden related tasks, work, recreational activities and social roles.[3-6 17 19] As it takes time to adjust plans, the chance to be spontaneous is also reduced.[3]

The language as a tool for increased understanding

People with RA-related fatigue perceive that other people, who are familiar with “normal” tiredness, are only able to understand fatigue on an intellectual level. Consequently, they do not recognize and understand the far-reaching consequences of this invisible symptom,.[3 4 17] People experiencing RA-related fatigue are conscious of the words they use towards their next of kin and to health professionals in order to express the meaning of fatigue and increase the understanding of their fatigue.[3 4 17] To be ‘tired’ is not considered an appropriate word and they use words such as ‘fatigued’, ‘exhausted’ and ‘lack of energy’.[4 17] They use metaphors such as ‘heaviness’ or ‘weight’ or ‘like an infection’ and use different adjectives; i.e. ‘frustrating’ and ‘extreme’ to describe their fatigue and facilitate an understanding regarding the nature of their fatigue.[5 17 19] People with RA-related fatigue communicate their fatigue differently depending on the context and they expect a reaction from those they talk to.[3] They distinguish linguistically between the severity of fatigue, the effect and the management of fatigue.[17] When they talk to other people with RA about fatigue, they use words that most people with RA are familiar with.

Various strategies to manage fatigue

People with RA-related fatigue report that conscious strategies are needed to break the vicious circle.[3 6] They try to pace, relax and rest during the day to save energy for later events and tasks, and be able to manage bad days.[4-6 17 19] People with RA-related fatigue constantly prioritize and plan activities according to their capacity to manage fatigue at home and at work.[3-6 17 19] Other strategies used include breaking down tasks over one or several days or consciously deciding to carry on regardless of the consequences, having a positive attitude or trying to accept the fatigue.[3 4 19] Some devote a day per week to manage bad days.[3 19] Some can distract themselves from their fatigue by concentrating on something else, engage in social activities, have fun, accept help from others or avoid energy consuming activities.[3] People with RA-related fatigue find it is necessary to take good care of themselves and their body to feel good and try to restore the imbalance in life and ease fatigue.[3] People with RA who have participated in group based Cognitive Behavioral Therapy (CBT) to support self-management of fatigue experienced an increased self-efficacy, problem solving, less fear of fatigue and increased acceptance and ability to assert their own needs.[18]

Discussion

This meta-synthesis is the first to summarize the qualitative research on the experience of people with RA living with fatigue. We identified that RA-related fatigue is a vicious circle of an unpredictable symptom, which can be described by its physical, cognitive, emotional, social and behavioral impact. In addition, we identified four sub-themes: 'being alone with fatigue'; 'time as a challenge; 'the language as a tool to an increased understanding' and 'strategies to manage fatigue' based on eight qualitative articles. The uncontrollable and unexplained nature of fatigue makes it the most challenging symptom for many people with RA. The findings emphasize that RA-related fatigue is multi-dimensional and it is pervasive and affects all areas of the people's everyday lives.

An international cooperation of researchers and patient representatives involved in OMERACT (Outcome Measures in Rheumatology), has acknowledged fatigue as an important symptom of RA, and should be measured in all clinical studies, where possible.[21 22] Fatigue can be measured by generic instruments or instruments that reflects the multi-dimensionality of RA-related fatigue in clinical studies[23]. The British Rheumatoid Arthritis Fatigue Multidimensional Questionnaire (BRAF-MDQ) is designed to capture the multi-dimensional nature of RA-related fatigue.[24] In addition to the BRAF-MDQ, there are three BRAF numerical rating scales (NRS) that measure fatigue coping, severity, and effect. The BRAFs encompass the physical, cognitive, emotional, social and behavioral aspects of fatigue, the level, the number of days, duration, impact and coping with fatigue. Our study highlighted the importance of wording in relation to fatigue and the BRAFs are based on interviews with people with RA.[17] However, the BRAFs do not encompass the challenges with loneliness and time, which we identified as important aspects of living with fatigue. The metaphors provide insight into the negative feelings and the lack of freedom that people experience.[18 19] These aspects should be included in the dialogue between health professionals and the patients.

The unpredictability of fatigue creates a changed self-perception and sense of self-worth, which amplifies the physical, cognitive, emotional and behavioral impact of the symptom. Charmaz argues that chronic illness can be considered as a fundamental type of suffering which can undermine the person's "self".[25] The unpredictability creates uncertainty and fear which can lead to more restrictions and limitations in life than necessary.[25] This is consistent with the findings regarding fatigue in our study. Health professionals can support people with RA-related fatigue in addressing and acknowledging these emotions and issues in the dialogue with people with RA.

People with RA-related fatigue may experience loneliness because they consider that they have to opt out of social activities to take care of themselves. They do not feel that other people acknowledge their invisible fatigue and social relations are strained. Living with RA puts social roles under pressure in general, both in the family, among friends and in the wider social network.[26] Work life is important for people with RA as it affects their identity, social relationships and the sense of normality in everyday life.[26] Women with RA give the highest priority to their professional identity compared to a disease and motherhood identity.[27] In this meta-synthesis, we also found that people with RA prioritize work-life and functional roles, and it is their leisure time and family time where RA-related fatigue bears the greatest impact. However, despite often prioritizing work, the cognitive and physical impact of fatigue can make it difficult for people with RA-related fatigue to fulfill their role at work.[28] Thus, these issues need to be included in the dialogue between patients and health professionals.

Fatigue was considered to be the main barrier to physical activity.[16] Physical activity is associated with physical fatigue in people with RA [29]. At the same time, people with RA describe physical activity as one of the strategies they use to manage their fatigue.[30] Physical activity can induce a natural sense of fatigue and exhaustion, which are considered positive as opposed to the

RA-related fatigue, which is considered unpredictable, unearned and unexplained. [30] A recent Cochrane review identified physical activity as a potentially effective non-pharmacological strategy to help reduce the level of fatigue.[31] Even a reduction in sedentary time seems to reduce the level of fatigue significantly.[32] Another efficient strategy is the application of Cognitive Behavioral Therapy (CBT) to help people reduce their RA-related fatigue.[18 31 33]

Our study highlights that patients with RA-related fatigue report that health professionals do not address fatigue sufficiently. Other studies have indicated that health professionals do not possess the necessary competencies to guide the patients to manage their fatigue[34]. Thus, further education and training of health professionals to acknowledge and validate fatigue, and in the use of cognitive behavioral techniques are needed.[18] However, we still need more evidence regarding effective interventions to help reduce RA-related fatigue.

Strengths and weaknesses of the study and in relation to other studies

The huge impact of RA-related fatigue on all aspects of peoples' lives, the importance of the language, the temporal aspect, and how they feel alone with their fatigue are all novel findings, which emerged due to the synthesis of findings from across the individual qualitative studies.

The literature search was supervised by a research librarian to enhance the quality, and we consider it to be thorough. In order to optimize the quality of the included studies, we chose not to include grey literature and abstracts which might not have been peer-reviewed.

Additional studies from other areas of the world might have altered the results, but we found it important to limit the study to western countries as the experience of fatigue might be dependent on, or influenced by, the cultural context. Furthermore, restricting searches to the past 15 years can be considered to be a limitation.

The findings from this study are likely to be relevant and useful for people with other types of inflammatory arthritis and long-term conditions where fatigue is a significant symptom.

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Conclusion

The unpredictability of RA-related fatigue is dominant, pervasive and is experienced as a vicious circle, which can be described by its physical, cognitive, emotional and social impact on peoples' lives. It is important for health professionals to acknowledge the impact of fatigue on the patients' everyday lives, pay attention to the wording they use to describe their fatigue, and to include the experience of living with fatigue in the dialogue with patients. Support from health professionals to manage fatigue and to develop new strategies to increase physical activity and maintain work is important for people with RA-related fatigue.

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Conflicts of interest

None of authors has any disclosures.

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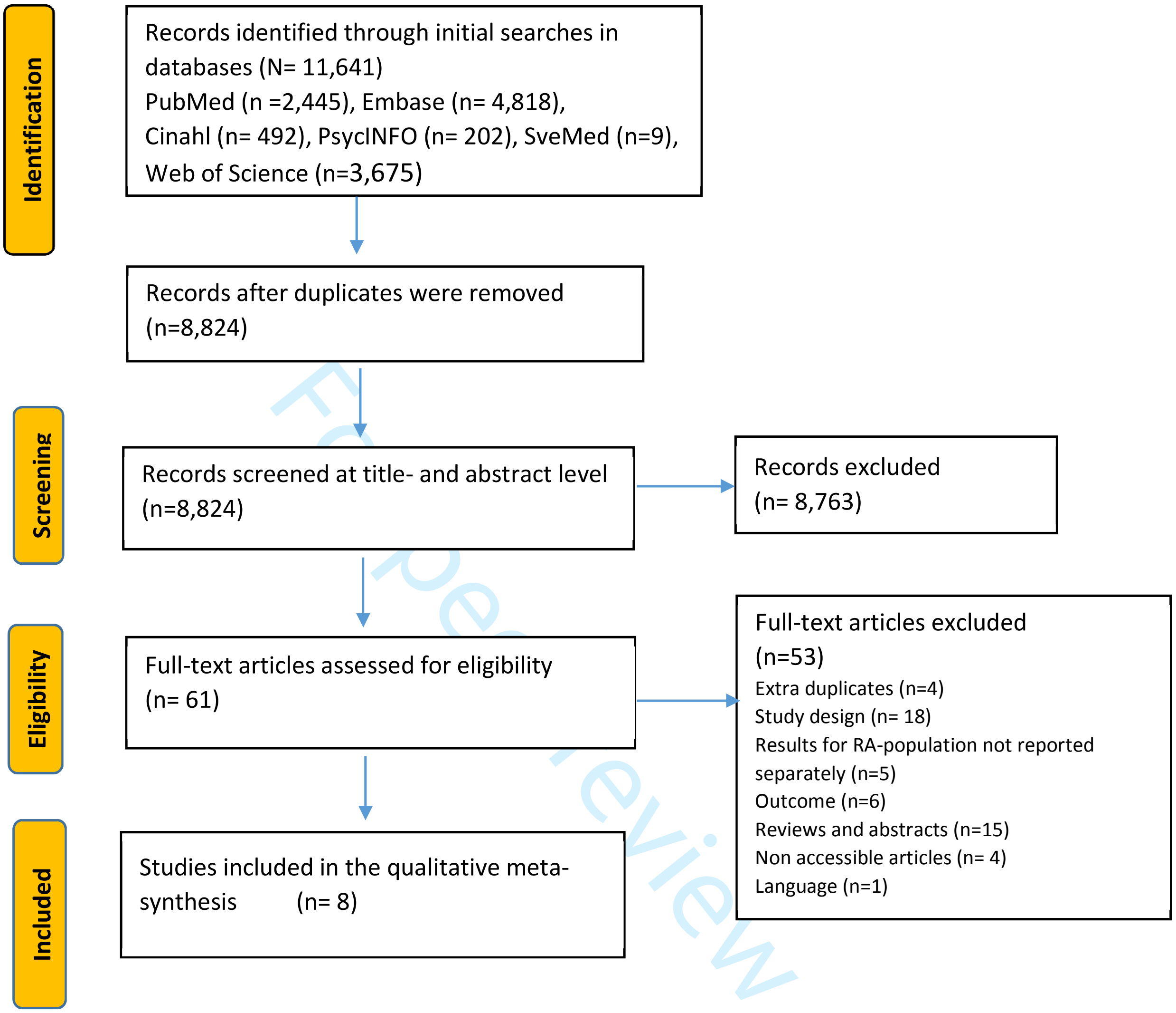

Figure 1. Flow-chart for the overall literature search and selection process

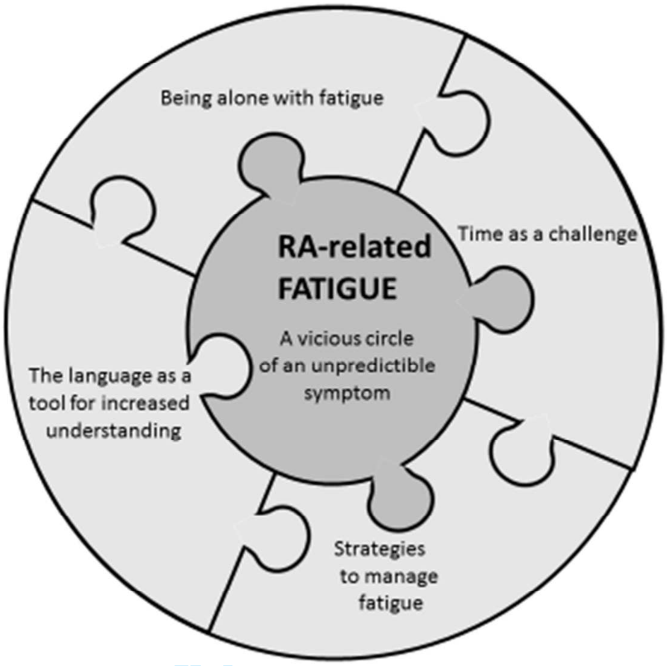

Figure 2: The interrelated findings of the experience of RA-related fatigue

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The experience of people with rheumatoid arthritis living with fatigue: a qualitative meta-synthesis

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Primary Subject Heading:	Qualitative research
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Keywords:	long term condition, tiredness, outcome, symptom, interview, impact

The experience of people with rheumatoid arthritis living with fatigue: a qualitative meta-synthesis

Word count: 3797

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Abstract

Objectives

To identify, appraise and synthesize qualitative studies on the experience of living with rheumatoid arthritis (RA) related fatigue.

Methods

We conducted a qualitative meta-synthesis encompassing a systematic literature search in February 2017, for studies published in the past 15 years, in PubMed, Cinahl, Embase, SveMed, PsychInfo and Web of Science. To be included the studies had to report the experience of living with fatigue among adults with RA. The analysis and synthesis followed Malterud's systematic text condensation.

Results

Eight qualitative articles were included, based on 212 people with RA (69% women) and aged between 20-83 years old. The synthesis resulted in the overall theme 'A vicious circle of an unpredictable symptom'. In addition, the synthesis derived four subthemes: 'being alone with fatigue'; ´time as a challenge'; 'language as a tool for increased understanding' and 'strategies to manage fatigue'. Fatigue affects all areas of everyday life for people with RA. They strive to plan and prioritize, pace, relax and rest. Furthermore, they try to make use of a variety of words and metaphors to explain to other people that the experience that RA-related fatigue is different from normal tiredness. Despite this, people with RA-related fatigue experience feeling alone with their symptom and they develop their own strategies to manage fatigue in their everyday life.

Conclusions

The unpredictability of RA-related fatigue is dominant, pervasive and is experienced as a vicious circle, which can be described in relation to its physical, cognitive, emotional and social impact. It is important for health professionals to acknowledge and address the impact of fatigue on the patients' everyday lives. Support from health professionals to manage fatigue and develop strategies to increase physical activity and maintain work is important for people with RA-related fatigue.

Keywords: long-term condition, tiredness, outcome, symptom, interview, impact

Article summary

Strengths and limitations of this study

- The meta-synthesis approach led to new overall understandings, compared to the fragmented findings of individual studies
- The literature search was supervised by a research librarian and encompassed six databases
- Only peer-reviewed articles were included in the synthesis
- The inclusion of eight qualitative studies provided a useful basis for the synthesis
- The findings are useful in relation to people with other types of inflammatory arthritis and long-term conditions where fatigue is a significant symptom

Introduction

Rheumatoid Arthritis (RA) is an autoimmune inflammatory, fluctuating long-term condition, characterized by pain, fatigue, swollen and stiff joints and potential joint destruction, which can lead to disability. Fatigue in people with RA is highly prevalent; reported by 42-80% of the patients, and perceived as a dominating problem with a greater impact on everyday life, than pain.(1-3)

During the past 10-15 years, there has been an increasing research focus on RA-related fatigue, and two different theoretical models have been developed to aid conceptual understanding (2, 4) where fatigue is understood as a complex and multifactorial subjective experience with disease related, personal, cognitive, psychological and contextual dimensions. Several qualitative studies have revealed, that people with RA experience fatigue as an overwhelming symptom influencing their everyday lives and that they struggle alone with their fatigue. (3, 5-7) However, there is a need for an overall comprehensive understanding and acknowledgement of the experience of RA-related fatigue. With a synthesis of current qualitative research, it is possible to consolidate and add weight to the existing findings from individual qualitative studies, (8, 9) that normally have little impact on evidence-based practice.(8, 10) Therefore, the aim of this study was to identify, appraise and synthesize qualitative studies on the experience of living with fatigue in patients with RA in order to achieve a higher level and richer understanding of the experience of RA-related fatigue.

Methods

This study used a hermeneutical approach seeking to achieve an increased understanding of the phenomena of living with fatigue. (11) We conducted a qualitative meta-synthesis based on Sandelowski and Barrosos' approach.(12) . In accordance with Sandelowski and Barosso, (12) the qualitative meta-synthesis consists of three phases: 1) a systematic literature search; 2) appraisal of included articles; and 3) analysis, synthesis and integration of findings.

Systematic literature search

Two of the authors completed a systematic literature search in February 2017 in six databases: Pubmed, Cinahl, Embase, Sve-med, PsycINFO and Web of Science. The literature search was performed as block searches.(13) The other authors and a research librarian supervised the search. Keywords as well as subject headings were used to strengthen the literature search.(14) In each database, thesaurus, MESH-terms and entry words were identified as equivalent keywords for “rheumatoid arthritis” and “fatigue”. The equivalent keywords in each block were combined with OR, before the blocks were combined with AND (Supplementary file 1).

Inclusion criteria were peer-reviewed studies using a qualitative design, reporting experiences of living with fatigue in patients diagnosed with RA and age > 18 years as an outcome. Studies published between 01.01.2002 - 02.23.2017 were included. Only full-text articles in Danish, English, Swedish and Norwegian languages were included. As the experience of fatigue is different depending on peoples’ cultural, psychosocial and economic context,(15, 16) we excluded studies from non-western countries to ensure homogeneity. We considered western countries to encompass Europe, Canada, USA, Australia and New Zealand. We excluded studies reporting fatigue in people with different diagnoses, if findings regarding people with RA were not reported separately and excluded review articles. The retrieved titles were managed in the electronic reference-program Endnote X7 (endnote.com), where duplicates were removed.

The web-based reference-program Covidence (Veritas Health Innovation, Melbourne; Australia, Covidence.org) was used in the screening process. The next step was full text screening of 61 articles. Potential conflicts were resolved and agreement obtained through discussions among AH, AL, BAE and JP. The overall literature search and selection process are described in Figure 1.

Please insert Figure 1

Appraisal of the included articles

Eight articles were included in accordance with the described inclusion- and exclusion criteria (Table 1). The combined sample size was 212 people with RA; 69% were women, aged between 20-83 years. The check list from the Critical Appraisal Skills Programme (CASP)(17), for assessment of quality in qualitative studies was used. Sampling strategies, data management, discussion, implications and techniques for maximizing rigour and credibility were essential issues. The critique of individual studies was further informed by the following selected elements from

Sandelowski and Barrosos' reading guide (12): judgement about whether plausible findings were appropriately supported by data; if appropriate analysis and interpretation of data were evident; if findings related to the overall aim of the individual study; variation of findings; coherence between and precise reporting of ideas and concepts and finally whether the results offered information or insight in RA-related fatigue.(12)

A comparative appraisal (12) across the included studies, allowed us to derive meta-study inferences. The eight studies were listed to allow an initial identification of patterns in methods and participants across the included studies (Table 1). An audit trail (12) (in Danish) documented the procedures and decisions.

References	Aim	Analysis	Participants	Data collection	Classification of typology
Hewlett et al. (2005)(5) UK	To explore the concept of fatigue as experienced by patients with RA	Thematic analysis grounded in data	15 patients 3 men /12 women. Age 31-80 years	Semi-structured in-depth individual interviews	Conceptual /thematic description
Repping-Wuts et al. (2008)(6) Netherlands	To explore the experience of fatigue in Dutch RA patients, including the concept, causes and consequences of fatigue, patients' self-management strategies and bottlenecks in professional care.	Thematic content analysis	29 patients 12 men / 17 women Age 36-80 years	Questionnaires and individual semi-structured interviews	Thematic survey
Crowley et al. (2009)(18) Ireland	To identify barriers to exercise in RA	Grounded theory	12 patients 12 women Age 43-80 years	Focus groups	Thematic survey
Nicklin et al. (2010)(19) UK	To develop draft PROMs to measure RA fatigue and its impact through collaboration with patients to identify language and experiences, create draft PROM items, and test for comprehension. Decisions supported throughout by a patient research partner.	*The study consists of 3 substudies* 1) Inductive thematic content analysis 2) Identifying and developing data to use in the third study 3) Cognitive method of survey methodology	1) 15 patients, 3 men /12 women. Age 31-80 years 2) 17 patients, 6 men / 11 women Age > 18 years 3) 15 patients > 18 years	1) Analysis of transcriptions from a former study of semi-structured qualitative interviews 2) Three focus group interviews 3) Cognitive interviews	Conceptual /thematic description

Nikolaus et al. (2010)(7) Nederlands	To gain further insight into the experience of fatigue in RA.	Framework approach combining inductive and deductive elements	31 patients, 8 men / 23 women Age 32-83 years	Electronic questionnaire and semi-structured in-depth individual interviews	Thematic survey
Dures et al. (2012)(20) UK	To explore the patient perspective of a Cognitive- Behavioral Program for patients with RA and the impact of behavior changes	Hybrid thematic content analysis	38 patients, 8 men / 30 women Age 35-77 years	Study nested in a RCT. Focus groups and one individual interview	Thematic survey
Feldthusen et al. (2012)(3) Sweden	To describe how persons with RA of working age experience and handle their fatigue in everyday life	Qualitative content analysis	25 patients, 6 men / 19 women Age 20-60 years	Individual questionnaires and focus groups	Conceptual /thematic description
Thomsen et al. (2015)(21) Denmark	To examine how patients with RA describe their daily sedentary behavior	Qualitative content analysis	15 patients, 5 men / 10 women Age 23-73 years	Semi-structured in-depth individual interviews	Conceptual /thematic description

Table 1. Overview of the included studies

RA: Rheumatoid arthritis; RCT: Randomized controlled trial; UK: United Kingdom

Analysis, synthesis and integration of findings

After appraisal of the included studies, we used Malteruds' systematic text condensation for an interpretive synthesis of the findings (22, 23) (Figure 2).

Please insert Figure 2

Inductive and deductive analysis methods were used alternately. To ensure rigour, a constant movement between fragments and the original text was applied (22). The analysis started with three of the included articles. (3, 5, 6) The rest of the included articles were analysed one by one and, constantly compared with the findings from the other articles.

The initial analysis of the findings resulted in 241 codes. The text bites from the 241 codes were organized into five initial themes. New understandings developed, based on subgroups within each of the initial themes. Eventually four themes emerged and the findings were described in relation to these four final themes (an example is shown in Supplementary file 2). Text-condensation and contextualization were discussed among the authors to extract the meaning of the emerging themes.

Patient and public involvement

Due to the nature of this study, no patients were involved in its planning or conduct. The study deals with the patient perspective and a significant and challenging symptom for most patients with RA. The results will be discussed with patient research partners and they will be involved when developing and testing interventions in the future to address fatigue.

Findings

Based on the systematic interpretive analysis we identified an overall theme ‘A vicious circle of an unpredictable symptom’ and four sub-themes, inter-linked to each other and to the overall theme: ‘being alone with fatigue‘; ´time as a challenge’; ‘language as a tool for increased understanding’ and ‘strategies to manage fatigue’ (Figure 3).

Please insert Figure 3

A vicious circle of an unpredictable symptom

Fatigue is one of the most important symptoms for people with RA as it is difficult to control and has considerable consequences for all aspects of their everyday lives.(3, 5-7, 21) They consider their fatigue both to be more intense and different from the fatigue they knew before they were diagnosed and different from the fatigue that people without RA might experience.(3, 5, 19) RA-related fatigue is unpredictable and does not occur regularly within or across days. It varies in severity, duration, frequency and intensity, and varies from short episodes daily, weekly or less often, to fatigue that is more permanent, and can become an overwhelming and total feeling with no specific cause or reason. As such, it is perceived as inexplicable.(3, 5, 6, 19) Fatigue can have a cumulative physical, cognitive, emotional and social impact, which forms the basis for a vicious circle, where fatigue wears people down and generates more fatigue.

Physical impact

In the overall theme, physical impact included the experience of fatigue as the main barrier for physical activity and exercise.(18) Physical activity becomes extremely exhausting and is associated with irritability and anger.(3, 5, 21) People with RA-related fatigue experience reduced sleep quality, with episodes of being awake at night and feeling unrefreshed after sleep, and a body that feels heavy or as though they are ill.(3, 5-7, 19, 21)

Cognitive impact

The cognitive impact includes the effect of fatigue on concentration, memory, the ability to learn, solve problems, assimilate information, participate in conversations and engage with others.(3, 6, 19) Fatigue has a negative influence on motivation and enthusiasm.(5, 6, 19) The cognitive problems create a feeling of being limited and always one step behind.(6, 19, 21) People with RA-related fatigue also experience positive effects of their fatigue. This encompasses learning to be more conscious about choices in life, learning to let things pass, and recognizing the advantages of resting.(20)

Emotional impact

The emotional impact of fatigue is related to experiences of frustration, hopelessness, fear, reduced motivation, lack of patience and loss of control in relation to other people.(3, 5, 6, 19) In addition, fatigue is experienced as exhausting, with a negative impact on people's ability to take initiatives and to get things done.(3, 18) A reduced energy to participate in social activities leads to negative feelings such as anger.(3, 6, 7) Younger women with many social roles report being overly sensitive and feeling misunderstood.(7) Others report feeling useless.(5, 7) It is hard to fulfill social expectations which leads to a feeling of being viewed as lazy, boring and self-absorbed.(5) They can feel too tired to entertain others or fall asleep, which can induce feelings of guilt and embarrassment.(19)

Social impact

Social impact of fatigue covers the feeling of being restricted in the ability to fulfill normal social roles in the family, in social life, at work and in recreational activities, and consequently social relations are strained.(3, 5-7, 18-21) People with RA-related fatigue experience the fatigue as a great barrier to being with other people, and they reduce social activities to a minimum.(3, 5, 6, 19) Planning and prioritizing are important in relation to the experience of fatigue and tasks are divided over a day or over several days in order to be able to manage bad days and save energy for later events and tasks.(3, 21) The unpredictability makes it hard to plan and the postponement or cancellation of social agreements may be necessary.(3, 6, 21) Work and functional roles are often given higher priority than recreational activities and physical activity and consequently people reduce and limit the time they spend on 'nonessential' tasks.(3, 18, 19)

Being alone with fatigue

The described emotional and social consequences of fatigue can result in a particular type of loneliness, which people with RA do not share with others. Days with high levels of fatigue lead to isolation at home either because it is difficult to go out or people deliberately choose to be by themselves and stay home.(21) They find it hard to reciprocate help and describe this as exhausting, which limits their relationships with other people.(3, 5, 6, 19) In particular, people describe how a sense of being dependent on others is detrimental. Fatigue leads to a feeling of imbalance in everyday life, which is dominated by the experience of negative emotions such as hopelessness and loneliness.(3, 21) People describe not having enough energy to take care of their families, and how this may lead to a feeling of being hard to live with. To manage work, everyday tasks and social activities is a lonely fight and is intensified as people strive not to show fatigue at work or in public(3) It is essential for them not to be perceived as grumpy or whining, but to manage fatigue on their own.(3) Their experience of fatigue as a particular symptom is not necessarily articulated in the dialogue with their rheumatologist or nurse specialist.(3, 6) They believe that support from health professionals is rare and that health professionals tend to focus on physical problems and disease activity rather than fatigue(5). Overall, this leads to the feeling that there is nothing to be done about their fatigue and that the experience of fatigue, its management, and acceptance of fatigue is their own problem.(3, 5, 6, 20, 21)

Time as a challenge

Poor sleep and the unpredictable nature of fatigue requires breaks and rests during the day. For some people, this means setting time aside, while for others this is perceived as impossible.(3, 5-7, 19, 21) Some everyday tasks become slow and troublesome due to joint pain and physical limitations. Tasks take longer than pre-RA and are more strenuous to perform, which can increase fatigue and require more breaks and the need for additional rest.(5, 6) There is a need to sit down to perform some tasks and a need to be alone, which also takes time and increases the imbalance in everyday life in relation to family life, household and garden related tasks, work, recreational activities and social roles.(3, 5-7, 19, 21) As it takes time to adjust plans, the chance to be spontaneous is also reduced.(3)

The language as a tool for increased understanding

People with RA-related fatigue perceive that other people, who are familiar with “normal” tiredness, are only able to understand fatigue on an intellectual level. Consequently, they do not recognize and understand the far-reaching consequences of this invisible symptom,.(3, 5, 19) People experiencing RA-related fatigue are conscious of the words they use with their family and with health professionals to express the meaning of fatigue and increase the understanding of their fatigue.(3, 5, 19) To be ‘tired’ is not considered an appropriate word and they use words such as ‘fatigued’, ‘exhausted’ and ‘lack of energy’.(5, 19) They use metaphors such as ‘heaviness’ or ‘weight’ or ‘like an infection’ and use different adjectives; i.e. ‘frustrating’ and ‘extreme’ to describe their fatigue and facilitate an understanding regarding the nature of their fatigue.(6, 19, 21) People with RA-related fatigue communicate their fatigue differently depending on the context and they expect a reaction from those they talk to.(3) They distinguish linguistically between the severity of fatigue, the effect and the management of fatigue.(19) When they talk to other people with RA about fatigue, they use words that most people with RA are familiar with.

Various strategies to manage fatigue

People with RA-related fatigue report that conscious strategies are needed to break the vicious circle.(3, 7) They try to pace, relax and rest during the day to save energy for later events and tasks, and be able to manage bad days.(5-7, 19, 21) People with RA-related fatigue constantly prioritize and plan activities according to their capacity to manage fatigue at home and at work.(3, 5-7, 19, 21) Other strategies used include breaking down tasks over one or several days or consciously deciding to carry on regardless of the consequences, having a positive attitude or trying to accept the fatigue.(3, 5, 21) Some devote a day per week to manage bad days.(3, 21) Some can distract themselves from their fatigue by concentrating on something else, engage in social activities, have fun, accept help from others or avoid energy consuming activities.(3) People with RA-related fatigue find it is necessary to take good care of themselves and their body to feel good and try to restore the imbalance in life and ease fatigue.(3) People with RA who have participated in group based Cognitive Behavioral Therapy (CBT) to support self-management of fatigue experienced an increased self-efficacy, problem solving, less fear of fatigue and increased acceptance and ability to assert their own needs.(20)

Discussion

This meta-synthesis is the first to summarize and synthesize the qualitative research on the experience of people with RA living with fatigue. We identified that RA-related fatigue is a vicious circle of an unpredictable symptom, which can be described by its physical, cognitive, emotional, social and behavioral impact. These findings are not new, but they are consolidated and strengthened by being consistent across a range of studies. In addition, the four sub-themes: ‘being alone with fatigue’; ‘time as a challenge; ‘the language as a tool to an increased understanding’ and ‘strategies to manage fatigue’ based on eight qualitative articles are comprehensive and provide a novel depth of detail into fatigue from a patient perspective. The uncontrollable and unexplained nature of fatigue makes it the most challenging symptom for many people with RA. The findings emphasize that RA-related fatigue is multi-dimensional and it is pervasive and affects all areas of the people’s everyday lives.

An international cooperation of researchers and patient representatives involved in OMERACT (Outcome Measures in Rheumatology), has acknowledged fatigue as an important symptom of RA, which should be measured in all clinical studies, where possible.(24, 25) Fatigue can be measured by generic instruments or instruments that reflect the multi-dimensionality of RA-related fatigue in clinical studies(26). The British Rheumatoid Arthritis Fatigue Multidimensional Questionnaire (BRAF-MDQ) is designed to capture the multi-dimensional nature of RA-related fatigue.(27) In addition to the BRAF-MDQ, there are three BRAF numerical rating scales (NRS) that measure fatigue coping, severity, and effect. The BRAFs encompass the physical, cognitive, emotional, social and behavioral aspects of fatigue, the level, the number of days, duration, impact and coping with fatigue. Our study highlighted the importance of wording in relation to fatigue and the BRAFs are based on interviews with people with RA.(19) However, the BRAFs do not encompass the challenges with loneliness and time, which we identified as important aspects of living with fatigue. The metaphors provide insight into the negative feelings and the lack of freedom that people experience.(20, 21) These aspects should be included in the dialogue between health professionals and the patients.

The unpredictability of fatigue creates a changed self-perception and sense of self-worth, which amplifies the physical, cognitive, emotional and behavioral impact of the symptom. Professor Charmaz argues that chronic illness can be considered as a fundamental type of suffering which can undermine the person’s “self”.(28) The unpredictability creates uncertainty and fear which can lead to more restrictions and limitations in life than necessary.(28) This is consistent with the findings regarding fatigue in our study. Health professionals can support people with RA-related fatigue in addressing and acknowledging these emotions and issues in the dialogue with people with RA.

We found that people with RA-related fatigue may experience loneliness because they consider that they must opt out of social activities to take care of themselves. They do not feel that other people acknowledge their invisible fatigue and social relations are strained. This is consistent with a study on the experience of living with RA. (29) RA puts social roles under pressure in general, both in the family, among friends and in the wider social network. (29) Work life is important for people with RA as it affects their identity, social relationships and the sense of normality in everyday life.(29) Women with RA give the highest priority to their professional identity compared to a disease and motherhood identity.(30) In this meta-synthesis, we also found that people with RA prioritize work-life and functional roles, and it is their leisure time and family time where RA-related fatigue bears the greatest impact. However, despite often prioritizing work, the cognitive and physical impact of fatigue can make it difficult for people with RA-related fatigue to fulfill their role at work.(31) Thus, these issues need to be included in the dialogue between patients and health professionals.

Fatigue was considered to be the main barrier to physical activity.(18) Physical activity has been found to be associated with physical fatigue in people with RA (32). At the same time, people with RA describe physical activity as one of the strategies they use to manage their fatigue.(33) Physical activity can induce a natural sense of fatigue and exhaustion, which are considered positive as opposed to the RA-related fatigue, which is considered unpredictable, unearned and unexplained.(33) A recent Cochrane review (34) and a meta-analysis on exercise training and fatigue (35) identified physical activity as a potentially effective non-pharmacological strategy to help reduce the level of fatigue. Even a reduction in sedentary time seems to reduce the level of fatigue significantly.(36) Another efficient strategy is the application of Cognitive Behavioral Therapy (CBT) to help people reduce their RA-related fatigue.(20, 34, 37)

Our study highlights that patients with RA-related fatigue report that health professionals do not address fatigue sufficiently. Other studies have indicated that health professionals do not possess the necessary competencies to guide the patients to manage their fatigue(38). Thus, further education and training of health professionals to acknowledge and validate fatigue, and in the use of different cognitive behavioral techniques are needed.(20) However, we still need more evidence regarding effective interventions to help reduce RA-related fatigue.

The overall findings from our study fit the models mentioned in the Introduction. (2, 4) However, the findings regarding loneliness, time, language and strategies to manage fatigue are less recognized and should inform future interventions. A recent study indicates that we may not require disease specific approaches as the severity of fatigue can largely be explained by transdiagnostic factors. (39) Thus, we may develop interventions to help reduce fatigue for people with different chronic diseases targeting individual needs. (39) Furthermore, the specific cognitive processes should be mapped and targeted. (40)

Strengths and weaknesses of the study and in relation to other studies

The huge impact of RA-related fatigue on all aspects of peoples' lives, the importance of the language, the temporal aspect, and how people feel alone with their fatigue presents a comprehensive, detailed picture of the experience of living with RA-related fatigue., Our synthesis strengthens and consolidates the findings from the individual qualitative studies, broadening and deepening our understanding.

The literature search was supervised by a research librarian to enhance the quality, and we consider it to be thorough. To optimize the quality of the included studies, we chose not to include grey literature and abstracts which might not have been peer-reviewed.

Additional studies from other areas of the world might have altered the results, but we found it important to limit the study to western countries, as the experience of fatigue might be dependent on, or influenced by, the cultural context. Furthermore, restricting searches to the past 15 years can be considered a limitation as there may be additional studies a few years older. Still, the experience of living with fatigue is affected by the cultural and historical context. Thus the 15 year limitation seems relevant.

The findings from this study are likely to be relevant and useful for people with other types of inflammatory arthritis and long-term conditions where fatigue is a significant symptom.

Conclusion

The unpredictability of RA-related fatigue is dominant, pervasive and is experienced as a vicious circle, which can be described by its physical, cognitive, emotional and social impact on peoples' lives. It is important for health professionals to acknowledge the impact of fatigue on the patients' everyday lives, pay attention to the wording they use to describe their fatigue, and to include the experience of living with fatigue in the dialogue with patients. Support from health professionals to manage fatigue and to develop new strategies to increase physical activity and maintain work is important for people with RA-related fatigue.

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Conflicts of interest

None of authors has any disclosures.

Data sharing statement

No additional data available.

Figure legends:

Figure 1: Description of the literature search

Figure 2: The stages in Malterud's text condensation (22, 23)

Figure 3: The interrelated findings of the experience of RA-related fatigue

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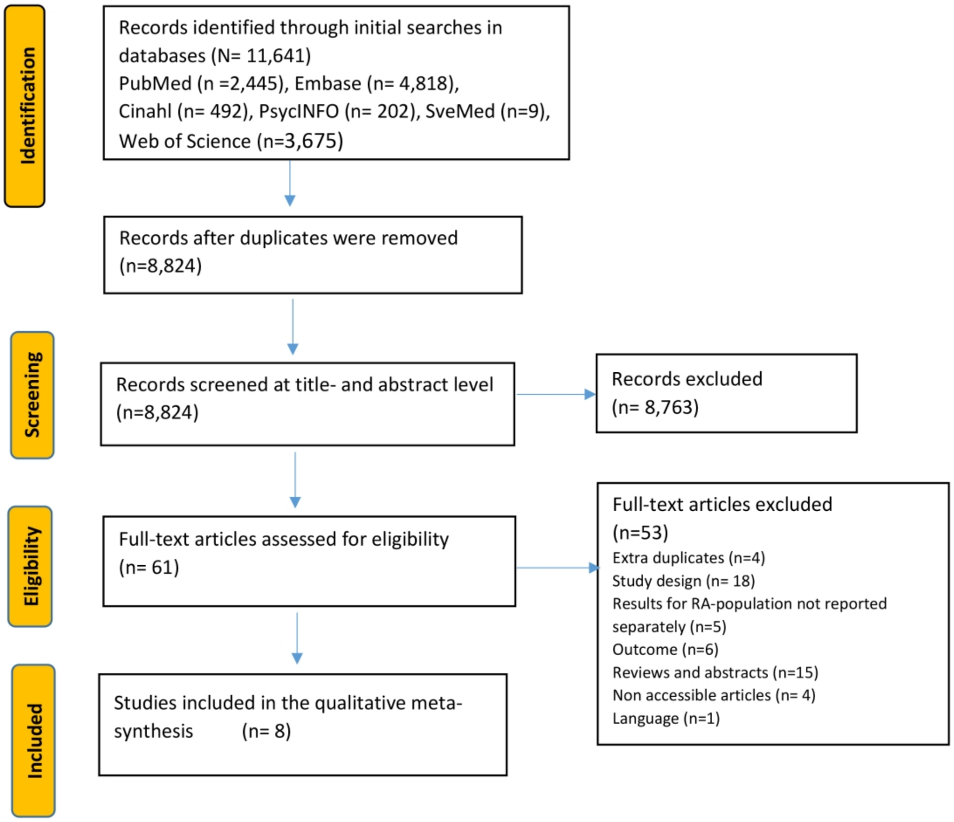
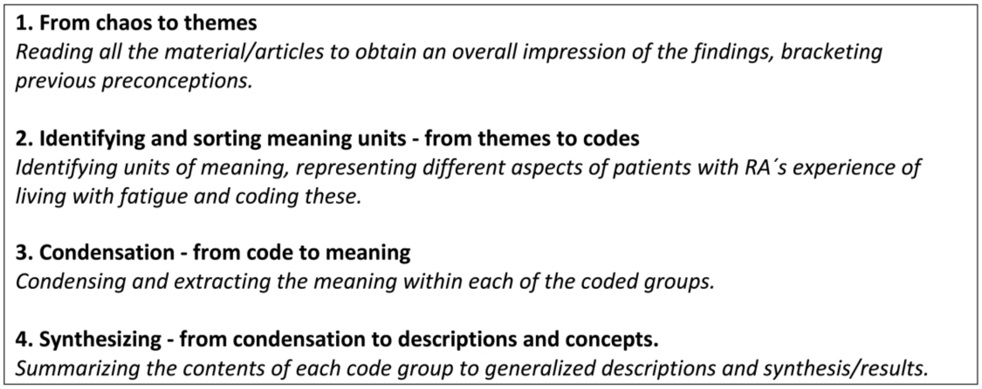


Figure 1. Flow-chart for the overall literature search and selection process

183x160mm (300 x 300 DPI)



1. From chaos to themes
Reading all the material/articles to obtain an overall impression of the findings, bracketing previous preconceptions.

2. Identifying and sorting meaning units - from themes to codes
Identifying units of meaning, representing different aspects of patients with RA´s experience of living with fatigue and coding these.

3. Condensation - from code to meaning
Condensing and extracting the meaning within each of the coded groups.

4. Synthesizing - from condensation to descriptions and concepts.
Summarizing the contents of each code group to generalized descriptions and synthesis/results.

Figure 2:. The stages in Malterud's text condensation(22, 23)

199x78mm (300 x 300 DPI)

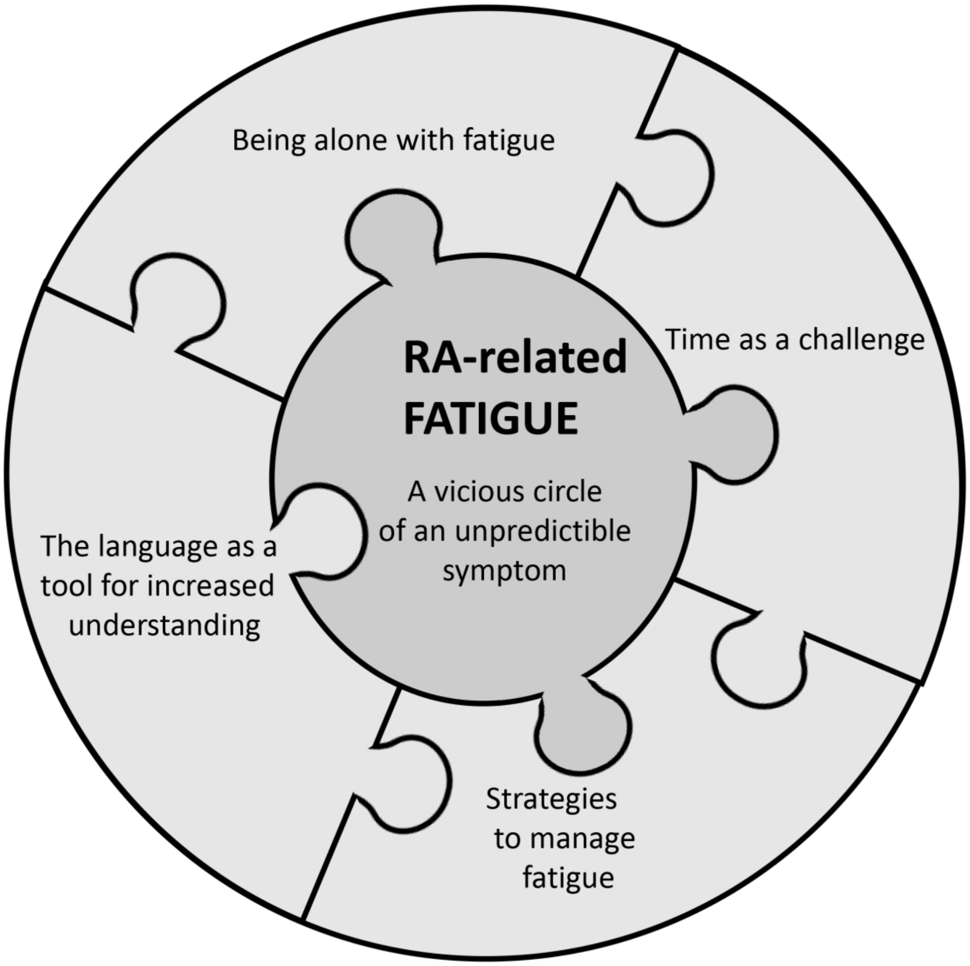


Figure 3: The interrelated findings of the experience of RA-related fatigue

192x190mm (300 x 300 DPI)

Supplementary file 1: Description of the literature search with the search terms

BLOCK 1	Subject headings in PubMed	arthritis, rheumatoid [MeSH]
	Subject headings in Embase	exp rheumatoid arthritis/
	Subject headings in Cinahl	MH arthritis, rheumatoid+
	Subject headings in PsycINFO	exp rheumatoid arthritis/
	Subject headings in SveMed	exp rheumatoid arthritis/
	No Subject headings in Web of Science	
AND	Each subject heading **OR** these keywords	((rheumatoid OR reumatoid OR rheumatic OR reumatic OR rheumat* OR reumat*) AND (arthrit* OR artrit* OR diseas* OR condition* OR nodule*)) mp.
BLOCK 2	Subject headings in PubMed	asthenia [MeSH] fatigue[MeSH]
	Subject headings in Embase	exp asthenia/ exp fatigue/ exp lassitude/
	Subject headings in Cinahl	MH fatigue
	Subject headings in PsycINFO	exp asthenia/ exp fatigue/
	Subject headings in SveMed	exp asthenia/ exp fatigue/ exp lassitude
	No use of subject headings in Web of Science	
	Each subject heading **OR** these keywords	fatigue* or tired* or sleepy or sleepi* or drows* or lassitude or letharg* or weary or weariness or exhaustion or exhausted or lacklustre or ((asthenia or asthenic) and syndrome) or ((lack or loss or lost) and (energy or vigour))mp.

Supplementary file 2. Example of analysis in Malterud's four stages of systematic Text Condensation

1.From chaos to themes (total impression)

Five initial themes and examples of subgroups

- The meaning of the language
- Permeating body, thoughts, behavior and feelings
- Constantly unpredictable fight
- To be sick
- Overwhelming life situation

Subgroups according to the theme 'Intimidating life situation'

  - Everyday challenges
  - Thoughts about one's self and others
  - Limitations to social relationships, leisure time and jobs

2. Identifying and sorting meaning units - from themes to codes

*Examples of text-bites/coding in the sub-group "**Everyday challenges**" from the initial theme "**Intimidating life situation**"*

- Everyday tasks can be a trigger to fatigue (4)
- Functional impairment due to RA means that activities are harder and take longer (4)
- Everything takes time when you must rest and take breaks (5)
- Reduced possibilities to be spontaneous because it takes time mentally to adjust to new plans (3)
- Fatigue is experienced as frustrating in everyday life, because of the difficulty of managing work, social life and leisure time as wanted (3)
- Fatigue results in the largest limitation on everyday tasks due to its unpredictable nature and the need for unexpected rests during the day (20)
- Fatigue creates imbalance in everyday life and leads to increases in sedentary behavior, sleep and being alone (20)

3. Condensation - from code to meaning

*Example of the condensation from the sub-group "**Everyday challenges**" withdraw as new abstract meaning, written as artificial text:*

Fatigue has consequences for daily life, creating the greatest challenge in everyday tasks because of its unpredictable nature and the unexpected need for rest during the day. It is frustrating not to be able to manage a job, housekeeping, social life and leisure activities, as you want to. Fatigue limits and causes an imbalance in everyday life, because of an increased need for sedentary behavior, sleep and being alone. Too many daily and housekeeping tasks trigger fatigue and there is a need to conserve one's energy. Fatigue takes time and causes imbalance. Possibilities to be spontaneous are reduced, because mentally it takes time to adjust plans, to rest and to take breaks. Other RA symptoms worsen fatigue, and makes everyday activities harder and take longer.

4. Synthesizing - from condensation to descriptions and concepts

*Example on recontextualization illustrated by a "golden quote", to concretize new findings, from where the interpretive themes were prepared => **Time as a challenge**.*

Days are limited to minimal physical activity because patients have an increasing need for rest, sedentary behavior, sleep and to be alone. Fatigue is experienced as the largest limitation in everyday life, because of the unpredictable nature and the demand for unexcepted need to rest, which is impossible to resist. Everything takes longer and creates imbalance in everyday life and it does not feel satisfying to use the time to rest and to take breaks, and not be able to manage a job, housekeeping, social life and leisure, as you want.